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Invited Lectures

(I-1 — I-10)

I-1

Neocortical arealization and specialization

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In human embryos, the neocortex starts differentiating during 1.5, 2 months of gestation. Gyri start appearing around 5 months and continue their development to postnatal stages. During this time, a complex series of molecular and cellular events define topographic organization of the neocortex with primary sensory, motor areas, language areas, sensory association and cognitive areas. Neural activity joins the orchestration of molecular signaling and differentiation, in shaping the functional characteristics of anatomical connections. This lecture will focus on how studies in mouse cortical development are revealing the underlying principles of neocortical differentiation in the mammalian brain and how they are shining light upon developmental brain disorders in children.

I-2

The brain of humans and experimental animals

Paxinos G

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Pre-Socratic philosphers rejected supernatural explanations for the existence of the physical world and the nature of the soul. These philosophers rejected gods and magic. Later Hippocartes said that men aught to know that from the brain, and only from it, derive our pleasures, happiness, laughter as well as pain and sorrow. Aristotle considered the heart as the seat of the soul, atributing the brain the lowly function of cooling the blood. Galen (130–200 AD) reinstated to the brain the mind and described Aristotle's position as absurd. The battle between the encephalocentric and cardiocentric theories of the mind or the sould continued until and after Shakespear. In the *Merchant of Venice*, Portia asks, «Where is fancy bread, or in the heart or in the head?» Heart transplant surgeons did a disservice to their profession by showing that the recipient does not fall in love with the wife of the dead man. After the long battle to find the seat of the soul, psychology lost its soul in the 1930s. According to Hebb (1958), the mind is the integration of the activity of the neurons of the brain. That is, there is no ghost in the machine. If the relation between brain and behavior is 1 to 1, then there is no need to hypothesize the presence of the soul to understand behavior and modify it. We have constructed brain atlases of the rat, mouse, monkey, bird and human. Humans diverged from the monkey about 11 million years ago, the rat 40 million years ago and the bird 400 million years ago. The human brain is very similar to the monkey brain even in the cortex. The rat brain is similar to the human brain in the subcortex, but largely heterologous in the cortex. The bird has about 70% homologous structures in the subpallium, but is only about 5% homologous in the pallium. Standard atlases using identical nomenclature enable scientists to navigate seamlessly between the brain of humans and experimental animals to test hypotheses inspired by human considerations and relate data from experimental animals to humans. In the histological atlases, we make use of genes that are responsible for the segmentation of the brain in development (hox genes). Using evidence from transgenic mice and birds we are proposing a new

plan for the organization and function of certain brain regions of mammals. Recently, using MR images in mice, rats and humans we are providing 3D volumes of canonical brains against which transgenic varieties with clinical significance can be compared.

I-3

The effects of *Nicotiana rustica (Maraş otu)* on the oral mucosa

İşigov İ

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The percentage of primary school students using *Nicotiana rustica/Nicotiana tabacum* (Maraş otu) is considerably high. In this talk, we will focus on the harmful effects of it on the mucosal layer of the mouth. Researchers point out that there is a close relationship between the consumption of Maraş otu with the gingivitis and swelling in the mouth. It is found that the students who do not use it have a normal oral mucosa. It is also concluded that those who use it have a higher probability of having symptoms of swellings and hyperemia. This study puts forward the harmful effects of Maraş otu for the oral mucosa.

I-4

Anatomical basis of viscerosomatic and somatovisceral reflexes

Agha N

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The interrelation between the different structures of the body is not limited to associations between similar tissues but also extends to dissimilar structures such as the interrelation between the skin and the underlying muscles. When painful and damaging stimuli are applied to the skin, the body responds by a strong contraction of the muscle(s) to withdraw that part of the body from the stimuli. This quick involuntary motor reflex is a defense mechanism called "flexor reflex." Sensory nerve endings from muscles, tendons, joints, and cutaneous receptors are all interrelated, and the stimulation of afferent cutaneous nerve endings has a concomitant effect on the underlying tissues (muscles, tendons, and joints). The points of convergence between the skin receptors and the receptors found in the underlying tissues are most probably located at the level of the spinal cord via the internuncial cells (primary flexor reflexes). Afferent cutaneous stimuli also probably travel all the way up to the brain stem and reach different nuclei in the upper portion of the reticular formation. These nuclei receive incoming impulses from various muscles, tendons, and joints. In addition, most of the ascending sensory tracts are somatotopically organized in the spine, medulla, cerebellum, thalamus, and cortex, hence resulting in the further accentuation of the synergistic response of specific muscles, tendons, and joints to the stimulation of well-defined areas of skin. All the information that is passed by receptors is integrated in the "skin-muscles-tendons-joints-ligaments complex" to control body mechanics. In this neurological network where many tissues are interconnected through multi-synaptic pathways, sensory stimuli originating in the skin may branch off in the spinal cord and travel in many directions. They may relay impulses to the ascending or descending reticular formation. Numerous researchers have investigated the field of somatovisceral reflexes through clinical trials and experiments. There is a general agreement that the stimulation of afferent nerve endings has a direct effect on visceral functions.

I-5

The effect of non-ionizing electromagnetic field with a frequency of 50 Hz in rat ovary a transmission electron microscopy

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Recently, there are increasing concerns and interests about the potential effects of Electromagnetic Field (EMF) on both human and animal health. The goal of this study was to evaluate the harmful effects of 50 Hz non-ionizing EMG on rat oocytes. In this experimental study, 30 rats were randomly taken from laboratory animals and their ages and weights were determined. These 3 month's old rats were randomly divided into 3 groups. The control group consisted of 10 rats without receiving any treatment and kept under normal conditions. Experimental group 1 (10 rats) received EMF for 8 weeks (3 weeks intrauterine +5 weeks intrauterine +10 weeks after birth). After removing the ovaries and isolating follicles, granulosa cells were fixed in glutaraldehyde and osmium tetroxide. Electron microscopy was used to investigate the traumatic effects of EMF on follicles. In control groups nucleus membrane and mitochondria in follicle's cytoplasm seemed normal in appearance. Theca layer of primary follicles in experimental group was separated clearly, zona layer demonstrated trot with irregular thickness and ovarian stroma seemed isolated with dilated vessels showing infiltration. According to the results of this study, it can be concluded that EMF has harmful effects on the ovarian follicles.

I-6

Medicine and anatomy problems in "Turkish World"

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Today in Turkish Medicine world, including Turkey, vaccine production, plasma, plasma products, genes and cancer genome project activities are carried out. On the otherhand, in Turkey and many Turkish community and their relatives; there are many health problems as vitamin deficiencies, anemia, unwanted pregnancies, risk pregnancies, miscarriages, birth complications, children with growth retardation, chronic diseases and complications, diarrhea, malaria, meningitis, typhoid etc. infectious disease and preventative diseases through vaccination (measles, tuberculosis, hepatitis, etc.) HIV/AIDS, including sexually transmitted infections, domestic violence and the associated injuries and sexual vio-

lence, depression, anxiety, fatigue, sleep disorders, prolonged age, and posttraumatic stress disorder, mental health problems, and dental health problems. Because today most Turks are removed from their lands and faced with the highest emigration. The education and research of the Anatomy in the Turkish world has a good place. Even in the medical schools at the moment in the war, such as Iraq or recently in the war like Bosnia, the anatomy studies are not far behind as other countries. There is even a better position than some non-war environment countries. Cadaver supply problems for Turkey is still not fully resolved. But in many relative countries it is not a problem. Also there is no agreement yet on a common language and terminology. This poses difficulties in terms of the monitoring of scientific publications. It will get to know each other for the Turkish scientists and relatives of the Turkish community scientists by regular surveillance of medicine and anatomy congresses. In this way, mutually solutions can be found for common and regional problems.

I-7

The first plastination project in Turkey: the history of a scientific new idea

Durgun B

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Plastination invented by Anatomist Gunther von Hagens offers the anatomical specimens that stem from real human bodies, exclusively for medical teaching, anatomy labs, and instruction. Its potential value in research is increasingly appreciated. More recently, von Hagens exhibition, Körperwelten (Bodyworlds), get the anatomy knowledge to the public arena. The first plastination project in Turkey began at Çukurova University, Faculty of Medicine, Department of Anatomy in 1981 and accomplished in 1985. The objective of this presentation is to speak about the first plastination project in Turkey along with the history of a scientific new idea. In plastination method, water and lipids in biological tissues were replaced by a curable polymer desired optical quality. The replacement was performed using the differences between the high vapour tension of the final solvent and the low vapour tension of the polymer. The procedure included six steps; removal of the organ and dissection, fixation, dehydration, freeze substitution, forced impregnation in a vacuum, and hardening. The properties of the finished specimen were determined by the class of polymers used. The polymer solutions used in our project were not that of von Hagens and these solutions (BIOPLAST) were patented in 1984 with the name of Fahri Dere. It would not easy to study on a new blossoming method if there was no enough knowledge about it. The inadequate laboratory conditions, the malfunctioning of devices and to be in need of materials were the main difficulties in this process, therefore, many devices were designed and made by the researchers with the spirit of teamwork in early phases of this project. After the recipe for polymer solutions had been prepared properly, the human organs and specimens such as kidney, heart, brain, eye, meninges and foot at various dissection stages were plastinated. Hard, transparent, dry, odorless and durable specimens were obtained and they could be examined radiologically and microscopically. So, this project resulted in three theses (by Durgun B, Yücel AH, Ziylan T). Some biological and pathological specimens were also plastinated. Even after 35 years, these specimens have preserved their properties. Plastination permits to keep the anatomical specimens in a physical state approaching that of the living conditions. The getting to accept a new idea was the most difficult phase of this project, but our plastination project led to the new studies related to the solving of some plastination problems, such as the rapid fixation and color preservation. Consequently, we can say that every new idea meets the challenge to getting to accept, but success is just a challenge itself.

I-8

Does the anatomy fall into disfavor?

Ertekin T

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Anatomy as a course has been taught in undergraduate, graduate and postgraduate level in health science. Anatomy is delivered at the beginning of medical education to provide a basis for medical language, clinical training and practice. Although anatomy is widely accepted as the most significant components of medical education, anatomy has been remained at the background in recent times. We thought that for this, the non-evolution of anatomy as a subject, low interest among students and academicians, the differences between the faculty and teaching methods that applied, the shrinking of anatomical schedule, the scarcity of qualified faculty member have contributed equally to the decline of anatomy. This presentation shows report about the number of faculty members and the topics of thesis in postgraduate level of anatomy in Turkey. Data related to our study were obtained from official web sites of the Council of Higher Education and universities.The bleak career prospect without motivation and encouragement, wrong choice of thesis topics among postgraduate students and opening of numerous medical schools leads to an insufficient number of faculty members at universities in Turkey. Thus we ask that is the decline of anatomy is true or not?

I-9

Future of the education and research in anatomy

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Anatomy is recognized as one of the most significant and revealing components of medical education. An inevitable paradigm shift occurs because of the new technologies that we experience, new apprehensions, ideas and informations that the period of time we are living brings. Anatomy will never lose its importance as long as human body is vitally important component of medicine and medical information. However, here it should be focused on the question that what kind of anatomy education is needed. Because anatomy provides a basis for medical education but it is

the not the purpose of it alone. It is an emerging duty for the anatomists while bringing anatomy education for its 'tomorrow' and to ensure that anatomy is modernized proper to contemporary time and raising pyhsicians with expected profile, consistent with current conditions and sophisticated. It is expected for anatomical researches of 'tomorrow of anatomy' having practical applicability, conseptual value and meaningful results for clinical sciences. In future years, anatomy will be a basic science that having gradually increasing value with the increase of translational researches.

I-10

Publication rates of abstracts presented at National Anatomy Congresses

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Meetings are essential for sharing knowledge and advancing scientific research. Despite the effort, most abstracts presented do not end up as published articles in scientific journals. We aimed to investigate the publication rates of National Anatomy Congresses. We included the abstracts presented at the annual meetings of 2007 and 2008. We used PubMed and Google Scholar to evaluate the publication of abstracts. We evaluated the abstracts regarding presentation type and study type. We determined the publication rates and mean publication times for each abstract. If present, we also compared the inconsistencies between meeting abstract and final published article. Among 342 abstracts presented, 195 (57%) were followed by a full-text article. Publication rates for oral and poster presentations were 75% and 52.2%, respectively. Mean publication time for all abstracts were 23.7±23 months. Within the first five years after the congresses 89.2% of articles were published. There were no inconsistencies in 50 (25.6%) articles, while 145 (74.4%) had inconsistencies from the congress abstract. Forty five (23.1%) articles did not provide adequate amount of information. There were no standard reporting format for abstracts. Publication rates of National Anatomy meetings were higher than national meetings of clinical specialties. We believe a standard reporting guideline for congress abstracts is needed.

Panel Session

(C-1 — C-9)

Current approaches in clinical anatomy

C-1

What is clinical anatomy?

Tekdemir İ, Güner MA

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Clinical anatomy, which is notably based on dissections inevitable method of anatomical studies, is to define anatomical structures and variations with their clinical significance and to identify new surgical applications along with developing technology. The British Association of Clinical Anatomists was established in 1977 in the United Kingdom to advance the study and research into clinical anatomy. Afterwards the roots of the American Association of Clinical Anatomist were formed in 1983. Then the Turkish Anatomy Association was found and changed the name as the Turkish Society of Anatomy and Clinical Anatomy (TSACA). TSACA has led the anatomical studies in Tukey since its foundation. Moreover, it was the host of 10th Congress of European Association of Clinical Anatomy in İstanbul in 2009. The applications of clinical anatomy cover various areas as both graduate and undergraduate medical education, clinical researches and surgical courses. Recently, it has considered that problem based anatomy education is more efficient and consistent than the conventional anatomy lecture. Thus, it can be stated that the instructional objectives of anatomy class may show better concordance with the medical practice by that way. Consequently, the clinical anatomy applications should be followed closely and given wide coverage in medical curriculum. From this point of view, it is aimed to present the place, importance and contributions of clinical anatomy.

C-2

Variations in the vascular anatomy of the right colon and implications for right-sided colon surgery

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The vascular anatomy of the right colon (caecum, ascending colon, transverse colon) is complex and varied compared with the left colon. Knowledge of the normal pattern and variations of the blood supply of the right colon is crucial for better outcomes following colon surgery. The purpose of the present study is to describe the precise vascular anatomy of the right colon in detail using fresh cadavers, taking the surgical steps involved in "Complete mesocolic excision and central vascular ligation" (CME + CVL) into consideration. Macroscopic anatomical dissections were performed on 111 adult fresh cadavers with emphasis on the vascular anatomy of the right colon between January 2013 and October 2015. The colic tributaries of the superior mesenteric artery and vein were documented in writing. Furthermore, the dissections were recorded with a video camera. The incidence of colic arteries arising from the superior mesenteric artery was: ileocolic artery, 100%; right colic artery, 33%; middle colic artery, 100%; and accessory middle colic artery, 11.7%. All 111 cadavers had a single ileocolic vein, which drained into the superior mesenteric vein in 103 cases, into the gastro-pancreatico-colic trunk in 7 cases and and into the jejunal trunk in one case (0.9%). The drainage site of the ileocolic vein to the superior mesenteric vein varied, and in 9% of cases the ileocolic vein did not accompany the ileocolic artery. The Gastro-Pancreatico-Colic Trunk was detected in 87 cases with several forms of the origin of the respective branches, the Gastro-Pancreatic Trunk was detected in 24 cases, and the classic Gastro-Colic Trunk of Henle was not detected. Variations were found in the formation and drainage routes of other venous colic tributaries of the superior mesenteric vein. Surgeons must watch, observe and bear in mind that vascular variations can occur. Awareness of these complex variations may improve the quality of surgery and may prevent devastating complications during right-sided colon resections.

C-3

Clinical perspective for musculoskelatal anatomy

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Objectives: Evaluation of the reasons for the differences between classical and clinical anatomy knowledge and recommendation of solutions for the problem.

Methods: Literature studies and departmental experiences

Results: In classical anatomy books and literature, musculoskeletal anatomy including variations has been described detailed; and pathologies have been evaluated with various perspectives. Differences between classical anatomy and clinical anatomy knowledge, result with many different and conflictive diagnosis and treatment modalities.

Conclusion: The aim of this presentation is to share the previous experiences about clinical anatomy learning methods and

to give advices for combining the classic anatomy knowledge with latest diagnose, treatment and education modalities.

C-4

Surface anatomy and anatomical planes in the adult Turkish population

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Objectives: Surface anatomy and anatomical planes are widely used for teaching anatomy and clinical practice. These planes are largely derived from cadaver studies and their projections on skin (surface anatomy) show inconsistencies between and within anatomical reference textbooks.

Methods: In this study, we intended to reevaluate the accuracy of common thoracic and abdominopelvic anatomical planes using computed tomography (CT) imaging on living adults in adult Turkish population. After excluding patients with kyphosis, scoliosis, abnormal lumbar lordosis, vertebral compression, organomegaly or ascites, computed tomography (CT) images of 150 patients (mean age 53, range 24–81 years; 81 male) that were obtained in supine position at end tidal inspiration were analyzed. Sternal angle, transpyloric, subcostal, supracristal and pubic crest planes and their relation with major deep anatomic structures were analysed by dual consensus.

Results: Tracheal bifurcation, azygos vein/superior vena cava junction and pulmonary bifurcation were usually below; concavity of aortic arch was usually within the sternal angle plane. Superior mesenteric artery and formation of portal vein were usually within; renal hila and gallbladder fundus were usually below the transpyloric plane. Inferior mezenteric artery was below the subcostal plane and aortic bifurcation was below the supracristal plane in most of the adults.

Conclusions: It is obvious that projectional surface anatomy is fundamental for medical education and clinical practice and reassessment of it is required for the elimination of contradictions.

C-5

Surgical neuroanatomy and surgical anatomy: continuous collaboration from operation room to the anatomy dissection lab

Cömert A

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Surgical neuroanatomy and applied surgical anatomy in reference to surgical operations is crucial for surgeons. Thus, during history collaboration and relation between anatomists and surgeons always have been very close. Nowadays new development of technology affects the operations and surgeons need to establish good surgical anatomy knowledge and to increase skills step by step. Surgeons need to learn anatomy but only books and atlases always do not provide enough satisfactory information. Some topographical relation and all integrity only can be learned via cadaver dissections. There is need of applied endoscopic, microscopic, laparoscopic, and radiologic images integrated with surgically relevant landmarks on cadaveric specimens for each operative procedure. The surgeon can discuss about all important anatomical structures encountered during the steps starting from the skin and common anatomical variants and anatomy for operative methods with exposures are critical for success in the operating room. Therefore, surgeons always have to question their knowledge and skills and anatomists closely have to collaborate with them to increase quality of research interest and clinical practice. Both we anatomists and surgeons need to ask a how much we know and how much we do not. Usually solving the surgeon's problem in Anatomy laboratory is successful but sometimes need to collaborate again and all collaborators have to understand operative anatomy problems altogether surgeon and to find the answer with strong collaboration. Additionally in order to build true, safe and effective anatomy basis there is a need of surgical neuroanatomy and surgical anatomy cadaver courses organized by both disciplines with collaboration. By this collaboration multidisciplinary research projects effectivity and quality of surgical interventions can increase. Training preoperative and perioperative techniques and approaches firstly in cadavers and solving related problems in anatomy laboratories are very important traditions in our university. In order to improve the skills and knowledge and to decrease the complications anatomists and surgeons have to build continuous collaboration from operation room to the anatomy dissection laboratory.

Did we reach to our aim in anatomy education?

C-6

Interim report of core curriculum study for anatomy

Adıgüzel E

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The study of the anatomy core curriculum for medical education has proceeded since 2014. It is aimed that the anatomy core curriculum, which will be prepared according to The Core Curriculum for Turkey, includes solutions of problems deal with integrations, modern educational methods, assessment and evaluation. For this purpose, diseases listed in The Core Curriculum for Turkey were grouped according to biological systems. Than the anatomical learning topics needed to learn these diseases were determined. The final list of the anatomical learning topics will be offered to anatomy and clinical related Turkish academia for consensus. Revising will be held according to feedback from academia. Workshops for integrations, modern educational methods, assessment and evaluation will be organized to establish solutions for final anatomical learning topics resulted from

consensus, and a guidebook will be prepared for every educational system in medical schools. Finally anatomy learning topics according to Turkish medical core curriculum are assessed, and the course density of the anatomy topics discussed in this presentation.

C-7

Giving of anatomy in integrated training system: sharing of experiences

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The main feature of an integrated education system of the anatomy departments of is to given according to the system, no to shema of the flow of the course. Blocks and periods consist of cell, tissue and organs which are entegrated on the clinical and pathologic view. Anatomy course is given by entegrated system in GATA. This mode of operation of the integrated system of course, we have aimed to contribute to the discussion of the anatomy learning assessment. The top ten in two classes, general courses in anatomy as a large weight is located four blocks (movement, nervous, circulatory respiratory-digestive-endocrine-urogenital). just simply move the system from this block, located on the second semester during the first year, other systems are given in the second year. First class in the first semester, with classes being osteology anatomical terminology adapte the students are provided. In the movement and nervous blocks weight of the anatomywas 40–50% and in the other blocks 30%. Weight of the osteology was 15% in tissue block. Biggest problem with this situation % by weight of the integrated system passes in front of the students to work with low-course. This time, instead of passing all classes, class performance, especially medical students were evaluated by a perception quite difficult to pass very close to the anatomy of the middle class has disappeared. Integrated assessment in our school system is under certain guidelines and regulations. Because of the practical and theoretical exams, year in and year-end rate in effect in certain passing grade exams, skills and elective courses with many parameters examined applications such as passing grade is calculated. Therefore, especially in the absence of dams in the practical exam in our system, theoretically and practically made to calculate half of the exam in the exam, due to the inclusion of practical questions of other subjects involved in it in a practical examination block, the attention to the student's anatomy laboratory has reduced partially in the integrated system. The most important case that gives us the integrated system, integral coupling issues of students separately detailed information before the disappearance of the process they were hard to put together, partly to prevent the information overload (even you give, students do not need to learn because of this exam structure), integrated session and it provided information on how to use the anatomical anatomy pave the way for the formation of a more holistic perspective. In this presentation, how anatomy education was placed in the entegrated system in GATA School of Medicine, its advantages and disadvantages, and our experience of application was aimed to declare.

C-8

The anatomy education in vertical and horizontal integration

Şehirli ÜS

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Vertical and horizontal integration is the model of medical education at Marmara University School of Medicine. The integration of basic medical sciences and clinical sciences provides a holistic approach. Students can integrate the information as a whole. The advantages and problems of anatomy education in this model are discussed.

C-9

Integrated curriculum; what have we gained or sacrificed?

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What is the need to change the curriculum in a medical education? Has the integrated medical education really changed the conventional medical curriculum? Should authority change an institution's educational system? Could be educational curriculums of almost all medical institutions of a country subject to "one policy"? What is being a university? Is there any other reason we do not know? We might ask those or similar question before curriculum change. Now, it may be the time to face what the cost of that alteration is.

Oral Presentations

(O-1 — O-48)

O-1

Adding sciatic nerve blockade to adductor canal blockade: an anatomical study

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Objective: We aimed to blockade the saphenous, the medial femoral cutaneous, the posterior branch of the obturator and the sciatic nerves effectively by single intervention during the knee operations and to control the postoperative pain.

Methods: In this study 8 formaldehyde embalmed cadavers were macroscopically and microscopically dissected in order to investigate the anatomy of adductor canal, the course of these nerves within the canal and, the relationships of the nerves with each other and with the fascial compartments. On every cadaver, measurements were made to identify the attempt point. One pilot study was performed on a cadaver by injecting colored latex into the adductor canal. According to obtained informations, the other lower limbs were sectioned to improve the method on. According to the results achieved from the sections, an application was performed on one lower limb. Tape measure (cm) and protractor were used for the measurements. Colored latex was used to demonstrate the anesthetic blockage of the nerves.

Results: The canal was observed between vastus medialis, sartorius, adductor longus and, magnus muscles. It was observed that the femoral artery and vein, posterior branch of the obturator nerve, the saphenous nerve and, the medial femoral cutaneous nerve were located in the adductor canal. The superomedial border of vastoadductor membrane (A) was determined as the ideal point of injection. The distances between this point and medial (B) and superior (C) borders of patella were measured on extended knees. Accordingly, the mean A-B and A-C distances were measured as 5.3 cm and 7.4 cm respectively. On one lower limb adductor canal was dissected following the colored latex injection into it. The nerves within the canal were dyed while the sciatic nerve wasn't. There was a fascial plane, which did not allow the passage of colored latex towards the sciatic nerve. The other lower limbs were transversely sectioned on the level with the upper border of the vastoadductor membrane to figure out this structure. On these sections it was found that a needle advanced perpendicular to vertical axis had to be angled 90o to the transvers plane. The mean shortest distance to the nerve via this angle was 8 cm. It was calculated that these distances were the half of the measured thigh widths. According to these measurements, colored latex was applied to one lower limb. Adductor canal and the sciatic nerve were dissected and it was seemed that the four aimed nerves were dyed.

Conclusion: We suggest that to blockade of these four nerves by a single injection for anesthetic interventions will find a practical application area during the knee surgeries.

Keywords: adductor canal, sciatic nerve, the medial femoral cutaneous nerve, saphenus nerve, obturator nerve

O-2

The anatomical investigation of the course and branching patterns of the superficial branch of radial nerve

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Objective: The superficial branch of the radial nerve (SBRN) may be injured by different causus in the clinic and depending on this condition, neurological sign and symptoms may be seen. The anatomical variations and morphometric properties of the nerve should be known well for preventing the nerve damages which may be incurred during the surgical resections. The purpose of this study is to evaluate the anatomical and morphometric properties of SBRN in the forearm, wrist and hand region.

Methods: Fourty forearms belong to twenty one fetuses (n=21) were dissected for determining the anatomical course of the SBRN in distal forearm. The anatomical variations of SBRN in the dorsal forearm region were assessed in three types (Type-1, Type-2 and Type-3). Otherwise, the innervation properties in dorsal hand region were assessed in four types (Type-1, Type-2, Type-3 and Type-4). The distance between the point that the SBRN emerged to the deep fascia and the radial styloid process and acromelion (PRM-1 and PRM-3) and the distance between the point where the SBRN gave its first branch to the radial styloid process and acromelion (PRM-2 and PRM-4) was measured. The forearm length was divided three equal part as proximal 1/3, middle 1/3 and distal 1/3 and emerging point of SBRN was determined as topographically. The relation of the SBRN with the lateral antebrachial cutaneus nerve, anatomic snuffbox and cephalic vein was also evaluated.

Results: The most frequently seen variation type of SBRN in the forearm was Type-1 (87.5%), in the hand was Type-3 (32.5%). The mean PRM-1 was determined as 1.51±0.10 cm, PRM-2; 1.01±0.16 cm, PRM-3; 4.87±0.90 cm and PRM-4; 4.38±0.75 cm. SBRN was coursed through to distal by emerging mostly in the middle 1/3 of forearm. In 32.5% of the forearms, there was nerve branches between lateral antebrachial cutaneus nerve and SBRN or its terminal branches. In 50% of the forearms, it was found that

the branches separated from SBRN passed within the borders of anatomic snuffbox. The cephalic vein mostly crosed to SBRN in the middle of forearm and common trunk of SBRN in the distal of forearm.

Conclusion: Knowing to anatomic variations and morphometric properties of SBRN will aid to minimize nerve injuries performed in surgical applications in forearm, wrist and hand region particularly in pediatrics.

Keywords: anatomic variations, superficial branch of radial nerve, lateral antebrachial cutaneous nerve, cephalic vein, fetus

O-3

Anatomic course and variation of femoral nerve and its branches in fetuses

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Objective: Femoral nerve is primary nerve innervating the anterior side of the thigh and the largest of the peripheral branches of the lumbar plexus. It emerges through the psoas major fibers, then passes under neath the inguinal ligament just lateral to the femoral artery as it enters the thigh. Variant origin, level of the divisions and branches measurements of the femoral nerve have a clinical important. The femoral nerve block is performed on the main trunk of the femoral nerve just below the inguinal ligament. The higher division of the femoral nerve in iliac fossa results in incomplete femoral nerve block.

Methods: This study was performed on 30 fetuses (17 male and 13 female) with no gross anomalies from the fetus collection of Necmettin Erbakan University, Meram Medicine Faculty Anatomy Department. We were used microdissection instruments, 0.01 mm precision digital caliper (stainless hardened), microsurgery microscope (Kaps Sam 62) and a digital camera (Canon D1000). We determined the course and variation of femoral nerve in human fetuses. Furthermore, we measured thickness and lenght of trunk and divisiones of the femoral nerve. The obtained data were evaluated by using SPSS 21.0 (Statistical Package for Social Sciences). Data were analyzed by both descriptive (mean value, standard deviation, maximum and minimum values, percentages) and quantitative statistical methods. Results were evaluated statistically in 95% confidence interval and differences were accepted significant if $p<0.01$.

Results: The localization of the division points femoral nerve divides into its branches were assessed under 3 categories as 1-above the inguinal ligament, 2-at the level of inguinal ligament, 3-below the inguinal ligament. Femoral nerve divides into its branches above the inguinal ligament in 6 extremities (10%), at the level of inguinal ligament in 33 extremities (55%) and below the inguinal ligament in 21 extremities (35%). The distance between inguinal ligament and femoral nerve's bifurcation point was found 4.91±3.73 mm for above the inguinal ligament and 3.32±1.69 mm for under the inguinal ligament. When right and left parameters of all fetuses were compared, it was observed that statistically difference was between thickness of anterior and posterior branches of femoral nerve and also distance between femoral artery and femoral nerve ($p<0.05$). At the different levels branches variations were detected.

Conclusion: There are few studies for femoral nerve in the fetal period. The length, thickness and branch of the femoral nerve and their variations knowledge and the course of the distance from the around structures measurement must be known in surgical procedures and radiological examinations and it will be useful in the injection to be made for the blockade procedures. We believe that the data obtained from this study will help to clinicians during the initiatives in other studies on this topic and this region.

Keywords: femoral nerve, fetal, mophology

O-4

Assessment of surgical border in the treatment of pancreatic cancer

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Objective: Uncinate process, which is a hook shaped protrusion under the head pancreas, is surrounded by superior mesenteric artery and vein. Generally superior mesenteric artery and vein are in front of the process and abdominal aorta is located behind the process. During the surgical resection of the pancreas head cancer, despite a cautious approach, frequent recurrence is mostly seen around the uncinate process after treatment, due to the pancreatic tissue around the superior mesenteric artery being not fully cleaned. Inferior pancreaticoduodenal artery, which is the first branch of superior mesenteric artery, is used as a guide by the surgeon during resection. Therefore, the inferior pancreaticoduodenal artery, which has two branches as anterior inferior pancreaticoduodenal artery and posterior inferior pancreaticoduodenal artery, is of critical importance during surgical planning and operations in terms of origin variations of the artery from superior mesenteric artery and distance to uncinate process of origin site of the artery. The purpose of this study is to reveal the exit variations of a.pancreaticoduodenalis inferior from a.mesenterica superior and to obtain information regarding the distance of the exit point of the artery from processus uncinatus.

Methods: This study was performed at 30 pancreatic tissue between 20–80 years of age received via a work permit from

Ankara Forensic Medicine Institution, dated 02.02.2012. After the fat tissue is cleaned, a.v.mesenterica superior, neighboring processus uncinatus is revealed. Then origin site of inferior pancreaticoduodenalis artery from superior mesenteric artey was found, images were made and the necessary measures were taken under the surgical microscope.

Results: In 22 of the cases, inferior pancreaticoduodenalis artery is observed as arising from a single root, then splitting to anterior and posterior branches. In the remaining 8 cases, inferior pancreaticoduodenal artery anterior and posterior branches are identified as emerging separately. In cases of single root, average distance of origine site of inferior pancreaticoduodenal artery from superior mesenteric artey to uncinate process was 14 mm. In cases of separate roots, average distance of origine site of posterior inferior pancreaticoduodenal artery from superior mesenteric artey to uncinate process was 12 mm, whereas average distance of origin site of anterior inferior pancreaticoduodenal artery from superior mesenteric artey to uncinate process was 16 mm. Once the surgeon locates the uncinate process, 15 mm. above s/he will be able to find origine site of inferior pancreaticoduodenal artery and ligate. However, in cases of separate origin, it is critical to note that the distance beetwen anterior inferior and posterior inferior pancreaticoduodenal artery is approximately 18–20 mm.

Conclusion: In determining the behavior of the periampullary tumors, we think that this study, in terms of interpretation and evaluation of relapse cases following tumor resections, will shed light in surgical planning. Better knowledge of origine site of inferior pancreaticoduodenal artery, variations of position and distance to uncinate process, all of which are used as a guide during the operation is considered to be important for pancreas head cancer surgery.

Keywords: inferior pancreaticoduodenal artery, superior mesenteric artery, superior mesenteric vein, uncinate process, periampullary tumors, pancreas cancer, surgical border

O-5

Body is an indicator of physical health

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Objective: The shape of a body is dependent on various factors. systemic diseases, accidents, organ failure have influence in the formation a body shape. Consequently, a comprehensive examination of the body was needed to show how the changes observed in a cadaver with contracture aged 61 at Ege University Faculty of Medicine Department of Anatomy Macroscopy Laboratory affected not only the musculoske letal system, but other organs of the body as well.

Methods: At Ege University Faculty of Medicine Department of Anatomy Macroscopy Laboratory, a cadaver aged 61 with contracture was placed into the routine dissection schedule, the dissection was performed to observe the changes in not just the locomotor system, but in other systems as well, and the findings were recorded.

Results: When the abdominal cavity of the cadaver was examined, it was determined that the locations of the organs have shifted as a result of scoliosis. The margo inferior of the liver had extended to fossa iliaca, and while right side arcuscostarum gotcloserto the cristailiaca, the distance between the left side arcuscostarumand the cristailiaca had increased. As a result, it was noted that thelocations of colon ascendens and colon transversum were changed. It was also observed that, again as a result of scoliosis, the distance between the polus inferior of the right and left kidneys and cristailiaca was different. Since a testicle was not detected in left scrotum, unilateral cryptorchidism was considered, and when canalisinguinalis was opened the testicle was discovered in the middle of the canal in an atrophied state. Again, variations were detected in the arteries of the left side kidney. It is known that kidney anomalies and cryptorchidism cases are embyriologically related to one another. Also, variations related to contracture were detected in upper and lower extremities.

Conclusion: With this study, we are demonstrating how bones, joints, muscles, veins, nerves and internalorgans adapt to changed conditions in a deformed body.

Keywords: dysmorphic feature, contracture, asymmetri, cryptorchidism, a. testicularis variation

O-6

Correlation of headache with the variations of foramen parietale and the foramen's morphometry

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Objective: Foramina are clinically valuable as they are the passages of important anatomical structures. The parietal foramina are located usually symmetrical on both sides of the sagittal suture. They allow passage of the veins (vv. emissariae) which connect the superior sagittal sinus and the scalp veins. Anatomical variations in foramina may be either acquired or genetic and they may be related to neurological diseases. The aim of the present study was to define variations of the parietal foramina (dimension differences, located unilaterally, multiple located unilaterally, multiple located bilaterally) and to determine the relation of variations with headache.

Methods: We studied on 19 dried human skulls and 50 CT images. Presence of the foramina macroscopically, located unilaterally/bilaterally were inspected and topographic measurements were performed on totally 38 parietal bones. Distances from the foramen to the lambdoid suture, sagittal suture, external occipital protuberence and to each other were measured.

Results: Thirteen (68.5%) of the skulls were male and the remaining 6 (31.5%) were female of total 19 skulls. There were 34 (89.4%) foramina on 38 parietal bones. There were one foramen on both sides of 11 (57.8%) skulls bilaterally, one foramen on left side of the two (10.52%) skulls unilaterally, one

foramen on right side of four (21.05%)skulls unilaterally, two foramina on right side and one foramen on left side of one (10.52%) skull and three foramina on right side and one foramen on left side of one skull. Variations were observed in 8 (42.1%) skulls. Distances from the left foramina to the lambdoid suture, sagittal suture, external occipital protuberence and to each other respectively were 26.4±19 cm, 4,6±3.36 cm, 10.02±7.9 cm, -0.16±2.09 cm and 69.6±43.08 cm. Distances from the right foramina to the lambdoid suture, sagittal suture, external occipital protuberence and to each other respectively were 34.7±15.12 cm, 7.3±3.23 cm, 13.11±6.3 cm, 0.22±2.44 cm and 89.6±23.7 cm. In addition, foramen parietale variations are evaluated on CT images of the 50 patients who suffer headache and had no neurological symptoms, no abnormal neuroanatomy, bone morphology and skull abnormality. Obtained results were evaluated for the relation of headache etiology and parietal foramen variations.

Conclusion: According to recent studies, it is thought that there could be a relationship between headache and parietal foramen variations. Results of this study highlight this entity and further studies including more datasets might improve our knowledge about this relation.

Keywords: foramen parietale, morphology, variation, headache, computerized tomography

O-7

Exploring up-to-date technologies in anatomy education

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Objective: To investigate the process ofdeveloping n education tool which work coordinated with mobile devices and supported by augmented reality technics.

Methods: Highly detailed 3D models of appendicular skeleton and relatively low detailed models belonging to axial skeleton and human on anatomical situs created by using Zbrush, a digital scuplting program, developed by Pixologic. Necmettin Erbakan University, Meram Faculty of Medicine bone collection used for reference for creating models. Created models are supported with 2D renders which are manupulated by using Photoshop to suit needs, markings and text generated in the light of Terminologia Anatomica. Three dimentional models are exported from Zbrush as more generic formats to be used in Unity. All the data gathered under Unity as aworking mobile application and anatomical atlas to accompany application.

Results: Altough Zbrush and Photoshop are well known for artistical creation tools in medical illustration field, Unity, generally used by independent producers determined as an effective way of presentation and gathering of the created media. In addition 3d models are linked to augmented reality section to help students wh prefer to work on anatomy atlases.

Conclusion: Three dimentional models, 2d images derived from 3d models which were touched and modified to Show structures and lastly text generated are gathered with Unity under easy to use innovative interface. Additional functions including augmented reality are capable of adding third dimention to study rutine of medical students. Students working without the capabilities of anatomy laboratories got chance to evaluate two dimentional media with the help of augmented reality and3D models thus understanding natureof complicated anatomical structures.

Keywords: anatomy education, mobile application, augmented reality

O-8

Evaluation of photogrammetry and its software to build 3D objects for using in anatomical education

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Objective: Obtaining economic, easy accessible and compatible to its natural appearance education material by transposition of anatomic specimens on computer media with photogrammetric method and comparison of various software that used in this specific process in terms of quality and availability.

Methods: Photogrammetry is been generated from words of photo, gram and metage and its basically is the science of gaining reliable data from photographic images. Fundamentally this technic that used for taking measurements by contribution of photographical images gained a large field especially in anatomical education by the use of up growing touch control screened mobile devices and softwares that used for processing images to create realistic 3D objects. In this study to obtain photo grammatic 3D images, cranium is located on rotating table is pictured by 10 degrees rotation angles on a vertical plane with 3 different angles with Canon 5DS R camera. Different 3D virtual objects are generated with Autodesk 123d Catch, Agisoft photoscan and Autodesk remake softwares from images that had been obtained. These 3D virtual objects was upload to www.sketchfab.com website and evaluated in webgl based web browser qualitatively. Application features and comparatively advantageous sides of these softwares are considered.

Results: Agisoft Photoscan has the advantages of allowing more image files usage and more quality control over images on the other hand it has the disadvantage of very high graphical process power requirement. Both other two ones are free and provide their own server based usage in positive. However they have lower quality in picture resolution then the Agisoft.

Conclusion: Photogrammetry is an extensive method in current information technologies. Providing easier Access to information in an economical way is its advantage to others in anatomical education. Choice of the software has to be considered with regards to cost, quality and ease of handling.

Keywords: photogrammetry, anatomical education, 3D virtual object

O-9

A comparative approach to the CAD model of a dog femur

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Objective: Computer assisted technologies offers new opportunities in medical imaging and rapid prototyping in biomechanical engineering. Three dimensional modelling of soft tissues and bones are becoming more important. The accuracy of the analysis in modelling processes depends on the outline of the tissues derived from medical images. The aim of this study is the evaluation of the accuracy of three dimensional (3D) models of a dog femur derived from computed tomography (CT) data by using point cloud method (PCM) and boundary line method (BLM) on several modeling software.

Methods: Solidworks, Rapidform and 3DSMax software were used to create 3D models and outcomes were evaluated statistically. The most accurate 3D prototype of the dog femur was created with Stereolithography (SLA) method using rapid prototype device. Thus, difference between models created from real and software was found and accuracy of device and software was revealed in this study.

Results: Accuracy rates of the Solidworks, Rapidform, 3DSmax software according to BLM method were 88.3%, 88.9% and 91.2% respectively and accuracy rates of the Solidworks and Rapidform software according to PCM method were 91.3% and 91.6% respectively. Accuracy rate of model created with SLA method was found as 90.6%.

Conclusion: In this study, accuracy of Rapidform as reverse engineering software was found more efficient than another software.

Keywords: CAD model, femur, three dimensional modelling

O-10

Comparison of satisfaction levels for anatomy in different universities department of nursing students

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Objective: The aim of the present study is to describe and compare the satisfaction levels of the anatomy education between the Ondokuz Mayis and Hitit University Health Science of nursing students in academic year of 2015–2016.

Methods: The questionnaire had 24 questions and 5 options were used in the present study. The present study was included 82 (19 males, 63 females) nursing students of Ondokuz Mayis University and 89 (35 males, 54 females) nursing students of hitit University. In data analysis, questionnaire items were divided into three groups as theoretical, practical and exam compliance. The data were analyzed using SPSS for Windows. Differences in the distributions were tested by Student's t-test for independent samples (for normally distributed variables) and by Mann–Whitney U test for independent samples (where the variables were not normally distributed). The relationship between the two groups was used by Spearman's rho test. For all tests the level of significance was set to 5%. Values were expressed as mean±standard deviation (SD).

Results: Our results revealed that Ondokuz Mayıs University students' average scores about the theoretical, practical and exam compliance were 38.66±0.84; 38.66±0.87 and 16.15±0.40, respectively. For the Hitit University students were 34.51±0.70; 33.26± 0.83 ve 14.33±0.37, respectively. Ondokuz Mayıs University students reported more positive answers of theoretical, practical and exam questions than the other University ($p<0.01$). There were significant correlated scores between three of them ($p<0.01$, $r=0.69$; 0.67 and 0.52).

Conclusion: Physical conditions of satisfaction among universities for students of anatomy courses, practical training model and the importance of the cadavers were found in confirmation of the effect of this test. It has demonstrated that positively affected; theoretical and practical lessons of exam success in improving the quality and satisfaction. Satisfaction levels indicate the need to take the idea of education for students.

Keywords: nursing, anatomy education, theoric, practice and exam

O-11

Reporting detailed information and acknowledging cadavers: two examples of good practice recommendations for anatomists

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Objective: Body donation depends on forming a trustworthy relationship between anatomists and their society. This relationship can be obtained by acting in a responsible manner regarding human cadaveric specimens. We believe scientific articles are a new field of anatomy to show good ethical practices and acknowledge donors-cadavers. We aimed to create an awareness through evaluating the information anatomists provided in their articles and trends in donor-cadaver acknowledgements.

Methods: We investigated all articles performed on human cadaveric specimens published in Clinical Anatomy (CA) and Surgical and Radiologic Anatomy (SRA) between January 2011 and December 2015 and articles that Turkish Anatomists (TA) authored or co-authored between January 2011 and April 2016. We evaluated the information on the age, sex, preservation technique(s), source, and ethical/legal permissions regarding the cadavers used. We also noted any acknowledgements regarding donors-cadavers and/or their families.

Results: We included 259 articles from CA, 327 articles from SRA, and 212 articles from TA to our study. CA, SRA, and TA reported the sex of cadavers in 73.4%, 71.8%, and 74.5% of articles, respectively. The age was reported with a rate of 69.1% in CA, 69.1% in SRA, and 68.9% in TA articles. The preservation technique was reported with a rate of 73.4% in CA, 72.2% in SRA, and 56.6% in TA articles. CA, SRA, and TA reported the source of specimens in 56.4%, 52.9%, and 50.5% of articles, respectively. CA, SRA, and TA articles provided some form of ethical approval in 33.2%, 31.8%, and 28.3% of articles, respectively. The consent of donors-cadavers was reported with a rate of 24.3% in CA, 27.8% in SRA, and 11.8% in TA articles. Donors-cadavers acknowledgement rate was 29.3% for CA, 8.6% for SRA, and 4.7% for TA articles. We observed no standard data reporting format.

Conclusion: As anatomists, it is our duty and responsibility to establish and maintain a trusting relationship with our society. This relationship forms the core of our body donation programs. One way to achieve this is to facilitate a transparent reporting standard in scientific articles. A second way is appreciating the contribution of donors-cadavers and their families to education and research.

Keywords: anatomy, cadaver, medical ethics, guideline

O-12

Microanatomic examination of histological sections taken from silicone plastinates

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Objective: In the literature; the histological studies related with the section plastination of liver, spleen and kidney tissues are found. To our knowledge, there are no studies related with the histological examination of silicon plastinates of the spinal cord.

Methods: The study was performed in the spinal cord sample of an autopsy material cat taken from Veterinary Medicine of Ankara University. The spinal cord sample of cat was plastinated by the routine silicone plastination method. Then; during the histological tissue preparation technique, the samples were not put into dehydration and clearing steps. The samples were only put into hot paraffin, waited there and they were blocked into paraffin. By microtome the sections were taken at about 7 µm in thickness. During the staining by hematoxylin and eosin, the used xylol gave damage to the silicone and therefore, the integrity of the tissue was not protected. Depending upon to this finding, the xylol was taken out from the routine procedure and instead; the samples were put into graded alcohol series for very short times and they were stained with hematoxylin and eosin.

Results: In the light microscopic examination of the sections which were stained or non-stained, it was observe that the tissue integrity was overall protected. In both of the stained and non-stained sections; our samples showed similarities with the studies done for the protection of myelin. However different from the hematoxylin and eosin stained sections found in the literature; in our sections, the gray matter was light colored and the white matter was dark colored. This type of staining was related with the protection of myelin. The microscopic focusing and differentiation was not exactly found in our sections. The nuclei and nucleoli of multipolar neurons in gray matter and the ependymal lining cells around the central canal were not clear and their intracytoplasmic organelles were not clearly detected. This finding was thought to be related with acetone used during plastination.

Conclusion: The plastinates are important in anatomy education as they give the three dimensional appearance very successfully. Additionally; if suitable techniques of dehydration was applied to the tissues, histological examination can be done from the silicone plastination materials.

Keywords: plastination, histology, microanatomy, spinal cord

O-13

Surface anatomy and anatomic planes in adult Turkish population

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Objective: Anatomical planes and their projections on skin (surface anatomy) are now the integral part of the anatomy education and clinical anatomy. The use of anatomical planes to detect the location of deep anatomic structures is very common in daily clinical practice, such as percutaneous interventions, surgical incisions and diagnostic imaging. These planes are largely derived from cadaver studies or from the studies that made with conventional imaging techniques, and their projections on skin show inconsistencies between and within anatomical reference textbooks. Today, by means of modern non-invasive imaging techniques, such as computed tomographic (CT) imaging, it has become possible to make more researches about anatomical planes on living individuals. The number of studies with cross-sectional imaging methods to analyse these anatomic planes is very few. Also, there is not any published, detailed and systematic study in Turkish population regarding the surface anatomy features.

Methods: In this study, we intended to establish the location of common thoracic and abdominopelvic anatomical planes and therelationships of the main deep anatomical structures to those planes, using computed tomography (CT) imaging on living adults in adult Turkish population. After excluding patients with kyphosis, scoliosis, abnormal lumbar lordosis, vertebral compression, intraoperative metallic material at thoracolumbar spine, distorting mass, organomegaly or ascites, computed tomography (CT) images of 150 patients (mean age

53, M/F=81/69) which were obtained in supine position at end tidal inspiration were analyzed. Sternal angle, transpyloric, subcostal, supracristal and pubic crest planes, and their relation with major deep anatomic structures were analysed by dual consensus.

Results: While the tracheal bifurcation, azygos vein/superior vena cava junction and pulmonary bifurcation were usually below the plane of sternal angle, concavity of aortic arch was generally within the plane. Tip of the tenth rib, superior mesenteric artery and formation of portal vein were usually within the transpyloric plane. In addition, renal hila and fundus of gallbladder were below the plane in most cases. Inferior mesenteric artery was below the subcostal plane and aortic bifurcation was below the supracristal plane in most of the adults.

Conclusion: Anatomical planes and projectional surface anatomy are fundamental for medical education and clinical practice. Modern cross-sectional imaging techniques allow large groups of live patients to be examined. Classic textbook information regarding anatomy needs to be reviewed and updated using the data gathered from these recent studies, taking ethnic differences into consideration.

Keywords: surface anatomy, sternal angle plane, transpyloric plane, subcostal plane, supracristal plane

O-14

Evaluation of the anatomy of confluence sinuum for the posterior cranial fossa approaches in Turkish population

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Objective: Brain's venous blood drains into the dural sinuses. For neurosurgeons, protection of dural sinuses during the craniotomy processes is really important. One of these sinuses, confluence sinuum, is really important for the approaches to the posterior cranial fossa. Although it is generally known that location of the confluence sinuum is at the same level with internal occipital protuberance, it could demonstrate differences. Aim of this study is that evaluating anatomy of the confluence sinuum by using computed tomography angiographic images in Turkish population, retrospectively.

Methods: Cadaveric specimens and computed tomography angiographic images were used in this study. By using OsiriX-Lite software, location of the confluence sinuum was evaluated by determining a triangle between asterion and lambda points in 64 patients' CTA images.

Results: Measurements were done on the three-dimensional reconstructed images and statistical analyses were performed.

Conclusion: Determining location of the confluence sinuum is very important for the surgery that would apply to the posterior cranial fossa.

Keywords: confluence sinuum, computed tomography, angiography

O-15

Prevalence of septum pellucidum variations: a retrospective study

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Objective: Septum pellucidum is a mass of white mater with a thickness of 1–5 mm vertically located in the midline of the brain, just below corpus callosum up to fornix and consists of two layers. The most commonly observed septum pellucidum variations are cavum septum pellucidum (CSP), cavum velum interpositum (CVI), cavum vergae (CV) or complete absence of septum pellucidum. Cavum septum pellucidum is determined as a separation between the two leaflets of the septum just between the anterior horns of the two lateral ventricles, but does not have any connection with the ventricles. Cavum velum interpositum is a cave formation between the two layers of septum pellucidum at the level of crus fornicis and pineal body and lastly Cavum vergae is also a cave formation between the two layers of septum pellucidum extending backwards up to the posterior border of corpus callosum. In this retrospective study the aim is to assess the prevalence of septum pellucidum variations in adults and to evaluate the differences between the two sexes.

Methods: In this retrospective study MR images of 995 male and 2133 female a total of 3128 patients aged between 18–80 years old were examined and septum pellucidum variations were evaluated on T1 and T2 weighted axial, sagital and coronal planes. All the MR images were available in the archive of MR imaging center of Dıskapı Yıldırım Beyazıt Education and Research Hospital in 2014–2015. The patients with space occupying intracranial lesions, hydrocephalus and craniotomy were excluded.

Results: In 93.82% of all the cases septum pellucidum was observed in its normal anatomical structure. The prevalence of CSP was 3.7% and CV was 3.1%. Of all the MR images in 0.05% CSP and CVI was observed on the same image, and in 1.5% of all the cases CSP, CVI and CV were all observed in the same patient. In none of 3178 cases complete absence of septum pellucidum was observed.

Conclusion: There are only a few studies on the variations of septum pellucidum. Embriyological development of septum pellucidum is concurrent with most of the anatomical structures located close to it. Thus, the abnormalities observed in septum pellucidum will probably reflect the anomalies of its anatomical neighbors. So the results of the present study will certainly lead the later studies on the relationship of such variations and the observed clinical signs.

Keywords: septum pellucidum, magnetic resonance imaging, cavum septum pellucidum, cavum velum interpositum, cavum vergae

O-16

Pointing of functional region in brain by clinical signs and 3 dimensional (3D) imaging methods on patients with ischemia

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Objective: The relation ship between neurological findings in patients with is chemic damaged brain regions shown in more postmortem studies. However, 3-dimensional (3D), the case has not been evaluated in vivo. The purpose of this study, magnetic resonance obtained from the patient (MR) and computed tomography (CT) three sectional is chemic damaged brain regions on images dimensional (3D) is by making investigate and to correlate them with the clinical findings.

Methods: 105 patients for this purpose (53 males, 52 females) were examine dimages in 3D computer-assisted programs and clinical findings were correlated within farct scale. Level of consciousness, orientation, limb motor activation, thefacial motor activity, eye movements, visual fields, limbataxia, sensory conditions, neglectarticulation and language were evaluated.

Results: In the clinical signs of ischemia under the influence of men and women were found to be different. Unlike known, damage was observed in patients with ischemic area of the same lead to different clinical manifestations. Infarct size was found to be an important factor in the emergence of clinical scheme.

Conclusion: A plurality of functional regions of the brain has been identified to date. Present study was performed to correlate the clinical evaluation in 3D forthefirst time. The results of computer-aided neuroscience (compututionalneuroscience) can be the source terms. As a basic and clinic could pave the way for new studies

Keywords: brain, ischemia, MRI, CT, clinics, neurology, symptoms, 3D, computational neuroscience

O-17

Sex determination from the radiograpic measurements of calcaneus

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Objective: The main reason why the calcaneus is chosen for the sex determination is due to its solid structure and resistance to postmortem changes. The comparison of calcanei in radiographies ensures the determination of the sex of corpses whose sex is unknown. A number of skeletons that have been studied as part of the sex determination studies as well as the variability extents of the male and female samples in the physical and forensic anthropologies, which deal with the analysis of the past and present biodiversity, provide information for the observation of data like age, height and sex that are essential for identification.

Methods: In this study, we used the radiographies of patients in the Radiology Section of TOBB ETÜ Hospital. A total of 143 individuals (including 66 maleand 77 female patients) whose calcanei were anatomically normal were involved in the study. The participating individuals were divided into three groups; the first group consisted of individuals born in and after 1986, the second group consisted of individuals born between 1971 and 1985 and the third group consisted of individuals born in and before 1970. The gender distribution was similar in each of the three age groups. Metric and non-metric methods have been used in the process of identification held with the aim of sex distinction. Metric measurements were made after the following eight parameters of the calcaneus were defined; maximum width, body width, maximum length, minimum length, height of the facies articulariscubo idea, tuber angle, front angle and the tuber plantar angle.

Results: The maximum, minimum and average values of the conducted measurements were defined. In each of the age groups, differences were observed between the metric lengths of the female and male parameters. As results; these condand third groups showed similarities in the angular (alpha, beta, sigma) length sand the first group showed similar values in the alpha and sigma angles. A statistically significant difference was observed in the beta angle of the first group. When all of the measurements of the three groups were compared; the maximum height, the minimum height and the tuber plantar angle showed similarities; whereas in the other parameters a statistically significant difference was observed.

Conclusion: This study reveals the importance of calcaneus in the sex determinationand it is clear that it can be used as an alternative method in the forensic anthropology and the forensic sciences.

Keywords: sex determination, calcaneus, radiography, anatomy, forensic anthropologies

O-18

The calculation of uterus volume with MRI and intravaginal ultrasound on healthy women

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Objective: The aim of this study is to measure uterus, junctional zone and endometrium volume according to the phase of their menstrual cycles using magnetic resonance imaging (MRI) and intravaginal ultrasound on healthy women.

Methods: Our study involves 28 women who are approximately 42-years-old, weighs 68 kg and are 1.57 cm and participants

are divided into three groups as follicular phase (7), luteal phase (10) and menopause group (11). MRI and intravaginal ultrasound has been performed on the 7th or 8thday of the menstrual cycles for the follicular phase and on the 20th and21st day for the luteal phase. While the calculations of the volume are made on the images of MR with cavalieri and planimetry methods out of stereology methods, on the intravaginal ultrasound they are made with 0.523 × height × depth × width formula.

Results: In the measurements made with cavalieri and planimetry methods, it has been observed that in the menopause group, as the age increases, the volume of uterus and myometrium decreases ($p<0.05$). In the luteal phase, on the other hand, positive correlation between the number of pregnancy and the volume of junctional zone has been detected ($p<0.05$). It has been observed that there is no significant difference between the volume ofuterus and its layers with regard to birth method, height and weight. In the follicular phase group, uterus, junctional zone and the volume of endometrium have been calculated approximately 59.71±27 cm^3, 15.40±10 cm^3, 3.24±2.1 cm^3 respectively, according to the cavalieri method, on the other hand they have been calculated 60.72± 27 cm^3, 16.8±11 cm^3, 2.8±1.8 cm^3 according to planimetry method. Besides, in measurements with ultrasound, uterus and endometrium volume have been determined as 53.36±26 cm^3 and 2.0±3.2 cm^3. There is no significant difference between the measurements. In the luteal phase group, it has been determined that while uterus, junctional area and the volume of endometrium are bigger in MR images (it is respectively 81.09± 34 cm^3, 19.24±9.2 cm^3, 5.25±2.8 cm^3 with Cavalieri method; on the other hand,it is respectively 82.76±35 cm^3, 20±9.5 cm^3, 5.22±2.6 cm^3 with planimetry method), in ultrasound images uterus (53.82±20 cm^3) and endometrium volume (2.24±1.8 cm^3) are statistically smaller ($p<0.05$). In the menopause group, although uterus and endometrium volume have been measuredwith cavalieri method approximately 38.17±12 cm^3, 0.86± 1.0 cm^3; and with planimetry method approximately 40.21±13 cm^3, 0.99±1.5 cm^3, uterus and endometrium volume have been determined approximately 24.43±10 cm^3 and 0.57±0.9 cm^3 in ultrasound images. There has been significant difference statistically between the measurements ($p<0.05$). When the measurements have been evaluated according to menstrual cycles phases,it has been understood that in all three measurement methods, uterus volume in the luteal phase period, junctional area and endometrium volume in bothluteal and follicular phase period are significantly high when compared to the menopause group ($p<0.05$).

Conclusion: It is crucial to know the normal volume of uterus and its layers according to the age and menstrual cycles phases in the MR and intravaginal ultrasound images for the early diagnosis of uterus pathologies. However, when volumetric differences in ultrasound and MR images are considered, we are in the opinion that the imaging method used for diagnosing uterus pathologies shouldbe taken into account seriously.

Keywords: endometrium, junctional zone, uterus, stereology, intravaginal ultrasound

O-19

Analysis of Virchow-Robin spaces in female migraine patients with MRI

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Objective: Migraine is chronic condition characterized by recurrent moderate or severe headache, mostly in the autonomousnerve system. Its exact mechanism is not known but is suggested to be a neurovascular disorder. The rationale for this suggested mechanism is the close relationship between vascular activity and nerve function. Virchow Robin spaces (VRBs) are perivascular areas inlaid with pia surrounding small arteries and arterioles perforating the brain surface and invading the tissue. Studies are being performed to investigate the implications of VRB in several diseases and in normal subjects. VRB was detected in patients with dementia, epilepsy, head trauma and hypertension although the etiology is not clear. Our study looks into the VRBs of migraine patients through magnetic resonance imaging (MRI) to investigate the neurovascular basis of migraine.

Methods: A patient group of 83 female subjects aged 18 to 60 years who were diagnosed with migraine and had MRI taken, and a control group of 87 female subjects were formed. Whether there were correlations between migraine and number of VRBs at the hippocampus, white matter and basal ganglia was investigated.

Results: For the white matter level, 37% of the subjects in the patient group were Grade 1; 50% were Grade 2; 72% were Grade 3 and the remaining were Grade 4 while, in the control group, 63% were Grade 1; 50% were Grade 2; 28% were Grade 3. No Grade 4 cases were identified in the control group. For the basal ganglia level, 26% of the subjects in the patient group were Grade 1; 42% were Grade 2; and the remaining were Grade 3 while, in the control group, 74% were Grade 1; 43% were Grade 2; and the remaining were Grade 3. No Grade 4 cases were identified in either of the groups. For the hippocampus level, 34% of the subjects in the patient group were Grade 1; 47% were Grade 2; and the remaining were Grade 3 while, in the control group, 66% were Grade 1; 43% were Grade 2 and the remaining were Grade 3. No Grade 4 cases were identified in either of the groups. In all three levels, there were statistically significant differences between the patient and control groups, favoring the patient group. The correlation of the white matter to the basal ganglia and hippocampus was very weak, and the correlation of the basal ganglia to hippocampus was weak.

Conclusion: Statistically significantly higher results in the group of patients with migraine compared the controls in all three levels may provide guidance in diagnosing the disease and/or confirming the diagnosis. We also believe that our findings will form the groundwork of and support other studies on the mechanism of onset and treatment of the disorder.

Keywords: MRI, migraine, Virchow-Robin spaces

O-20

Investigation and analysis of Doppler ultrasound (DUS) and optic coherence tomograpy (OCT) parameters in patients with migrain

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Objective: Migraine is not only a headache, it is considered a primary neurological disorder. Combinations of certain neurologic, gastrointestinal and autonomic changes were also seen in migraine. To evaluate the relationship between migraine and retinal artery diameter, retinal neural network layer thickness, the ganglion cell layer thickness, macular thickness, macular volume, choroidal thickness; Optical Coherence Tomography (OCT) have been working with the data. There were studies investigated that the relationship between migraine and data of Doppler Ultrasonography (DUS) of carotid arteries. In our study, we aimed to examine the relationship between the OCT and DUS data in patients with migraine. We also aimed to contribute to the diagnosis and treatment of these patients.

Methods: This study was conducted in 54 individuals aged between 19–58 years old in Afyon Kocatepe University Research Hospital (31 female with migraine and 2 male with migraine; 19 healthy female and 2 healthy male). Patients who had OCT and DUS information were selected from Neurology and Ophthalmology departments in our hospital. OCT parameters were choroidal thickness (CT), macular volume (MAKVOL), central macular thickness (CMT), retinal nerve fiber layer (RNFL) thickness, superior temporal retinal artery (STRA) and vein (STKVI) in diameter, inferior temporal retinal artery (ITRA) and vein (ITRV) diameter of the central ganglion cell layer thickness. Peak systolic velocity (PSV), end diastolic velocity (EDV), breath-holding index (BHI), intima-media thickness (IMT) of internal and common carotid artery were measured with DUS. Pulsatility index (PI), resistivity index (RI) and peak systolic velocity (PSV) of middle cerebral artery (MCA) were measured with DUS. The mean blood flow velocity of ophthalmic artery (OA MEAN), peak systolic velocity (PSV) parameters were also measured with DUS.

Results: CCAPSV (p=0.012) and BHA (p=0.004) levels which obtained by DUS were significantly higher compared to the control group. However IMT (p <0.001) was significantly lower in the patient group and IMT was thicker in patients. MAKVOL (p=0.038), CMT (p=0.041), CT (p<0.001), ITRI (p=0.018) and STRA (p=0.043) levels were significantly higher compared to patients in the control group. However STKVI (p=0.038) value was lower in the patient group.

Conclusion: We suggest that migraine may be associated with controversial vascular risk factors. Thus our results will contribute to the diagnosis and treatment and we think that will shed light on future work.

Keywords: migrain, optic coherens tomograpy, doppler ultrasonography

O-21

Anatomic study of ocular biometric measures of emmetropic eyes, myopic eyes, and hyperopic eyes using the LenStar 900

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Objective: To investigate the relationship between refractive error and ocular biometric Measures.

Methods: This retrospective study was performed in the Department of Ophthalmology at Adıyaman University Hospital. The data were obtained by scanning the patient archive. Ocular biometric measures were obtained with a LenStar LS 900 optical biometry (Haag-Streit AG) on one eye of 120 phakic subjects (mean±SD age; 32±7 years). In our study, forty Emmetropes, 40 myopes, and 40 Hipermetropes were included. Outcome measures were compared for the three groups using One-way ANOVA test. These included; Central corneal thickness, anterior chamber depth, pupil diameter, lens thickness, axial length and retinal thickness. Mydriatic agent was not applied in this study.

Results: In our study, There were significant differences among groups anterior chamber depth (p<0.001), lens thickness (p=0.016), and axial length (p<0.001). However, there were not significant differences among groups for Central corneal thickness, (p=0.756), pupil diameter (p=0.462), and retinal thickness (p=0.646).

Conclusion: Our study demonstrated that the anterior chamber depth, lens thickness, and axial length measures are different among groups. Knowing the difference between these anatomical measurements will be the guiding in our clinical and surgical work.

Keywords: ocular biometry, LenStar, myopia, hipermetropi

O-22

Morphologic-volumetric aspect of the 43 brain structures from MRI related with psychotic disorder sincluding schizophrenia, schizoaffective disorder and psychotic bipolar disorder in the same study

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Objective: It has already been investigated that schizophrenia (SZ), schizoaffective disorder (SZA) and psychotic bipolar disorder (BD) cause volumetric alteration on brain structures previously. However, theseare in separated studies from each other and have some contradictions in findings. The aim of present

study is to estimate volume of the brain structures in the same study in order to improve understanding of morphological normalities in underlined psychotic disorder.

Methods: For this purpose, brain structures from MR images of the 174 cases with psychotic disorder (58 femaleand 116 male) were compared with 186 healthy controls (67 female and 119 male). 16 right, 16 left and 11common,totally 43 structures that might be related with psychotic disorders was evaluated.

Results: There was a volume decreasing in almost all structures in patient with SZ. But, ventricles volume increased in patient with all SZ, BD and SZA. Most of the alterations was correlated with Positive and Negative Syndrome Scale (PANNS).

Conclusion: Then we concluded that the effect of the psychotic disorders were definetely different on sexes. Volumetric alterations were descriptive mostly for patients with SZ. BD and SZ might overlap in clinical and biological features but they demonstrated significantly different alterations morphologically. PANNS was more correlated with SZ, especially with SZA than BD via morphometry. Morphemetric abnormality was less in BP than SZ and SZA. These findings indicate the availability of anatomic almarkers in the diagnosis and treatment of psychotic-patients.

Keywords: anatomy, brain, morphometry, psychoticdisorder, schizophrenia schizo affecti disorder, psychotic bipolar disorder

O-23

Effect of thoracic outlet diameters on standard laparoscopic cholecystectomy in terms of intraoperative hemorrhage amount and operational time

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Objective: Cholelithiasis is a very common health problem; thus laparoscopic cholecystectomy is one of the most widespread abdominal surgical procedure in whole world. This study interrogate the influence of the bony anatomical structures, especially inferior thoracic aperture's diameters, on the dissection times and surgical complications such as perioperative amount of blood loss in laparoscopic cholecystectomy patients.

Methods: Thirtytwo patients who were evaluated by computerized tomography (CT) or magnetic resonance imaging (MRI) for several additional reasons and underwent laparoscopic cholecystectomy (LC) between April 2014–December 2015 were investigated in this prospective anatomical and clinical study study. From cross-sections of CT or MRI, anteroposterior (AP) diameter (from the anterior edge of 10th thoracic vertebra's body to xiphoid process tip) and transverse or laterolateral (LL) diameter (between the midpoint of right and left 9th costal bodies) of the patients' inferior thoracic aperture were measured. Quantitative evaluation of overall dissection time and intraoperative bleeding were evaluated.

Results: Twenty three of 32 patients (71.9%) were female and 9 of them (28.1%) were male. Mean age of patients was 57.97±16.11 (min: 29; max: 85) years. Mean overall dissection time was 1172.43±427.58 (min: 550; max: 2157) seconds and median amount of intaoperative hemorrhage 6.5 (min:1; max: 23) cc. Mean LL diameter of the patients was 26.02±2.29 (min: 21.50; max: 31.50) cm and median value of AP diameter was found 11.35 (min: 9.40; max: 19.40) cm. A positive relationship was found between LL and AP diameter (r=0.574; p=0.001). There was negative relationship between operational time and both LL and AP diameters (r=-0.418; p=0.017 and r=-0.405; p=0.022). Although comparisons between AP diameter and gender were not statistically significant, LL diameter was significantly wider in male patients.

Conclusion: It seems that standartd 4-port-access laparoscopic cholecystectomy can take much longer time in patients with narrow thoracic outlet. In our opinion, this study emphasized the importance of inferior thoracic aperture and its influence on minimally invasive surgery in patients with symptomatic cholelithiasis. We do believe that diameters of thoracic outlet aperture might be considered as a predictive factor for difficult laparoscopic cholecystectomy operations. The measurements of mentioned diameters might be clinically useful in general surgery same as pelvic diameters in obstetrics.

Keywords: cholelithiasis, laparoscopic cholecystectomy, difficult cholecystectomy, inferior thoracic aperture, thoracic outlet, thoracic anatomy

O-24

Magnetic resonance neuroimaging study of brain structural differences between musicians and non-musicians

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Objective: To investigate the value of image post-processing softwares three medical image analyzing tools, individual brain atlases using statistical parametric mapping software (IBASPM), MriStudio and MriCloud volumetric analyses of the some brain structures such as hippocampus, caudate and in order to identify the best method for volumetric assessment. Total brain (TBV), grey matter (GM) and white matter (WM) volumes were measured VBM (Voxel Based Morphometry) "optimized VBM" procedure toolbox under SPM8 (Statistical Parametrical Mapping).

Methods: The study included T1-weighted magnetic resonance imaging (MRI) of 7 musicians and non-musicians with 1.5T MRI system. Using a magnetization prepared rapid gra-

dient echo (MPRAGE) sequence with a slice thickness of 1 mm, the volumes of different cerebral regions were calculated individual atlas-based volumetry using IBASPM, Mristudio and web based parcellation using MriCloud. Statistical differences were examined using correlation analyses accounting for spatial interpretations percent volume difference.

Results: MriStudio performed better in volumetric determination than IBASPM. Similar result were found concordant correlation using MriStudio and MriCloud.

Conclusion: Our results do not indicate statistically significant differences between musicians and non-musicians.

Keywords: automated image analysis methods, magnetic resonance imaging, volumetric segmentation, Voxel Based Morphometry

O-25

Microtomographical measurement of trabecular bone morphology on rat proximal femur metaphysis

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Objective: The metaphysis, the portion between the epiphysis and the diaphysis of long bones, contains the red bone marrow and the growth plate. Histologically, it is a portion at which we can see trabecular and compact bone together. The metaphysis, directing forces to the trabecular tissues mechanically, transforms them into tension and compressive loads. In this portion where bone tumors are seen oncologically, osteoid osteoma settles in femur proximal metaphysis.Also, trabecular and compact bone structure of this portion is important especially while intervening in femoral neck fracture and intertrochanteric femur fracture in hip fractures of patients having osteoporosis.

Methods: The study was conducted with 200–230 gr 4.5 months old 14 female Wistar rat by getting permission from Akdeniz University Animal Experiments Native Ethical Committee. Rats were sacrificed and their femurs were conserved in formaldehyde. Specimens were scanned in microtomography (micro-BT) (Skyscan1174, Skyscan, Kontich, Belgium) 800 microampere (µA), 50 kilovolt (kV) and 33 µm pixel dimensions. Rotation stage of Micro-BT was selected as 0.7° and each was defined in a way to do rotation scan 2300 millisecond exposure 180°. Reconstructions of the data acquired at the scanning phase was staged by NRecon(Skyscan, Kontich, Belgium) software. At the reconstruction stage light cure rate defined as 20%, ring artifact reconstruction as 6% and images were transferred to CTAn (1.13.5.1) software. Trabecular bone in the images of which upper and lower limits were determined was defined and selected as ROI (region of interest) to analyze proximal metaphasis. Digital images were created by using Global Thresholding method and 3D analysis was made. Findings were evaluated by making descriptive statistical analysis with the help of SPSS (15.0) program.

Results: In 14 rat femur, in each bone of proximal metaphasis, approximately 100.176 mm^3 tissue volume (TV) was detected when their trabecular bones were examined. Bone structure constitutes 10.659 mm3 (BV) of this volume with 10.7% (BV/TV). This trabecular bone area covered 252.638 mm^2 surface area. Bone surface area was compared with total bone volume to provide a clear understanding of thickness and complexity of bone structures (BS/BV=24.896 mm^{-1}) and density of bone surface was defined by dividing bone surface area into total tissue area (BS/TV=2.57mm^{-1}). Automatic histomorphometric measurements were made to evaluate the trabeculars and the thickness of trabeculars was defined as averagely 0.167 mm, the distance between trabeculars defined as 1.521 mm, number of trabecular pass defined as 0.655 mm^{-1} per unit length.Trabecular bone pattern factor calculates an index of relative convexity or concavity of the total bone surface. This parameter was calculated -4.548 mm^{-1} andnegative value indicated concavity. Structure Model Index (SMI) measure the surface curvature in the bone area. This parameter is of importance in osteoporotic degradation of trabecular bone which is characterised by a transition from plate-like to rod-like architecture. An ideal plate, cylinder and sphere haveSMI values of 0, 3 and 4 respectively. Conversely, cylindrical and spherical cavities have SMI of -3 and -4 respectively. In this study was defined SMI value 0.689 and was seen ideal plate value.

Conclusion: Reached values have formed reference values of trabecular bone which is in femur proximal metaphysic andhave been found important prospective clinical studies aspects.

Keywords: metaphasis, femur, microtomography, Micro-BT, Trabecular Bone

O-26

Protective effects of caffeic acid phenethyl ester (CAPE) against carbon tetrachloride (CCl_4)-induced renal damage

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Objective: CCl4 is a toxic agent on organs via ROS. CAPE is an active components of extract of honeybee propolis. In recent studies shown that CAPE has antiinflammatory, immunomodulatory and antioxidative effects. In this study, we aim to evaluate the protective effects of CAPE on CCl4-induced renal damage.

Methods: 28 Wistar albino rat were divided into 4 groups (n=7). Group 1: Control (5% ethanol, 1 ml/day/ip), Group 2: Olive oil (0.5 ml/after day/ip), Group 3: CCl4 (0.5 ml/kg after day/ip),

Group 4: CCl4+CAPE (10 µmol/kg/day/ip). At the end of the experiment tissue samples were embedded in paraffin. Stained with H-E and PAS sections were cut 5 µm and evaluated by light microscopy. Mean histopathologic damage score (MHDS) was calculated (0–3, maximum score=15). Sections were evaluated by Leica DFC 280 light microscopy and Leica Q Win Image Analysis System (Leica Micros Imaging Solutions Ltd. Cambridge, UK). Tissue bisochemical parameters [malondialdehit (MDA), glutation (GSH), superoxide dismutase (SOD), catalase (CAT)] were measured Statistical analysis was carried out using the SPSS 14.0 (SPSS Inc., Chicago, Ill., USA) statistical program. For comparison among groups Kruskal-Wallis and Mann-Whitney U tests were used. All data are expressed as the arithmetic mean±standard error (SE). $p<0.05$ was considered significant.

Results: Control and olive oil groups were normal in histological appearence. In CCl4 group, hemorrhage, infiltration, vacuolization and tubuler dilatation were detected. In PAS-stained sections, microvilli degeneration in proximal tubules was observed. While MHDS of group 1; 0.14±0.14 and group 2; 0.28±0.18, statistically significant incresase was detected in group 3 (8.00±0.30) ($p=0.001$, $p=0.001$, respectively). In CCl4+CAPE group, MHDS was statistically decreased when compared with the CCl4 group (5.71±0.28) ($p=0.001$). Furthermore, in CCl4 group, MDA levels were increased and SOD, CAT and GSH activities were decreased when compred with the control and olive oil groups ($p<0.05$). In group 4, MDA levels were decreased and antioxidant enzyme activities were increased when compared with the group 3 ($p<0.05$).

Conclusion: Increased MDA level in the CCl4 group indicates oxidative damage. The oxidative stress was corrected by CAPE probably due to its strong antioxidant activity. CAPE supports antioxidant defense mechanism, and its administration is beneficial for treatment of renal damage induced by CCl4. We concluded that CAPE maybe protective on CCl4-induced renal damage via antioxidative property.

Keywords: carbon tetrachloride, CAPE, renal damage

O-27

The effects of intraarticular injection of thrombocyte gele and/or mesenchimal stem cells on cartilage repair in an experimental osteoarthritis model of rat knee

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Objective: In a rat model of osteoarthritis (OA), we tried injection of platelet rich plasma (PRP) and mesenchymal stem cells (MSCs) for treatment. We present the preliminary results of the study.

Methods: This project is supported by GATA Scientific Research Council (AR-2011/06). With the approval of local ethical commitee, we divided 44 rats into 5 groups. Groups 1-4 received and intraarticular injection of mono-iodo-acetate (MIA) into their right knee joints in order to induce osteoarthritic lesions. Group 5 (negative control group) received an intraarticular injection of vehicle (physiologic saline solution). All of the left knees were used as control joints. Group 1 received MSCs; group 2 received PRP+MSC; group 3 received PRP and group 4 received physiologic saline solution (positive control group) via intraarticular injection. Baseline locomotor activity (LMA) was recorded for 40 min on the day before the MIA treatments. The LMA recordings were repeated at every two weeks during the experiments. LMA of the groups were compared with their baseline activity by using paired samples t-test.

Results: MIA injections to a single knee of the rats did not produce any statistically significant effect on LMA ($p>0.05$). Significant increase in LMA was observed in groups 1, 2 and 3 when compared with the LMA after MIA injections ($p<0.05$). Haematoxylene-eosin and trichrome staining of the sections of group 4 (positive control group) revealed that the articular cartilage was reduced in thickness. The surface of the cartilage was irregular. Cells density was observed to be reduced compared to group 2 and control knee joints. Deterioration was observed in the organization of the layers of articular cartilage. The nuclei of chondrocytes were pycnotic. The cell volumes were reduced. The borders of the lacunae were blurred. There were sclerotic lesions in the subchondral bone. The sections from group 2 and control knees revealed regular organization of the layers of the articular cartilage. They included healthy looking chondrocytes in lacunae with distinct borders. No sclerotic lesions were observed in the subchondral bones.

Conclusion: Injection of PRP+MSCs seems to ameliorate osteoartritic lesions in the rat model of osteoarthritis.

Keywords: osteoarthritis, rat model, platelet rich plasma, mesenchymal stem cells, mono-iodo-acetate

O-28

The effects of nicotine on hindlimb development in rat fetuses

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Objective: When nicotine was taken within pregnancy period it passed into fetal circulation and causes fetal malformations. The aim of research is to determine the rate of cartilage/bonethat belongs to hindlimbs of fetus whose mothers exposed to nicotine.

Method: The study has been plannedas three mothers in each group. These groups were determined ascontrol, low (3 mg/kg) and high dose of nicotine (6 mg/kg).The doses were given from first day to twentieth days of pregnancy. The mothers were sacrificed and fetuseswere taken in 20th day. 15 fetus from each group were applied double staining protocol. The primer and seconder ossification centersof hindlimbs were identified understereomicroscope and the photos were taken.

Results: We determined that the ossification rates of the femur were 31.08%, 3.10%, 19.34% in control, low and high dose nicotine groups respectively. The ossification of tibias has been calculated as 35.80% in the control group, 26.04% in low dose of nicotine group, 23.40% in high dose of nicotine group. The region that exhibits ossification in fibula was determined as 38.90% in the control group, 24.16% in the low dose of nicotine, 20.32% in the high dose of nicotine group.

Conclusion: The decrease in the ossification rate of examined bones was statistically significant ($p<0.05$) and determined that this situation was in a dose-dependent manner. In the future; we thought that studies related to the treatment of teratogenic effects of nicotine on bone development may be beneficial. This research was supported Erciyes University Scientific Research Projects Unit TYL-2015-6188.

Keywords: nicotine, double staining, fetal skeletone development, teratogenicity

O-29

Investigating the effect of pulsed electromagnetic field in regulating sepsis induced renal apoptosis

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Objective: Sepsis is a potentially life-threatening condition that occurs due to an overactive inflammatory response to severe bacterial infections. Acute kidney injury is a frequent and serious complication in patients with severe sepsis. Pulsed electromagnetic fields (PEMF) have been shown to promote proliferation and regeneration in the damaged tissue cells. This study was undertaken to gain insight into the effects of PEMs on sepsis induced renal cell loss.

Methods: Twenty eight adult Wistar albino rats were divided into four groups in each seven. Group I (control), a sham operation was performed. Group II (Sepsis), sepsis was created with Caecum ligation and perforation (CLP) in rats. Group III (Sepsis+7.5Hz PEMF), after induced sepsis the rats were subjected to 7.5Hz PEMF for 24 hours. Group IV (Sepsis+15Hz PEMF), after induced sepsis the rats were subjected to 15Hz PEMF for 24 hours. The kidneys of the rats were removed in all groups surgically under deep anesthesia then they were sacrified. Routine histological procedures tissues were blocked. Then the tissues in the blocked were cutted at 5 µm thickness. Tunel staining was performed for apoptotic index and immunohistochemical staining was performed for detecting apoptotic (Bax, Acas-3) and antiapoptotic cell protein (Bcl-2). All the prepared sections were analyzed under light microscope then results were analyzed statistically.

Results: After sepsis, in Tunel technique it was observed that the numbers of apoptotic cells were significantly increased in group II respect to others ($p<0.05$). In Immunohistochemistry we observed that apoptotic proteins expression (Acas-3 and Bax) were up regulated and the anti-apoptotic protein (Bcl2) was down regulated in whole renal tissues of the rats with sepsis ($p<0.01$). PEMF applications caused a significant decrease in the number of apoptotic cells and the expression of the apoptotic proteins ($p<0.05$) but it caused a significant increase in the expression of anti-apoptotic protein Bcl-2 ($p<0.05$) in the two treatments groups when compared with the sepsis group.

Conclusion: According to current results it can be stated that sepsis induced apoptosis can be regulated with the implementation of PEMF. No significant difference was statistically observed between 15 Hz and 7.5 Hz PEMF but 15Hz PEMF was seen more effective than 7.5Hz PEMF. Although this animal study provides evidence of the therapeutic effects of PEMFs on sepsis induced renal apoptosis. It is suggested to be performed extra more detailed analyses regarding this issue.

Keywords: apoptosis, immunohistochemistry, kidney, pulsed electromagnetic fields, sepsis

O-30

The effect of moderate and high doses of vitamin A on the liver of fetal rats

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Objective: Major congenital anomalieshave been observed in 2–3% of live births. This ratio increases when non-structural but neurological and behavioral anomalies, that are detectable in further ages, were included. It is known that babies from mothers, who were exposed to some chemicals, show a higher rate of congenital anomalies. Vitamin A, which is also consumed with routine prenatal vitamin supplements, is teratogen when consumed in high doses. There are many studies about morphologic congenital anomalies caused by high doses of vitamin A. Some studies are reporting effects of doses that are not recognized as teratogenic because they cause no major morphological malformation, but mental and behavioral disorders that can only detected in further ages. Mammalian fetal blood passes first through the liver, because of that it is expected that chemicals in the blood will affect primarily the liver. Vitamin A uses the same way, and is also stored in the liver. There are few studies about the teratogenic effect of vitamin A on the fetal liver, and no studies about the doses that are not categorized as teratogenic. Our study aimed to show the effect of vitamin A doses on the liver that is not considered to be teratogenic.

Methods: Five groups consisting of 5 female rats on each group were used. 10.000, 50.000, 100.000, 200.000 IU/kg retinol palmitate were given by gavage to the experimental groups between 10.–12. days of pregnancy (P10–12). The fetuses were taken at P19 with c-sections. Their livers were dissected and prepared for histological and immunohistochemistry studies. The slides were evaluated using stereological principles.

Results: Our findings are indicating that doses even at 50.000 IU/kg of vitamin A, given at P10–12, increases the total number of Tunel (+) cells and decreases the number of BrdU (+) cells. This data is manifesting in the decrease of total hepatocyte number and volume of the liver.

Conclusion: Our study is reporting that, 50.000 IU/kg vitamin A, which is not considered as teratogenic, have the same teratogenic effect on the fetal rat liver, like doses that are considered as teratogenic.

Keywords: retinol palmitate, liver, stereology, Tunel, BrdU

O-31

The epigenetic evaluation of the adult hippocampal neurogenesis phenomenon in cranially irradiated mice

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Objective: After the cranial ionizing radiation (CR) therapy, in both early and long-term, Adult Hippocampal Neurogenesis (AHN) cycle, hippocampal dependent learning (HDL) and long-term memory functions (LMF) in mice are evaluated by epigenetic perspective.

Methods: The cranial/head regions of anesthetized mice were administered a dose of 8 Gray (Gy) in postnatal day 14 (P14) and assigned as single dose radiation group (Rad+). Another group of same number mice which irradiated 8 Gy both in P14 and P21 (total 16 Gy) called double doses radiation group (Rad++). Additionally, a group of age and body weight matched mice were assigned as anesthetic (only given anesthesia) and normal control group (not exposed to any application). Parts of mice in groups were decapitated and brains were removed at P22 for evaluation of early (acute) effects of CR. Additionally, seven months later, the remaining mice were first assigned for Open Field test (OF) to measure the locomotor activity, and afterwards for Morris Water Maze paradigm (MWM) to test the HDL and LMF for testing the long-term effects of CR. Following the behavioral tests, immunohistochemical stainings (im) were performed with phenotypic neuronal and epigenetic markers to test the ongoing neurogenesis and epigenetic events in the P22 (acute) and P231 (late) brains hippocampi.

Results: In MWM, learning and memory patterns of Rad+/Rad++ groups were found to be significantly decrease trend as compared to the kontrol groups ($p<0.005$) and it is understood that these differences are significantly dose-dependent. We found a significant decrease of Doublecortin (DCX) populations at the subgranuler layer of dentate gyrus of Rad+/Rad++ groups as compared to the controls ($p<0.005$). In the same hippocampal regions, there was also significant reduction of main DNA methylation and demethylation determinants (5mc, 5hmc and Methyl-CpG Binding Protein 2-im positive cells). Additionally, Dnmt3a expression patterns of Rad+/Rad++ groups at P22 were found to be significantly decrease as compared to the control group ($p<0.005$), but there was no Dnmt3a expression in P231. Also, c-Fos populations which are represented as electrophysiological active neurons of Rad+/Rad++ groups at P22 were found to be significantly decrease as compared to the control group ($p<0.005$).

Conclusion: Overall, CR (in both long and short terms) reduced the neurogenesis cycle, weakened the cognitive abilities such as learning and memory, and altered the AHN epigenetics, which may suggest a significant role in hippocampal dependent learning and memory.

Keywords: hippocampus, adult hippocampal neurogenesis, cranial ionizing radiation, epigenetics

O-32

Differential effects of dopamine on simultaneous recorded theta and gamma oscillatory activity in primary motor cortex (M1) *in vitro*

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Objective: Exaggerated oscillatory activity at beta frequency is associated with dopamine depletion in Parkinson's disease (PD). In vitro, beta oscillations in primary motor cortex (M1) can be induced by co-application of carbachol and kainic acid. This activity is abolished by picrotoxin and modulated by gabazine, tiagabine and zolpidem, indicating dependence on networks of GABAergic interneurons (Yamawaki et al., 2008; Prokic et al., 2015).

Methods: Using an improved brain slice preparation and local field potential recordings in deep layers of M1, we have used co-applied carbachol (5 µM) and kainic acid (150 nM) and elicited simultaneous theta (6.6±0.1Hz) and gamma (36.6±0.4Hz) oscillations which are known to coexist in vivo.

Results: Application of dopamine (30 µM) resulted in a decrease in gamma power (93±9.7% of control, n=9, $p<0.05$) with no change in theta power (111±13.1%of control, n=9, ns). Application of amphetamine (20 µM) showed a similar effect on gamma power (67±7.8% of control, n=13, $p<0.001$) and increased theta power (151±16.2% of control, n=13, $p<0.001$). D_1 and D_2-receptor agonists, SKF 38393 (10 µM) and quinpirole (10 µM) respectively, showed a significant increase in theta (SKF 38393, 162±17.9% of control, n=25, $p<0.001$; quinpirole, 149±13.8% of control, n=9, $p<0.01$) and gamma power (SKF

38393, 160±12.4% of control, n=25, p<0.001; quinpirole, 134±12.3% of control, n=9, p<0.05). Application of D_1 and D_2-receptor antagonists (SCH 23390 (2 µM) and sulpiride (10 µM), respectively) either seperately (SCH 23390 theta, 179.6±26.2% of control, p<0.01, n=10; gamma 157.7±25.3% of control, p<0.05. n=10; sulpiride, theta, 126.3±9% of control, p<0.01, n=9; gamma 118.3±6.4% of control, p<0.05, n=7) or together increased theta and gamma power similar to the agonists.α_1-specific adrenergic receptor agonist, phenylephrine (10 µM) showed a similar effect on theta (157±12.6% of control, n=10, ns) and gamma power (69±5.2% of control, n=9, p<0.01) with dopamine. Prazosin (10 µM), α_1-adrenergic receptor antagonist, had no effect alone (theta, 157±12.6% of control, n=10, ns; gamma, 103±11.7% of control, n=10, ns) but blocked the effect of dopamine on gamma oscillations (91±19.4% of control, n=10, ns). In the presence of D_1 and D_2-receptor antagonists, dopamine's effect on gamma activity was blocked (104%±21%, n=6, ns) but phenylephrine's effect remained (36±5.5%, n=6, p<0.001).

Conclusion: These results show that dopamine possibly acting at α_1-adrenergic receptors or D_1-α_1 receptor complexes, instead of D1-D2-dopaminergic receptors differentially modulates theta and gamma activity in M1. This work was supported by Research Fund of the Marmara University (Project No: SAG-C-DRP-080415-0102). Also, the researcher was supported by Scientific and Technological Research Council of Turkey (TÜBİTAK) as a placement student (2214/A-International Research Fellowship Program for Doctorate Students).

Keywords: primary motor cortex, dopamine, theta, gamma, α_1-adrenergic

O-33

Comparing glutamatergic neuron population in the ventrobasal and lateral geniculate thalamic nucleus of GAERS and normal rats

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Objective: An imbalance between GABAergic inhibition and glutamatergic excitation is suspected to be involved in the genesis of epileptic processes. In the present study we aimed to quantify the number of glutamate+veneurons in ventro basal complex (VB) and lateral geniculate (LGN) nucleus of genetic absence epilepsy rats from Strasbourg (GAERS) and compare it with normal Wistarrats.

Methods: The measurements were made on serial section using computer program image J and the dissector method. The VB and LGN thalalamic nucleus was removed from each animal, the glutamate+veneurons were labelled using light-microscopically glutamate immunohistochemistry and the data was statistically analyzed.

Results: The present study showed that glutamate+veneuronsper/unite area in VB of Wistar animals between P10 and P60 showed difference (p=0.0110) however, GAERS animals showed significantly decrease in the in the number of glutamate+veneurons per/unitearea (p<0.0001). The LGN showed no significant difference between development alagenor between Wistarand GAERS.

Conclusion: The decrease in the number of glutamate+veneuronsin GAERS from P10 to P60 can be the result of the imbalance between excitatory and inhibitory neurotransmission.

Keywords: GAERS, ventrobasal complex, glutamate

O-34

Accumulation of α-synuclein in cerebellar Purkinje cells of diabetic rats and its potential relationship with inflammation and oxidative stress markers

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Objective: The present study was conducted to evaluate plasma oxidative stress markers such as malondialdehyde (MDA) and glutathione (GSH), inflammatory marker PTX3 and cerebellar accumulation of α-synuclein in streptozotocin (STZ)-induced DM model in rats

Methods: We have taken to our study 12 rats, 6 of them were for experimental procedure and 6 of them were control. In study group we have given intraperitoneal (i.p) STZ (60 mg/kg) and after 24 hour, the plasma glucose levels were measured in all groups. The rats whose plasma glucose levels were over 250 mg/dl were named diabetic rats. After 8 weeks later rats were sacrified for biochemical and immunohistochemical procedure.

Results: Plasma MDA levels were significantly higher in diabetic rats when compared with the control rats (p<0.01), while plasma GSH levels were lower in the diabetic group than in the control group (p<0.01). Also, plasma pentraxin-3 levels were statistically higher in diabetic rats than in the control rats (p<0.01). The analysis of cerebellar α-synuclein immunohistochemistry showed a significant increase in α-synuclein immunoexpression in the diabetic group compared to the control group (p<0.01)

Conclusion: Due to increased inflammation and neurotoxicity in the chronic period of hyperglycemia linked to diabetes, there may be α-synuclein accumulation in the cerebellum and the plasma PTX3 levels may be assessed as an important biomarker of this situation.

Keywords: diabetes mellitus, alpha synuclein, pentraxin 3, oxidative stress, alpha synucleopathies

O-35

The neuroprotective effect of regular swimming exercise programme on the dopaminergic neurons localized in the striatum of Parkinsonian rat models

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Objective: Parkinson disease (PD) is the second most common neurodegenerative disease which is characterized by the loss of dopaminergic neurons found within the substantia nigra pars compacta. Total amount of loss is mainly from the axonal terminals of the dopaminergic neuronal structures with a percent of 60 and the remaining loss is from the neuronal body, which in turn is responsible from the clinical picture of the PD. These 4 cardinal and devastating symptoms of PD are; resting tremor postural instability, bradikinesia and rigidity. Nowadays, beside the medical treatment, the physical therapy programmes are being involved as one of the mainstay in the treatment options in order to improve the physical capacity and balance which helps to increase the quality of life of the PD patients. As an endogenous toxin 6-OHDA, it causes a decrease in the amount of both dopaminergic neurons and the calretinin positive neurons. In our study, we aimed to observe the neuroprotective effect of the regular exercise on the dopaminergic neurons found in the striatum of the wistar rats with PD by applying tyrosine hydroxylase (TH) immunohistochemistry protocols. In addition to this, we would like to observe the amount of the CR positive neurons which is one of the calcium binding proteins and to compare it with dopaminergic neurons located in the striatum.

Methods: Fist of all in order to create the pathology, 6-OHDA is injected unilaterally to the medial forebrain bundle of the 250–300 gram weighing wistar model rats (n=8) by using the stereotaxic method. Following the injection, rats are divided into two as sedentary and exercise groups. Rats found in the exercise group are made to swim regularly for 30 minutes for 5 days per week and this is continued for 6 weeks of period. This amount of exercise is accepted as moderate exercise. At the 21st day following to the injection, by apomorphine injection (0.05 mg/kg/sc) rotation test is applied. At the end of the 6th week which is the end of the exercise program, brain excision is done by the transcardiac perfusion method under the anesthesia. After the brain excision, samples are stained with TH and CR immunohistochemistry protocols respectively in order to observe the amount of TH positive neurons and calretinin positive neurons located within the stiatum.

Results: The number of rotations in the exercise group was found to be less when compared to the sedantery group rats with a p value of 0.0058 with a statistically significant difference. The density of TH positive neurons were not to be seen different noticably in the striatum and substantia nigra of the rat brain samples which are belonging to groups. The sum of calretinin positive neurons between two groups showed a statistically significant difference (p=0.009). The number of calretinin positive neurons obtained from the ipsilateral (lesioned) side of the samples belonging to exercise group were shown to have a significant increase with a p value of 0.028 when compared to the samples of sedantery rat group. Morever, calretinin positive neurons located at the contralateral (no lesion) side of the samples obtained from the exercise rat group showed a statistically significant increment in the amount (p=0.08).However, we failed to observe any significant difference on the diameters of the neurons (p=0.1976). With all the results obtained from our study, we were able to prove the hypothesis that the exercise has a neuroprotective effect on Parkinson.

Conclusion: We would like to show a direction to the further clinical studies which could be done in order to show the neuroprotective effects of the vigorous and prolonged periods of exercise in PD treatment.

Keywords: Parkinson, exercise, 6 OHDA, thyrosine hydroxylase, calretinin

O-36

Therapeutic effects of valproic acid and nesfatin-1 on 6-OHDA induced Parkinson's disease model in rats

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Objective: Parkinson's Disease (PD) is a neurodegenerative disorder charecterized by resting tremor, bradykinesia, rigidite and postural instability. Preventing neurodegeneration studies in PD have been increased as well as other neurodegenerative diseases. Although there is not a routine treatment of Valproic acid (VPA) in PD; its effectiveness can be shown in PD like neurodegeneration. Hence, we aimed to investigate thetherapeutic effects of VPA and nesfatin-1 on 6-hydroxydopamine (6-OHDA)induced PD rat model by biochemical and histopathological methods.

Methods: Thirty two adult male Sprague Dawley rats, weighing 220–320 g,were used in the study. Animals were randomly divided into four groups: Sham (n=8), PD (n=8), PD+VPA (n=8) and PD+Nesfatin-1 (n=8). Under anesthesia, rats werepositioned in the stereotaxic device. After cutting scalp nearly 1.5 cm by vertical cut, it has become visible to the skull bone and Bregma and lambda. 6-OHDA solution (12.5 µg/2.5 µl) was infused into the rightcorpus striatum AP: +1.1 mm; ML: +/- 3.2 mm; DV: -7.2 mm) with a 10-gauge Hamilton syringe. Sham-operated rats received vehicle (0.2% Ascorbic acid; 2.5 µl) instead of 6-OHDA solution. Twenty one days after stereotaxic infusions of 6-OHDA solution and vehicle, animals were injected with apomorphine hydrochloride (0.1 mg/kg, i.p.) to induce rotational behavior. The

rats, which turn unilaterally more than 7 cycles/min, were accepted as successful for PD model. VPA (4 mg/ml, p.o) was administered through 21 days to the valid PD rats in PD+VPA groupand Nesfatin-1 (10 µg/kg/day; i.p.)was administeredthrough 7 days to the valid PD rats in PD+Nesfatin-1 group. Following VPA and Nesfatin-1 treatment, all animals were euthanized for biochemistryand histopathologic tests.

Results: Histopathologically; whilethe expression of caspase-3 and Bcl-2 increased in PD group; itsignificantly reduced in PD+VPA and PD+Nesfatin-1 groups ($p<0.05$). In contrast, decreased expression of TH in PD group was found significantly increasedin PD+VPA and PD+Nesfatin-1 groups ($p<0.05$). Biochemically; levels of COX-2, PGE2, NF-κB, NO and MDA were increased in PD group; all of them were significantly reduced inPD+VPA and PD+Nesfatin-1 groups ($p<0.05$). Whereas, decreased level of GSH in the PD group was found significantly increasedin PD+VPA and PD+Nesfatin-1 groups ($p<0.05$).

Conclusion: According to the results, it is considered thatVPA and Nesfatin-1 havetherapeutic effects on PD and prevent the progression of PD via apoptotic and oxidative stress mechanisms in dopaminergic neurons.

Keywords: Parkinson's disease, 6-hydroxydopamine, treatment, valproic acid, nesfatin-1

O-37

The thickness of the upper and lower soft lip tissue differs due to age and gender

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Objective: This study was performed to determine age and gender related changes in lower and upper lip thicknesses.

Methods: For this purpose, lateral cephalometric images of 220 healthy (87 females and 133 males) 16–74 years old people applied to Çukurova University and Başkent University (Adana) Dentistry Faculty Orthodontia Policlinics for various purpose between years 2011–2013 were evaluated. Cephalometric images belonged to individuals who have not received an orthodontic treatment and showed normal growth and development and have not experienced any surgical attempt on face. All individuals were divided into three groups (Group I; between 16–19 years, Group II; between 20–25 years and Group III; between 26–74 years). Upper (Pr-Ls) and lower (Id-Li) lip thicknesses of the individuals cephalometric images were measured by determining 6 references points on the images.

Results: Comparison between upper lip thickness in all of the age groups, there is no difference between sexes in Group I ($p=0.051$) (in women: 23.2±4.1 while in men: 25.9±6.2) but there are significant differences in Group II and Group III ($p=0.0001$). In point of lower lip thickness, there is no difference between sexes in 16–19 age group ($p=0.137$) while there are significant differences between sexes in Group II and Group III individuals ($p=0.0001$). The results showed that lower lip thickness (Id-Li) and the distance between interception point of upper and lower lip and incisive teeth (U1-St) varied in individuals in Group II and Group III depending on sex, however this relationship was not seen in Group I. Lip thickness values were found to be higher in males compared to females.

Conclusion: In conclusion, we suppose that having information on the differences of upper and lower soft tissue thicknesses in relation with age and gender would be beneficial for forensic anthropologists for facial reconstruction, for plastic and reconstructive surgeons and orthodontists to plan the treatment and analyze the harmony after treatment.

Keywords: facial soft tissue, cephalometry, upper lip, lower lip, cutoff value

O-38

Craniofacial morphometric measurements of children with celiac disease

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Objective: Celiac disease is a multi-system autoimmune disorder that occurs genetically against gliadin available in cereal products. In patients with typical childhood celiac disease during which craniofacial growth can also be affected, growth and developmental retardation are among important complications. However, craniofacial morphometric features cannot be expressed objectively. The aim of this study is to examine the craniofacial morphology of children diagnosed with celiac disease, and investigate the presence of morphologic features specific to that disease.

Methods: The photos of 100 patients at the age of 3–17, who were diagnosed with celiac disease through clinical diagnosis and biopsy and followed-up for at least 6 months, and 100 healthy children were evaluated, which were taken frontally and laterally at anatomic position. By mixing the photos of patient and control groups, the researcher who shall make measurements was enabled to do single blind study. ImageJ 1.50b software was used to measure the photos. 28 anatomic landmarkers were determined in the photos. 41 distances and 5 angles were measured by using anatomic landmarkers. After calculating the rates of the measured distances to each other, 41 rates were evaluated. All of these parameters were determined by setting up a model for patient and control groups and eliminating the effects of age and gender.

Results: It was detected that morphologic facial height, upper facial height, nose height, upper lip height, upper vermilion height, lower facial height, chin height, lower lip height, physiognomic face height, middle face height, minimum frontal breadth,

maximum facial breadth, interpupillary distance, intercanthal width, eye fissure width, biocular width, lower face width, nose width, nostril floor width, mouth width, bitragal width, ear length, ear width, nasomental angle and distance between subnasal and pronasal were statistically significantly less in cases with celiac disease than the healthy individuals. It was detected that nasal root width, distance between tragion and nasion, distance between tragion and subnasal, nasofrontal angle and nasofacial angle were statistically significantly higher in cases with celiac disease than the healthy individuals.

Conclusion: It is concluded that it shall be useful to objectively define the craniofacial morphometric changes seen in celiac disease, to have a suspicion of celiac disease in childhood and to refer those individuals for further examinations.

Keywords: celiac disease, craniofacial, morphometry

O-39

Heel spurs analysis of the skeleton in the Anatolian civilization

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Objective: Calcaneal spurs, especially seen on the face of the dorsal and plantar of the calcaneus bone are a bone protrusions. The spurs are occured at dorsal face of the calcaneus and they are defined as dorsal (achilles) spurs, besides they are defined as plantar spurs which are occured at plantar face of the calcaneus. In our study, it was aimed to examine the calcaneal spurs in detail at the skeletons of Late Eastern Rome, the Byzantine and Medieval period lived in ancient times of Anatolia.

Methods: 251 dry human calcanei in the 137 (80 males, 57 females) skeletons which were lived in Anatolia in the late Eastern Roman, Byzantine and Medieval period, were made paleodemographic analyses and they were explored in terms of calcaneal spurs. There were no fracture or deterioration in calcaneus of skeletons which were included in this study.

Results: In the 251 calcaneus bone, the incidence of dorsal spurs were found as 43.9%, whereas the plantar spurs incidence were established as 11.1%. Moreover, the incidence of both dorsal and plantar calcaneal spurs together were found to be 10.3%. Additionally, the incidence of calcaneal spurs were found to be 46.5% in 114 skeletons which have two calcanei. We divided three groups on total of 232 bones according to ages and Chi-square test was applied for obtain the distribution of the calcaneal spurs presence according to age groups. Furthermore, it was researched in terms of the differences between age ranges. The calcaneal spurs presence were found as 6.82% in young adults (18–29.9 years); 50% in adults (30–44.9 years) and 54.44% in elderly (45+ years). In addition, when the calcaneal spurs presence was examined due to gender this ratio was established as 40.6% in women, whereas in men it was found as 47.6%.

Conclusion: As a result, the values showed us that since 800 A.D., the incidence of calcaneal spurs in Anatolia was more common among elderly than young adults. Moreover, men are more likely to have calcaneal spurs than women and when we compared plantar spurs to dorsal spurs, the dorsal spurs are more common. Findings show that life conditions were more difficult according to that period and they had heavy workload. This study was supported by the Unit of Scientific Research Projects in Çukurova University.

Keywords: calcaneal spurs, os calcaneus, dorsal spur, plantar spur

O-40

The anthropometric measurements of nose for clinical approach

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Objective: The nose is a peripheral olfactor organ and upper respiratory tract. Since the nose is located on the center of face, its shape and proportion makes a great contribution to the face aesthetics. Moreover, nose-induced breathing problems (sleep apnea) have negative effects not only on sleep but also on behavior and daily activity. Septal deviation is a health problem which usually assesed by ear nose and throat specialists while aesthetic and plastic surgeons treat both inside and outside of the nose as a whole. Non-surgical rhinoplasty (filler rhinoplasty) is a noninvasive procedure including the filling of depressed areas, lifting the angle of the tip or smoothing of the nose bridge. This is not only a cosmetic procedure but it is used to correct functional problems with the nose, such as breathing difficulties. Since anatomic and morphologic features of nose varies according to race, ethnic groups, age and gender, the knowledge of anthropometric data and variations of the nose helps the surgeon to schedule of operation plan and to prevent undesired surgical results. Therefore in this study, it is aimed to gather anthropometric data and to classify the nose types based on Martin & Sallar's classification.

Methods: In this study, nose anthropometric measurements were obtained from 60 adults (30 male and 30 female) aged between 18–71 years. Measurements which were performed by using caliper are; nasal length, nasal bridge length, nostril length, nasal height, morphologic width of nose, anatomic width of nose, nasal root width, superior and inferior nostril length, maximum face width and nasal depth. Based on these measurements; external nasal surface areas, nasal volumes, nasal index and nose-face width index were calculated.

Results: The mean values of measurements (in mm) were: Nasal length=1.8±5.97, 51.77±7.05; nasal bridge length=51.61±5.05, 49.50±5.34; left nostril length=17.34±2.77, 14.83±2.33; right nostril length=17.01±3.07, 14.89±2.17; nasal height=56.35±4.61, 55.46±5.45; morphologic nasal width=37.07±4.74, 34.30±5; anatomic nasal width=28.98±3.44, 26.52±3.68; nasal root width=15.79±2.30, 14.67±2.80; left superior nostril width=8.38±2.22, 6.41±1.47; left inferior nostril width=6.90±2.34, 6.04±1.59; right superior nostril width=8.26±2.46, 6.76±1.36; right inferior nostril width=6.67±2.19, 6.16±1.55; maximum face width=121.85±8.04, 118.34±7.12; nasal depth=23.82±2.88, 20.28±3.6

(for male and female respectively). External nasal surface area=2188.93±291.57, 1787.48±272.39 mm^2 and nasal volume= 6791.60±2678.65, 5733.53±2093.10 mm^3. The most common nose type was Leptorrhine.

Conclusions: It is expected that the findings of this study will make a contribution to the literature and they will be found useful by ear nose and throat specialists and by aesthetic and plastic surgeons.

Keywords: nose, anthropometry, morphometry of the nose, nose type

O-41

Relation between foot pain and plantar pressure in pregnancy

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Hormonal and structural changes that occur during pregnancy cause alterations in body biomechanics. These alterations reach their peak in the last trimester. Adaptive changes that appear in the foot result in pain in the foot and ankle and pedobarography is a non-invasive measurement method which can be used to understand the origin of such pain. One hundred and thirty one pregnant women who did not have a foot or ankle problem prior to pregnancy volunteered to take part in the study. Pain was quantified by VAS. A cut-off value of 2.95 was taken divide the subjects into two groups: Group 1 (n=70) VAS<2.95 and Group 2 (n=61) VAS≥2.95. Plantar pressure measurements were taken by Tekscan HR Mat using midgait protocol. Forces experienced by the total right foot area, right forefoot and the midfoot for both feet were significantly higher in Group 2 ($p<0.05$). Contact area was significantly larger in Group 2 ($p<0.05$). Results indicate that presence and severity of the foot pain during pregnancy are related to the force distribution along the foot, especially at midfoot and the contact area

Keywords: foot, base pressure, pregnancy

O-42

The determination of the anthropometric index values in healthy subjects

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Objective: We aimed to investigate the incidence of pes planus and to determine the foot types with objective measurement methods in healthy young populations.

Methods: Healthy subjects was included in our study age between 18–30 years. Foot measurements were takenfrom 237 subjects (129 men, 108 women) from 474 feets. In this study; broad, slender and normal foot types and the incidence of pes planus were investigated. Moreover, anthropometric measurements of the foot in the healthy population were examined. Metatarsal foot width, heel width, foot length, intermetatarsal arc angle (IAA), hallux valgus angle (HVA) and footprint measurements were evaluated. Additionally, Chippaux-Smirax Arc Index (CSAI) and StaheliArc Index (SAI) were calculated by taking the ratio of the footprint measurements on the platform. After these measurements the minimum (min.), the maximum (max.), mean and standard deviation (SD) values were obtained. Analysis of the data was performed by the Pearson Spearman correlation analysis and Independent Sample T test (data shown normal distribution). The study was approved by our institutional review board and ethics committee approval also was obtained. Also, "Voluntary Informed Consent Form" was signed to the subjects who are included in the study before making measurements.

Results: The recordsof 237 healthy subjects (108 females, 129 males) were assessed. The mean values of age, height and weight were found as 19.74±1.52 years, 163.75±5.31 cm and 58.18±9.87 kg in females respectively. The same values were found as 20.57±2.13 years, 177.81±6.30 cm and 74.25±10.01 kg in males respectively. It was determined 22 slender type foot, 89 standard type foot and 18 broad type foot in right side, whereas, in left side 22 slender type foot, 87 standard type foot and 20 broad type foot were found in males. Moreover, in females 19 slender type foot, 67 standard type foot and 22 broad type foot were found. In left side, it was found as 16 slender type foot, 79 standard type foot and 13 broad type foot in females. The significant difference were found in all parameters (exclude; left HVA and right IMA) ($p<0.05$). When two groups were evaluated together; there were high correlation between right and left HVA andbetween right and left toe length. Furthermore, there were high correlation between right and left foot length and between right and left foot width in our study group. Additionally, there were moderate correlation between right and left toe lenght and between right and left foot length and between right and left IMA. Whereas, It was found weak correlation between right HVA and right IMA, between left HVA and left HVA. It was found significant differences in CSAI and SAI parameters in two groups ($p<0.05$).

Conclusion: When we compared our study with the national and international literature, we think that the differences in between our results and literature values result from various factors including age, gender, race, socio-economic status, nutrition, health care, using shoe type, participation in sport activities and geographical conditions.

Keywords: foot, anthropometry, hallux valgus

O-43

Comparative evaluation of mandibular anatomical variations between orthopantomography and volumetric tomography

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Objective: The aim of this study is to compare the efficacy of panoramic radiography and volumetric tomography in the diagnosis of the mandibular anatomic variations.

Methods: Patients who were undergone oral surgical procedures between 01/04/2013–01/04/2016 with available radiographic data of panoramic radiography and cone-beam computed tomography were included in the study. Radiographic data only obtained with the same radiological parameters was included and analyzed in the study. The presence of anatomical variations of accessory mental foramen, retromolar foramen, bifid mandibular canal and mandibular incisive canal was evaluated by two researchers. Intra and inter-observer reliability was determined using Cohen's cappa test. The prevalance of anatomical variations between panoramic radiography and cone-beam computed tomography was compared with McNemar test. The significance level was set at 0.05.

Results: Eighty-six cases were included in the study. Accessory mental foramen, retromolar foramen, bifid mandibular canal and mandibular incisal canal were observed in 10 cases (11.6%), 7 cases (8.1%), 17 cases (19.8%) and 34 cases (39.5%), respectively. There was no statistically significant difference between 2 radiography techniques in the detection of accessory mental foramen, retromolar foramen and bifid mandibular canal ($p>0.05$). The incidence of mandibular incisal canal was significantly different between both imaging modalities ($p<0.05$).

Conclusion: The preferential use of cone-beam computed tomography may be beneficial in the detection of anatomical variation of mandibular incisive canal. Conventional panoramic radiography is adequate for the diagnosis of retromolar foramen, bifid mandibular canal and accessory mental foramen.

Keywords: anatomical variation, cone-beam computed tomography, mandible, panoramic radiography

O-44

The evaluation of paresthesia in the cystic lesions which effect inferior alveolar nerve before and after surgery

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Objective: Maxillary and mandibular pathologies can be related to anatomical structure which are located in the bone or soft tissue, depending on the localization and size. Cysts are pathological cavities, which contain fluidand semi fluid materials, that usually appear in jaw bone sand more rarely in the soft tissue of mouth and face. The objective of this study is to evaluate the anatomical alteration of inferior alveolar nerve and mental nerve after destruction and compression caused by mandibular cysts and there sponse of the afore mentioned nerves with lipparesthesia after surgeries without nerve damage.

Methods: 13 patients with localized cysts in the mandible were evaluated for lipparethesia before and after surgery in Akdeniz University Faculty of Dentisrty, Department of Oral and Maxillofacial Surgery.

Results: Radicular and dentigerous cysthaves low expansion pattern so paresthesia was not present in patients before surgery. Keratocysts have a high tendency to expand because of increased mitotic activity, and in two of keratocytscases, paresthesia was observed before surgery. Temporary paresthesia occured in 4 cases after surgery for 3–6 months. Permanent paresthesia was not observed in any of the patient.

Conclusion: The inferior alveolar and the mental nerves are frequently effected by odontogenic and non-odontogeniccysts of the mandible. The features of cysts have important role on planning the surgery and prevention of permanent or temporary changes in nerve functions.

Keywords: inferior alveolar nerve, mental nerve, odontogeniccyst, non-odontogeniccyst

O-45

The evaluation of bone thickness around mental foramen in respect to implant surgery by using computed tomography

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Objective: Dental implant is a mostly preferred surgical procedure for the absence of the teeth in the oral cavity. For this reason, it should be known that the anatomy of the region is very essential to know because of the important relations. Otherwise; it may create lots of health problems such as fallen implants in mental foramen. The purpose of this study is to take precaution for fallen implants applied on mental foramen by getting knowledge about the thickness of the bone around.

Methods: In this study; 100 men and 100 women mandibles' dental volumetric images were examined. In the scanned images, the cortical bone around mental foramen was divided into four pieces. Hereunder; the distances between mental foramen- alveolar crest, mental foramen- base of mandible, mental foramen-vestibular surface and mental foramen- lingual surface are measured. The data is analysed by Kruskal-Wallis and Mann-Whitney statistical tests on SPSS programme.

Results: As the results show us; tehere are different measurements on the thickness of the bone. According to gender there is thinner cortical bone in women compared to men between mental foramen and alveolar crest, base of mandible and vestibular surface ($p=0.028$). In respect to age; the thisckness of the bone is getting thinner by age. There is statistical significans between 18–25 and 51 and older people and 26–50 and 51 and older people ($p=0.004$). When male and female patiens were subdivided into two as toothed and total toothless, it is observed that the only thickness between mental foramen and alveolar crest was significant, that is thicker in toothed patients.

Conclusion: Consequently; dental implants' quality applied around mental foramen and applying non- fallen implants are

related to know well the thickness of the bone around mental foramen and the whole anatomy of the mandible.

Keywords: mandible, mental foramen, dental implant, computerized tomography, dental volumetric tomography

O-46

Evaluation of nasopalatine canal by using cone beam computed tomography (CBCT)

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Objective: Form and morphology of nasopalatine canal is highly important in planning of oral surgery techniques performed on maxilla, in the treatment of nasopalatine cyst, in palatine pathologies which require surgical intervention. Furthermore, due to the excess demand for aesthetics in the anterior maxillary region, the need to define anatomic structures in radiological way is known to have increased. The aim of this study is to examine the form and morphology of nasopalatine canal in healthy individuals, and evaluate them by classifying them in sagittal, coronal and axial plans.

Methods: The images of the individuals, who applied to the Faculty of Dentistry, Gaziantep University for any reason and in whom no pathology was detected in CBCT, were chosen randomly and the images of 150 cases at the age of between18–65 were evaluated retrospectively. Nasopalatine canal was classified in sagittal, coronal and axial plans. The number and form of incisive foramen, the lower hole, and nasopalatine foramen the upper hole, were evaluated. The angle between nasopalatine canal and hard palate was measured. Measurements were performed by using Planmeca Romexis (Planmeca, Helsinki, Finland) program.

Results: Nasopalatine canal was classified in five groups in sagittal plan: hourglass (26.8%), conical (14.8%), funnel (13.4%), banana (16.1%) and cylindrical (28.9%) shaped. It was evaluated in three groups in coronal plan: U (26.8%), Y (28.9%) and V (44.3%). In axial plan, its forms in its top region, its middle region and its lowest region were evaluated. Three groups were detected: round, oval and heart shaped. In sagittal plan, the diameters of nasopalatine foramen and incisive foramen, and the distance between the midpoints of both diameters were measured respectively 4.13±1.08, 6.47±1.41, 12.56±2.53 mm. The angle between nasopalatine canal and hard palate was detected 105.72±7.72 mm. These data were analyzed statistically.

Conclusion: Even if the conventionally used imaging methods (intraoral radiography and panoramic imaging) are suitable methods thanks to the low radiation doses, they are not considered reliable in defining the region before surgical intervention because of only two-dimensional evaluation opportunity. Besides that, although three-dimensional imaging can be performed by means of spiral or multiplanar-CT, they are not preferred because of the cost and high radiation doses. Therefore, CBCT is accepted as the most ideal imaging method. As a result of the measurements made, there seems to be many morphological and dimensional variations of the nasopalatine canal. It is necessary to consider the variations and morphological properties of nasopalatine canal, with the aim of prevent the complications and improper practices/applications during anesthesia and surgical operations in this region.

Keywords: CBCT, nasopalatine canal, nasopalatine foramen, incisive foramen

O-47

Processus coronoideus resection in lateral approach for fossa infratemporalis

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Objective: Fossa infratemporalis; located inferior to arcus zygomaticus and medial to ramus mandibulae is an irregularly shaped cavity containing important neurovascular structures. It is connected with other spaces like fossa pterygopalatine fossa temporalis cranial cavity and orbit with various openings of the skull. Clinically, it is an important issue for head and neck surgeons in terms of tumors of neurovascular and muscle structures, because bone structures bordering the fossa limit interventions, particularly ramus mandibulae and arcus zygomaticus. Aim of this study is to determine resection site on proc. coronoideus by protecting foramen mandibulae located on the medial aspect of ramus mandibulae and safe intervention area for lateral approach of fossa infratemporalis.

Methods: Foramen mandibulae was investigated morphometrically on 30 adult dry mandibles of Department of Anatomy of GMMA. Gender and age of the dry bones were unknown. Distance between foramen mandibulae and anterior and posterior edges of ramus of the mandibulae, tip of proc. coronoideus and closest distance with incisura mandibulae was measured with digital caliper. Mean value of the measurements was determined. Then, on 3 fresh frozen cadavers, structures on the lateral aspect of the ramus mandibulae were removed by dissection. Proc. coronoideus was removed with resection by mean values obtained from measurements and foramen mandibulae and its contents were observed if they protected after resection.

Results: Distance between foramen mandibulae and anterior and posterior edges of ramus of the mandibulae, tip of proc. coronoideus and closest distance with incisura mandibulae were 15.8±1.1 mm, 8.9±0.7 mm, 33.5±1.4 mm and 21.1±1.3 mm respectively. It was predicted that 3cm from tip of proc. coronoideus; 1cm from anterior edge of ramus mandibulae and 2cm inferior to the incisura mandible was found for safe intervention by preserving foramen mandibulae and its contents. No statistical difference was detected between right and left sides. Anatomical structures located on lateral aspect of ramus mandibulae of 3 fresh frozen cadavers were removed and proc. coronoideus was removed by round device according to mean values obtained. It was observed that after removal of proc. coronoideus, foramen mandibulae and its contents were preserved.

Conclusion: Tumors of fossa infratemporalis are rarely seen. But appropriate tumor extirpation is difficult due to structures bor-

dering the fossa, thus high mortality and considerable morbidity rates are seen. Therefore, there are different approach methods. In this study we tried to identify safe resection area for proc. coronoideus in terms of lateral approach to fossa.

Keywords: infratemporal fossa, ramus mandibulae, processus coronoideus, inferior alveolar nerve

O-48

Mapping the mouse spinal cord with CLARITY

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Objective: CLARITY is a newly-developed technique developed by Deisseroth's group in Stanford (K. Chung et al. Nature Methods 10:508–513, 2013), and is considered one of the most important advances in neuroanatomy. The dorsal horn of the spinal cord is morphologically heterogeneous neurons varying considerably in size, shape and density. There are ten laminae in spinal cord and over ten different nuclei first described in the cat, later in the mouse, rat, and for the first time (Atlas of the Spinal Cord, Sengul, Tanaka, Watson, Paxinos, Elsevier, 2013) in marmoset monkey, rhesus monkey and human. This study was designed to show organization and chemo-architecture of the mouse spinal cord in 3D using CLARITY, to reveal new details and be a guide for further cord studies using this technique.

Methods: C57BL/6J mice were perfused (n=12) perfused with ice cold hydrogel solution, spinal cords cut into 2–3 mm segments and washed with clearing solution until optically transparent. Ten markers were used for immunostaining. Tissue was imaged using multiphoton microscope.

Results: Calbindin, calretinin, parvalbumin, CGRP, ChAT, serotonin, glycine, GAD67, NOS and GABA revealed details of 3D organization and chemo-architecture of the dorsal horn laminae and spinal cord nuclei.

Conclusion: Until recently, the only way to visualize the spinal cord in 3D was to do serial sections and make a reconstruction of these. However, tissue sectioning and subsequent imaging of individual sections have various limitations. Interesting details of organization of mouse spinal dorsal horn anatomy and its chemo-architecture were observed in 3D for the first time. This study was supported by an NHMRC (APP1086643) and by the Australian Research Council Centre of Excellence for Integrative Brain Function (ARC Centre Grant CE140100007).

Keywords: chemo-architecture, CLARITY, cyto-architecture, dorsal horn, mouse, spinal cord

Poster Presentations

(P-1 — P-204)

P-1

The evaluation of exercise in El- Kânûn Fi't-Tıbb

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Objective: İbn-i Sina gained his extant reputation thanks to "El-Kânûn Fi't-Tıbb", his most important work. In the work, information was given about collective discourse of exercise, the various forms of exercise, its time and duration. The objective of this study is to compare the information presenting relationship of the exercise approaches and the exercise with health in "El- Kânûn Fi't-Tıbb" with today's knowledge, and to evaluate the point of view on exercise in that period.

Methods: Exercise-related chapters in the first volume of İbn-i Sina's work called "El-Kânûn Fi't-Tıbb", which was translated by Esin Kahya into Turkish, were examined. Information in the book was compared with today's knowledge. True, false or imperfect information was determined and interpreted.

Results: Exercise, defined as series of voluntary movements bringing about deep and hurried respiration, was classified according to duration, severity and rate. It was explained that regular exercise has a protective effect against temperament and humoral disorders, and it must be done when stomach is empty. Exercises done in hot and humid climate were stated to be better than the ones done in cold and dry climate. Personal exercise (special to person) was recommended. It was determined that there is false information about exercise in the work, and there is also information, which is valid today.

Conclusion: İbn-i Sina was greatly influenced on exercise by Hippocrates and Galen as in the other fields. The work of İbn-i Sina is a valuable book contributing to the historical development process of exercise.

Keywords: El- Kânûn Fi't-Tıbb, exercise history, İbn-i Sina

P-2

Leonardo da Vinci's contribution to anatomy

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Objective: Leonardo da Vinci was an Italian Renaissance sculptor, painter, architect, engineer, inventor, mathematician and musician in fifteenth century (15 April 1452–2 May 1519). He is the one of the greatest artist and genius of all time in the world. Base of the Leonardo's interest on human body formed by his figure sketch works. He approached to human body as a perfect machine which was wondered by him about working principle. He understood the importance of representation of different kinds of human body by anatomy and drew the sketch of "Vitruvian Man" which represented human body proportions scientifically. Leonardo drew many human skeleton sketchs and was the first person that describe S-shape form of spinal cord. He achieved to describe of human skull and cross-sections of brain outstandingly. He was the one of the first drawers of a fetus position in utero to understanding miracle of pregnancy. His studies about anatomy led to the first robot design in written history. This drawing named "Leonardo's Robot" gave an inspiration to English heart surgeon to find out a new path for treatment of damaged heart in 2005.

Conclusion: Leonardo's researches enhanced sense of art and made a significant contribution to anatomy. For Leonardo da Vinci, art and science is exceeding of limits.

Keywords: Leonardo Da Vinci, anatomy, Vitruvian Man

P-3

A point of view to anatomy from Marifetname (1757)

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Objective: Erzurumlu İbrahim Hakkı has given wide coverage to Anatomy in his book named Marifetname. The aim of this study is to present the anatomical fund of knowledge in Marifetname and Europe at that date comparatively.

Methods: Marifetname is the most famous study among 15 books of Erzurumlu İbrahim Hakkı. The book was written in 1757. Marifetname has an encyclopedical feature that the author has given wide coverage to science besides sufistic subjects. It is also a kind of review written in public language, referencing 400 books. Author starts to explain the benefits of anatomy as introduction in 29th part of second book. 32nd part is about embryological anatomy. In 33rd part skeletal system anatomy starts. Following subjects are muscular system anatomy, neuro anatomy and vascular system anatomy. When these parts are examined it can be seen that the anatomical knowledge at that age was detailed, advanced and was recorded properly.

Results: In Marifetname, vascular system is expanded on from venae portae to whole of the vascular system. Bernard Siegfried Albinus (1697–1770) who lived in Europe at that date, published his anatomical drawings particularly about vascular system, in his study named "Human Nature". In Marifetname

there is a paragraph about mandibular anatomy, however not detailed. German author Johann Wolfgang Von Goethe (1749–1832) was interested in osteology and he revealed anatomy of mandibula. Furthermore, the Danish surgeon anatomist Jackob B. Winslow (1749–1832) (the anatomist who described foramen winslow for the first time) described foramen spinosum for the first time. However, in Marifetname, either in cranium topic, nor in maxillary artey description, the foramen spinosum is not mentioned. But it can be accepted that there is not detailed information about all subjects as Marifetname is not only an anatomy text book.

Conclusion: In Marifetname anatomy is praised as a very beneficial branch of science. The author summarized the anatomical fund of knowledge at that age, in a basic public language. Marifetname can be accepted a reference reviewing anatomy information of that age, equivalent to its alternatives.

Keywords: Marifetname, history of anatomy, Erzurumlu İbrahim Hakkı, vascular system, osteology

P-4

The circulatory system anatomy in Tesrih-i Ebdan and Tercuman-i Kibale-i Feylesufan which is written by Semseddin-i Itaki

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Objective: "Tesrih-i Ebdan and Tercuman-ı Kibale-i Feylesufan" is the first illustrated anatomy textbook written in 1632 by Şemseddin-i Itaki. The purpose of this statement is to analyze the circulatory system in this book and compare with the current knowledge of the anatomy.

Methods: In this study, mainly benefited from Semseddin-i Itaki's illustrated anatomy book "Tesrih-ul Ebdan ve Tercuman-ı Kibale-i Feylesufan" which is the translation from the Ottoman alphabet into the current Turkish by Esin Kahya. It is aimed to review the circulatory system anatomy in Teşrih-i Ebdan ve Tercüman-i Kibale-i Feylesufan and show the similarities and differences between that book and the anatomy knowledge that we have today.

Results: In his book, while explaining the anatomy of the heart, Itaki wrote that ıt is occurred from nerve, membrane, cartilage, veins, heart arteries, gaps and the heavy meat objects located within the spaces and described like cone-shaped. He stated that the heart is composed of three cavities which are the two of three major cavities and one small, also the left side muscle is thick. Uruk-u sakine (vens) was named non artery and it was said that all of them are stem from the liver. He argued that the vessels one of the liver named "bab damarı" (vena porta) and the other "ecvef" (vena cava) that vena cava seperated to two branches the ascending branch piercing of the diaphragm to moving towards the chest cavity the plunging down branch while thickens based on spine back. While talking about "şiryan" (arter) anatomy it is said that the heart has two cavities, towards to left ventricle come up the two vessels and the small one was named "şiryan-ı veridi" (venous artery). This venous artery (pulmonary artery) exits the left heart and goes to the lungs. "Avrit" or the aorta when comes out of the heart is divided into two branches. One is surrounding the heart and the other are the veins of to the right side space of the heart (coronary arteries). After the two branches it would also the two branches one goes above and the other one goes down side. Author has regarded three cavities about the heart but in other parts of the book he has also stated that the two cavities.

Conclusion: It was observed that Itaki gave detailed information about the circulatory system in his book. It seems that Itaki totally accepted many written anatomical knowledge until the era that he lived and benefit from the works of medical scientists such as Vesalius, Aristotle, Ibn al-Nafis and Ibn Sina. But writing without dissection caused to repeating the wrongs that seen in previous authors. In addition it is important that the work is written in Turkish. The use of Turkish equivalent while expressing some terms of anatomy have enabled to understand more easily by anatomists in the next period.

Keywords: circulatory system, anatomy, Tesrih-i Ebdan, Şemseddin-i Itaki

P-5

Redefining the in vivo anatomy of the Zuckerkandl's tubercle on radiologic images

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Objective: Zuckerkandl's tubercle is an important surgical landmark. Previous surgical and anatomic studies that used diseased thyroid glands or cadaveric specimens with no medical history have contradicting results. We aimed to assess the in-vivo radiologic anatomy of individuals with healthy thyroid glands.

Methods: We evaluated the tubercle of 100 patients (50 women, 50 men) on computed tomography. We measured the antero-posterior, transverse, and longitudinal diameters of the tubercle. We determined the location of the tubercle with regard to the thyroid gland and neighboring neck viscera.

Results: The frequency of a visible tubercle was 80.5%. The average antero-posterior, transverse, and longitudinal diameters were 9.6±3.5 mm, 6.8±1.8 mm, and 16.9±8 mm, respectively. The tubercle was located in the upper third of the thyroid gland in 64 sides (39.8%), middle third in 54 sides (33.5%), lower third in 1 side (0.6%), upper and middle thirds in 41 sides (25.5%), and middle and lower thirds in 1 side (0.6%). The tubercle was in the tracheoesophageal groove in 127 sides (78.9%) and in the retro-esophageal groove in 34 sides (21.1%).

Conclusion: The in-vivo radiologic anatomy of Zuckerkandl's tubercle of healthy thyroid glands is different from previous surgical and cadaveric studies.

Keywords: thyroid gland, Zuckerkandl's tubercle, anatomy

P-6

A radiological investigation on the hand development in human fetuses throughout the fetal period and an evaluation performed in terms of its clinical importance

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Objective: It was aimed in this study that the morphometric development of the hand in human fetuses throughout the fetal period be radiologically investigated and the clinical importance of this period be evaluated.

Methods: A total of 100 hands (50 fetuses: 23 males, 27 females) of 50 fetuses with no external pathology or anomaly, and the ages of which varied between 20–40 gestational weeks were incorporated into the study. The fetuses were separated into groups according to gestational weeks, trimesters and months. After the general external measurements of the fetuses were performed, mammography and hand radiographies of the fetuses were shot in the way that their hands would be in a pronational position. Afterwards, the morphometric measurements of the hands were performed with the help of a digital caliper through the hand radiographies that were shot. Separately, the hand index and the parameters as regards 2D:4D index were reviewed.

Results: The averages and standard deviations of the measured parameters were determined according to gestational weeks, trimesters and months. There was a significant correlation between the measured parameters and the gestational age ($p<0.001$). Additionally, it was observed that there was some difference among the groups in the comparison of the measured parameters involving trimesters and months ($p<0.05$). In our study, it was also determined that the hand index was correlated with the gestational age ($p<0.001$), whereas 2D:4D index was not correlated with it ($p>0.001$).

Conclusion: We are of the opinion that in evaluating the clinical studies regarding the morphometric development of the hand throughout the fetal period and in determining the pathologies and variations related to the fetal hand development, the data obtained in our study will be of use to the clinicians engaged in gynaecology, radiology, and forensic medicine as well as those involved in this field.

Keywords: fetus, hand, fetal development, morphometry, radiology, skeletal system

P-7

Radiological investigation and clinical evaluation of the morphometric development of the forearm in human fetuses

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Objective: It was aimed that the morphometric development of the forearm in human fetuses during the period between 20–40 gestational weeks be radiologically investigated and that its clinical importance be evaluated, as well.

Methods: A total of 100 fetal forearms (50 fetuses: 23 males, 27 females), the ages of which varied between 20–40 gestational weeks, without having any external pathology or anomaly were incorporated into the study. The fetuses were separated into groups according to weeks, trimesters and months. After the general external measurements of the fetuses had been performed, the mammographies and forearm radiographies of the fetuses were shot in the way that the forearms would remain in a prone position. Morphometric measurements pertaining to forearm structures were taken from the forearm radiographies that were shot with the help of a digital compass. Later on, the morphometric measurements in question were statistically evaluated.

Results: The mean values and the standard deviations of the measured parameters were determined according to gestational weeks, trimesters and months. There was a significant correlation between the measured parameters and the gestational age ($p<0.001$). In the comparison of the measured parameters between trimesters and months, it was observed that there was a statistically significant difference between the groups ($p<0.05$). Separately, it was also determined that there was no statistically significant difference in the comparison of the parameters, which was made between genders and right-left forearms ($p>0.05$).

Conclusion: As for the results obtained in our study, we are of the opinion that the data obtained during this study period will be beneficial for the involved clinicians, such as those in charge of gynecology, radiology, forensic medicine and perinatology, in terms of evaluating the clinical studies related to the morphometric development of the forearm throughout the fetal period, in determining the fetal age and gender, and also in determining the pathologies and variations regarding the development of fetal skeletal system.

Keywords: fetus, forearm, fetal development, morphometry, radiology, skeletal system

P-8

The relationship between prolapsus phases with pelvis diameter's for women urinary incontinence

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Objective: Urinary Incontinence is involuntary urinary loss proved objectively causing social and hygienic. The prevalence at several studies ranging from 10% to 58%. Urinary incontinence problem is often seen together with pelvic prolapsus. The aim of this study was evaluate to relation between disease and age, to show anatomical features of organs and formations in women's body that have urinary incontinence and prolapse.

Methods: Apertura pelvis inferior and apertura pelvis superior diameters have been measured from MRI images which 46 women cases that have urınary incontinence and prolapse that evaluated according to POPQ (Pelvic Organ Prolapse Quantification) and relationship has been evaluated between POPQ phases and diameters. Demographic information that about the case has reached from the patient record system.

Results: Average age of 46 cases including our study have been indicated as 49.58±10.58 cm. The mean sagittal diameter has been determined as 10.93±0.96 cm, the mean apertura pelvis inferior-transverse diameter has been determined as 10.03±0.86 cm, diameter anatomica lenghth has been determined as 12.00±0.88 cm and diameter diagonalis distance has been calculated as 12.89±0.96 cm.

Conclusion: In our study, the relationship between sagittal diameter and prolapse stages has been confirmed and this relation was statistically significantly.

Keywords: urinary incontinence, prolapse, pelvis diameters, bladder

P-9

Mental foramen and lingual vascular canals of mandible: multidetector computed tomographic study

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Objective: Mandible is one of the highly important anatomic structures in oral and maxillofacial plastic and reconstructive surgeries; furthermore, the branches of sublingual artery which run in the floor of the mouth from the lingual aspect through the bony canals of mandible are potentially in danger of bleeding, most particularly during implantation. The purpose of this study is to determine the frequency, diameter, relation with mandible and position of various common and/or rare variable structures in the body of mandible which can lead to complication during mentioned procedures.

Methods: The archived dental multidetector computed tomography (MDCT) images of 100 adults (15–70-year-old) patients who had history of neither trauma nor operation on mandible, were evaluated retrospectively. Tomographic measurement of mental foramen and lingual vascular canals (LVC) as well as the assessment of frequency and position of canals were performed on obtained reconstructed images.

Results: Eleven patients demonstrated totally 15 accessory mental foramens (AMF). At least one median LVC in each patient was observed; also, lateral LVC was determined in 32 patients. Significant differences were observed in the results of different gender groups ($p<0.05$); in contrast, no significant difference was observed related with the age or side ($p>0.05$). AMF was mostly determined in male and unilaterally in right side; also, the distances of mental foramen, except the distance from the rear margin of mandible ($p<0.05$), were found to be more, bilaterally, in male.

Conclusion: Variation of mental foramen as well as presence, position and size of LVC can be clearly investigated by dental MDCT. The obtained results by MDCT will provide benefits in avoiding complication during or after dental implantation and maxillofacial surgeries.

Keywords: mandible, mental foramen, multidetector computed tomography, accessory mental foramen, lingual vascular canal

P-10

Anatomic assessment of bile ducts with magnetic resonance cholangiopancreatography

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Objective: A variety of anatomic variations seen in intrahepatic and extrahepatic bile ducts may cause different kinds of problems in surgical intervention. For this reason, in this study it was aimed to investigate prevalence and types of anatomic variations of bile ducts in normal cases.

Methods: In this study an evaluation was conducted on 303 (146 males, 157 females) magnetic resonance cholangiopancreatography images (MRCP) which were taken at Selcuk University, Medical Faculty, Department of Radiology. In these cases, intrahepatic and extrahepatic bile duct variations and anatomic variations of gallbladder were determined.

Results: In consequence of the study corresponding with hepatic canals; in 12 cases (3.96%) right posterior sectorial duct anomaly opening into left hepatic ducts, in 26 cases (8.58%) trifurcation variation formed with right posterior sectorial duct on combination level of left hepatic ducts and right hepatic ducts, in 15 cases (4.95%) aberrant right hepatic duct variation opening into common hepatic duct were found. Corresponding with ductus cysticus; in 20 cases (6.6%) long cystic duct variation, in 8 cases (2.64%) a medial cystic duct insertion, in 7 cases (2.31%) short cystic chan-

nel variation were found. On panktreatobiliyer level in 7 cases (2.31%) it is found that choledoch duct and pancreatic duct opened to duodenum separately. As a result of investigation of gallbladder localization, it is found that in 4 cases (1.32%) gallbladder was high localized and in 7 cases (2.31%) it was transfer localized.

Conclusion: Anatomic investigation of bile ducts with non-invasive MRCP technique and defining variations are important in terms of helping surgical planning, minimizing possible complications occurring during operations and helping transplantation surgery.

Keywords: bile ducts, variations, cholangiopancreatography

P-11

Computed tomographic evaluation of paranasal sinuses in acromegalic patients

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Objective: Acromegaly is a rare clinical condition that occurs when there is an excessive production of growth hormone. In acromegaly, the growth of bones, cartilage, connective tissues, skin and visceral organs is overstimulated. The purpose of this study is to evaluate paranasal sinuses with computed tomography (CT) in acromegalic patients for morphometric, variational, and pathological changes.

Methods: Frontal, maxillary and sphenoid sinuses CT scans were evaluated for 29 acromegalic patients (n=29) and 29 control (n=29) subjects. Measurements of anteroposterior, transverse, and craniocaudal diameters of the paranasal sinuses and the crista galli were obtained. The volumes of sinuses calculated with point counting method. The images were also examined for anatomical variations of the paranasal sinuses and the presence of sinusitis.

Results: All the diameters of the frontal and maxillary sinuses were significantly larger and the volumes of frontal and maxillary sinuses were higher in the acromegalic patients compared to those of the control group ($p<0.05$). Although the presence of the agger nasi cell and pneumatizations of the superior turbinate, the middle turbinate, the pterygoid process, and the crista galli were more frequently identified in the acromegalic patients versus the control group, only pneumatization of the middle turbinate was significantly different ($p<0.05$). In acromegalic patients the anteroposterior diameter of the crista galli was significantly larger ($p<0.05$) and sinusitis was more often than control group ($p<0.05$).

Conclusion: In conclusion, frontal bossing and maxillary enlargement were considered to be a result of the increased size and volume of the frontal and maxillary sinuses in acromegaly patients. All this structural changes may be associated with several complications in acromegalic patients.

Keywords: acromegaly, paranasal sinus, morphometry, stereology, variation

P-12

Assessment of the relationships between the direction of the curve and Cobb angle and pedobarographic data in scoliosis

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Objective: To investigate the relationship between static and dynamic balance and type, degree and direction of the curve in scoliosis by pedobarographic method.

Methods: Twenty-three female volunteers participated in the study. Cobb angle was measured on the AP radiographs of the subjects and the type and direction of the curve were determined. Depending on the type of the curve, subjects were divided into two groups: "type-C" (n=14) subjects had a single curve while "type-S" (n=9) subjects had two curves. Subjects had static balance measurements with their eyes open. Pedobarographic data were collected with mid-gait protocol and 7 regions were defined. Relations between the right and left foot data and the type, direction and Cobb angle of the curve were examined.

Results: There was a significant difference between type-C and type-S subjects in Dist parameter. Dynamic balance parameters did not correlate significantly with the direction of the curve. In type-C subjects, TopukCA was higher in the right foot. In type-S subjects, PF and PCP measurements were higher in the left heel and left 3rd–5th metatarsal regions and CA was higher in the right big toe region. In type-S subjects, there was no correlation between increased plantar pressure and Cobb angle. In type-C subjects, PF and PCP significantly correlated in the whole of the right sole and medial masked regions (FrstMTT, Basprmk) while there were significant correlations in Force, CP, PF and PCP in the left heel region and PF and PCP in the lateral masked regions (ScndMTT, DigerMTT).

Conclusion: There is no significant relation between static balance and the type of curve in scoliosis patients. Dynamic pressure data showed that pressures on medial side of the sole of the right foot and lateral side of the sole of the left foot were greater in subjects with type-C curve and there was a left-right difference.

Keywords: static balance, dynamic balance, pedobarography, scoliosis

P-13

Evaluation of the facet joints with magnetic resonance images in the patients with disc degeneration and spondylolisthesis

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Objective: Functional spinal unit elements (FSU), consisting of intervertebral disc (IVD), facet joint (FJ) and vertebrae, were studied effect on each other and degeneration in columna vertebralis relationship with this structure in different clinical situations.

Methods: 353 cases, 102 lumbar spondylolisthesis (LS) patients diagnosed by radiologists where are Selcuk University Faculty of Medicine at the Radiology Department and we divided into two groups according to the stage of disc degeneration (DD), DD patients (DDP) and the control group, were included in the study. Data on the patients were retrospectively obtained by MRI of the lumbar spine between the years 2013–2015. In all cases DD and FJ degeneration (FJD) were evaluated. After FJ orientation (FJO) and FJ tropism (FJT) values were determined by looking at the angle of bilateral FJ on the transverse plane, FJT classes were created. In all groups, middle height and width measurements of L4, L5 corpus and L4–L5, L5–S1 IVD were obtained and this values are viewed relationship between with FJT and FJO values.

Results: It was significantly that only LS group more coronal than DDP group in the between groups ($p<0.05$). FJT values were similar between groups ($p>0.05$). FJO, FJT and FET values of men and women were similar in the three groups ($p>0.05$). Although FJT was observed in a higher percentage in three groups, this difference was signifiantly L4–L5 in the DDP group and L5–S1 in the control group ($p<0.05$). It was a positive correlation between FJD and DD severity of all cases ($p<0.05$). FJs of cases having FJD were significant more coranal at L4–L5 in three groups ($p<0.05$). In the all cases, while there is no relationship between the FJT with morphometric parameters in both levels, it was a significant negative correlation between FJO with disc width, corpus width and corpus height at L4–L5 ($p<0.05$) it was a positive relationship between the FJD and DD severity with advancing age and FJs were observed more sagital at L4–L5 ($p<0.05$).

Conclusion: FJT isn't a risk factor for DD development, FJD can increase the severity of DD, the placement of the FJs can vary with different clinical manifestations and it can be considered that spondylolisthesis, FJD and corpus vertebrae contribute to these changes.

Keywords: facet joint, IVD, spondylolisthesis, MRI

P-14

Incudomalleolar josint disruption: a case report with imaging findings

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Objective: In the normal anatomic situation, the ossicular chain is formed by three bones that are located in the tympanic cavity from inner surface of tympanic membrane to the oval window, connected to each other by two diarthrotic joints named incudostapedial and incudomalleolar joints. The chain also includes ligaments that connect the ossicles to the walls of tympanic cavity. Incudomalleolar joint is a sellar enarthrosis type joint, which surrounded by articular capsule. The cavity of the joint is divided into two incompletely separated parts by a wedge shaped articular disk, or meniscus. Articular surfaces are made by posterior face of the malleus head with the anterior face of the incus body. Incudomalleolar joint disruption is known as loss of normal connection between incus body and malleus head. Because of several malleus attachments to the walls of tympanic cavity, malleus mobilization is usually lesser than mobilization of incus which leads to a lesser exposure of malleus to the dislocation than incus. Incus body turns and displaces, usually; superiorly, posteriorly or laterally and less often inferolaterally, and reposes in the upper part of the tympanic membrane.

Methods: High-resolution computed tomography is the method of choice for evaluation of ossicular chain situation. In a normal circumstance, the malleoincudal complex is centered within the epitympanic recess and resembles an ice-cream cone on axial images. The head of the malleus corresponds to the scoop of ice cream, and the body and short process of the incus correspond to the cone. Incudomalleolar disruption is diagnosed by the displaced ice cream scoop from cone. The joint is best seen in the axial images. However, the coronal images may be more helpful in diagnosis of subtle disruption. In this study, evaluation of the CT findings in an incudomalleolar joint disruption case, is aimed.

Results: An 18-year-old male patient with right side conductive hearing loss was admitted to our hospital and a Multi-Slice Computed Tomography of temporal bone with a one mm thickness in the axial plane, was performed previously. Axial images were also reconstructed to coronal images. While findings were normal otherwise, appearances in correspondence with an incudomalleolar joint disruption were observed.

Conclusion: Deterioration of middle ear ossicular integrity and disorders of joint movement that occurs mostly due to trauma are contributing to the prevalence of conductive hearing loss, which can be diagnosed by high-resolution computed tomography and can be treated surgically.

Keywords: incudomalleolar joint disruption, conductive hearing loss, malleoincudal complex, ossiclur chain, dislocation

P-15

A rare variation of the musculocutaneous nerve in human cadaver

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Objective: The musculocutaneous nerve, derived from the lateral cord, is one of the terminal branches of the brachial plexus. The classical pathway of this nerve is that it penetrates the coracobrachialis muscle, passes between the biceps brachii and the brachialis muscles, and terminates as the lateral antebrachial cutaneous nerve. The lateral cord is largely composed of fibers originating from the C5 and C6 ventral rami, thus accounting for the presence of these fibers in the musculocutaneous nerve. The course and branching anomalies of the musculocutaneous nerve and its relation to the coracobrachialis muscle have been docu-

mented in the literature. The change in the innervation of the coracobrachialis muscle is reported to be closely correlated with the change of course of the musculocutaneous nerve. Knowledge of these variations is critical to surgeons, radiologists and other clinicians working in the axillary region.

Methods: During the educational gross anatomy dissections of the axilla and brachium of a 65-year-old male cadaver in our laboratory, we encountered a neurovascular variation.

Results: Musculocutaneus nerve was giving a muscular ramus in 1.5 mm thickness, 5–6 cm before entering corocobrachialis muscle. This muscular ramus was joining again to nerve itself at the entering point by covering vascular bandle going to corocobrachialis muscle from axillary artery and by reaching to 3 mm thickness. The course of the musculocutaneous nerve was normal in the forearm region. Other branches originating from the brachial plexus were also normal.

Conclusion: The distribution, course and branching of the musculocutaneous nerve is important from the clinical point of view, especially in compression neuropathies due to vigorous activity and stretch injuries seen in various surgical interventions. The variant course of the musculocutaneous nerve should be kept in mind as a possible way of treatment in recurrent compression neuropathies.

Keywords: musculocutaneous nerve, brachial plexus, lateral cord, variation

P-16

A pilot knee MRI research in Turkish population: evaluation of normal morphometric values for planning prosthesis

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Objective: Morphometric values of distal femur and proximal tibia is considered for design and the production of knee joint prosthesis. Prior to commencing this study we could not obtain detailed information about knee morphometry among the Turkish population. Therefore, the present study aimed to determine an index for this population and compare with preexisting data of other populations.

Methods: This retrospective study was conducted on 50 patients (25 female, 25 male) who had magnetic resonance imaging (MRI) examinations of the knee in last 6 months. Some morphometric parameters of distal femur and proximal tibia were evaluated via various measurements on these axial images.

Results: According to the mean values and standard deviations of the measurements of distal femur and proximal tibia, it is found that all parameters were higher in males than in females for all cases. We found statistically significant difference between genders except for intercondylar notch and trochlear groove parameters ($p<0.05$). Mean value of intercondylar notch index was determined as 4.50±0.57 for all cases in this pilot study. We could not find any statistical significant difference between genders for intercondylar notch ($p>0.05$). We also classified intercondylar notch types. 52% of the cases were classified as Type A and rest of the cases (48%) classified as Type U.

Conclusion: Studies revealing morphometric information are essential because of the racial differences on skeletal system. Therefore, this results would have great influence and usefulness for the production of Turkish population-specific prosthesis. Additionaly, new studies are needed including higher case numbers so that more accurate population specific results can be obtained.

Keywords: knee radiology, knee morphometry, distal femur, proximal tibia, intercondylar notch width index

P-17

Morphometric measurements of piriform aperture and discriminative analysis in the determination of gender

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Objective: The piriform apertura is a pear-shaped aperture that located in the middle part of the face makes the nasal cavity of the bone entry. It is bounded by the frontal processes of the maxillary bones, the nasal bones, and the anterior nasal spine at midline. Sex determination of the bone measurements is an important topic at anatomy, anthropology and forensic sciences. Cranium and pelvic bones are the most parts of skeleton which help sex determination in the best way. The subject of this study is the reliability and availability of the morphometric measurements taken from the apertura piriformis located at center of the face in the determination of the gender.

Methods: Our study was performed using three-dimensional computed tomography images of 28 female and 22 male, a total of 50 individuals (mean age 34.78±10.46 years, range 19–59 years), available from Uludag University Medical Faculty Radiology Department. Three parameters belonging to apertura piriformis and two parameters belonging to face were measured on the 3D images which adjust to the Frankfort horizontal plan by using TPSDIG 2.04 software. Gender differences of morphometric measurements obtained from the study were evaluated by t-test (independent samples t test). Discriminant analysis was performed in order to distinguish the genders based on relevant morphometric measurements. Statistical analysis was performed in IBM SPSS Statistics 21.0 software and results was interpreted to be $p<0.05$ statistically significant.

Results: According to the comparison of morphometric measurements between the genders, it was found that only the meas-

urement of distance between of right-left sutura nasomaxillaris has no statistically significant difference between the genders. It was determined that other measurements of horizontal and vertical linear distance were statistically greater at the men according to the women. Model were obtained with the help of discriminant analysis as follows: Di=-20.884+0.199 (the distance between the right and left lateral piriform points)+0.178 (the distance between the anterior nasal spine and rhinion)+0.110 (the distance between the right and left sutura zygomaxillaris)+0.018 (the distance between nasion and prosthion)-0.223 (the distance between the right and left sutura nasomaxillaris). Correct classification rate of data in the study of obtained discriminant function was determined 74.0%.

Conclusion: In this study, the discriminant function that can be used in making gender distinction was tried to be developed by using morphometric data obtained from apertura piriformis and the face. This function will help determine the gender of samples, that will participate later in the study, using related morphometric measurements.

Keywords: apertura piriformis, morphometry, sex determination, 3D CT

P-18

Evaluation of the relationship between femoral trochlear morphology and meniscal tears on MR images

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Objective: The aim of this study is to investigate whether femoral trochlear morphology has relationship with meniscal damage and bone morphology could be taken as a risk factor in clinical. The patellafemoral joint, that occurs between patella at proximal and femoral trochlea at distal, takes active role at extension mechanism of knee. The compliance (in sequence) between patella and femoral trochlea is necessary for normal function of the joint. Whether, the femoral trochlear morphology is a risk factor at knee pathologies, is an investigated topic in literature. Some morphometric measurements like trochlear sulcus angle, patellafemoral alignment angle, width of trochlear sulcus and depth of trochlear sulcus are used for evaluation of the femoral trochlear morphology. The menisci are the structures that assist the articular cartilage with feeding by the duty of shock-absorbing function and provide protection of the articular cartilage from high pressure by distributing the burden a wider area. The meniscal tears cause clinical symptoms like knee pains due to that they cause corrosion and calcification on cartilage following periods.

Methods: The MR images that were scanned at Uludag University Medical Faculty Hospital Radiology Department between February of 2015–May 2015 were investigated retrospectively. The axial MR images belonging to 56 patient totally, were evaluated. The meniscal damages were identified in different degrees at the knees of 32 patient. The average age of this group is 49.59±14.36. 24 patients who don't have any pathologies at knee were included the study as healthy control group. The average age of this group is 35.08±9.7. 13 morphometric measurements at different levels on distal and proximal segments of femoral trochlea belonging to were taken from the axial knee MR images that were obtained at 3 Tesla Philips Achieva TX MR device using PASC station. The obtained data were evaluated by student t test and Mann Whitney U test by performing SPSS 22.0 software.

Results: As the result of comparing the images taken at the level of proximal trochlea belonging the healthy control group and meniscal damage group; statistical significance were seen at the depth of trochlear sulcus, the height of lateral facet of trochlea, the height of lateral condyle of femur. Also, the statistical significance ($p<0.05$) was seen at the width of trochlear sulcus between two groups.

Conclusion: The morphological evaluation of femoral trochlea is an important point of knee joint. By the current study, the trochlear morphology could be accepted as risk factor for the degenerative changes like meniscal damage at knee.

Keywords: patellafemoral joint, trochlear morphology, meniscal tear, MR

P-19

Regression and correlative analysis study of the graft length for reconstruction of ligamentum cruciatum anterius

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Objective: Ligamentum cruciatum anterius (LCA) is one of the ligaments of knee which is intraarticular, extrasynovial. The ligament, which is essential for normal activity of knee, is one of the fundamental stabilizer that prevents the tibia's sliding forward according to the femur. LCA tears are one of the most common knee injuries. The reconstruction of the ligament is important because if the tears of the ligament aren't reconstructed, they could cause anterior instability of the knee, meniscal tears and emerging degenerative changes in early age. Individual anatomical anterior cruciate ligament reconstruction has just emerged as a new topic in literature. The essential part of this method is to restore the natural measurement, collagen orientation and conglutination place. The aim of this study is estimate the length of LCA by using regression and correlation analysis, before reconstruction.

Methods: In this study, knee MR images which were obtained from 3 Tesla Philips Achieva TX MR device at Uludag University Medical Faculty Hospital, Department of Radiology were investigated retrospectively. Thirty males and 26 females, fifty six patients (average of age s 43.38±14.42, range of ages 19–82) in total, who were confirmed by musculoskeletal radiology specialist that they have no pathology related LCA, were included in this study. Nine morphometric parameters on the images were taken from sagittal plan of knee

joint including LCA, tibial plateau, patella, by using PACS station. The obtained data were evaluated by performing correlation and lineer regression analysis using SPSS 22.0 software.

Results: After the correlation analysis, it was identified that the length of LCA correlated highly with the antero-posterior breadth of the tibia, patellar height, distance between tuberositas tibia and patella joint. As a result of the regression analysis, the formula of "2.541 + (0.266 × the antero-posterior breadth of the tibia) + (0.234 × patellar height) + (0.214 × distance between tuberositas tibia and patella joint)" was developed for calculating the estimated length of LCA. It was found out that the standard error value of the formula was 3.32 and the power of measuring the dependent value was 0.402.

Conclusion: Today, the length of the graft used for the reconstruction of LCA and its compatibility with the knee anatomy of the patient is a matter of debate. It is important that the graft used for reconstruction should provide positive outcomes after long term rehabilitation procedure, let the knee acquire normal mechanic and ultra-structural features; it shouldn't damage the extension mechanism of the knee and cause pain in the knee. As individual anatomical anterior cruciate ligament reconstruction is a new approach, we believe that outcomes of our study will be important in terms of individual planning of the length of the graft to be used for reconstruction of LCA.

Keywords: ligamentum cruciatum anterius, graft length, MR

P-20

Morphometric analysis of tracheobronchial tree in human lungs

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Objective: Achieving morphometric measurements of the proximal tracheobronchial tree in human respiratory system is the aim of this study.

Methods: Study was conducted on 9 left and 7 righ lungs which are part of the Necmettin Erbakan University Faculty of Medicine Department of Anatomy formol fixed organ collection. On left side internal and external diameter of primary bronchus just before it gives branches to lobes (LLBED-LLBID), internal and external diameter (SLBID-SLBED, ILBID-ILBED), length (SLBL, ILBL) of superior and inferior lobar bronchia and angle (A1) between those structeres are measured. Similarly on the right side internal and external diameter of primary bronchus just before it gives branches to lober bronchia (RLBED-RLBID), internal and external diameter (SRBID-SRBED, MRIRBID-IRBED), length (SLBL, MLBL, ILBL) of superior, medial and inferior lobar bronchia and angles between superior and inferior lobar brochia, medial and inferior lobar bronchia (A2 and A3 respectively) are measured. Gathered data is evaluated by using SPSS 21.0.

Results: Mean values of external diameters belonging to primary bronchia, superior lobar bronchia, inferior lobar bronchia, found to be 13.98±3.8 mm, 6.22±2.71 mm, 5.65±3 mm respectively. Mean value of external diameter of medial lobar bronchi is calculated as 4.97±2.36 mm. Also most of the parameters were correlated.

Conclusion: During study measurements of tracheabronchial tree are gathered. We believe that the gathered data may help clinicians on various heart and lung diseases or in situations which resection and reconstruction of tracheobronchial tree, also may be helpful for bronchoscopic procedures.

Keywords: trachea, morphometry, primary bronchi, cadaveric study

P-21

Morphometric assessment of articulatio tarsi transversa ligaments in sagittal MRI images

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Objective: Ligaments belonging to art. tarsi transversa play an important role in joint stability during walking. With this study, qualitative visibility of the ligaments and cross-sectional dimensions were measured in sagittal MRI sections.

Methods: Analysis using subjective and objective methods was aimed by discussing ligament thickness in Art. tarsi transversa joint complex and relationship of the ligaments with each other were discussed in detail in foot MR images of 55 people in database of Celal Bayar University Hospital. MR images to be used in the study were selected from healthy individuals who completed the development normally, and the absence of deformities and abnormalities of the foot was taken into account. With CUBE sequence, sagittal T2-weighted MR images in 1.6 mm thickness were obtained using TE: 136 ms, TR: 3000 ms, ETL: 100, Bandwidth: 62.50, FOV: 16 cm, NEX: 1, Matrix: 256?256 parameters. Lig. calcaneocuboideum mediale (MCL), lig. calcaneocuboideum dorsolaterale (DCCL), lig. calcaneocuboideum plantare (PCCL-short plantar ligament), lig. plantare longum (LPL), lig. talonaviculare (TNL), lig. calcaneonaviculare laterale (LCNL), lig. calcaneonaviculare superomediale (SCNL), lig. calcaneonaviculare longitudinale inferoplantare (CNLL) measurements were performed.

Results: In sagittal images, most clearly displayed ligaments were measured. DCCL, PCCL and LCNL could not be distinguished in sagittal images and could not be measured. Average values (±SD) were calculated for other ligaments respectively. MCL was measured as 2.35±0.58 mm, PCCL was measured as 9.05±1.58 mm, LPL was measured as 3.01±0.8 mm, TNL was measured as 2.85±0.53 mm, SCNL was measured as 8.73±1.83 mm, and LCNİ was measured as 2.71±0.6 mm.

Conclusion: With the sequence used in sagittal T2-weighted MR imaging, it was concluded that evaluation of the ligaments was not very healthy, and combined use of multiplanar images will give more accurate results in the anatomical evaluation of the transverse tarsal joint ligaments.

Keywords: MRI, articulatio tarsi transversa, foot

P-22

Ligamentum flavum thickening at lumbar spine is associated with facet joint degeneration: an MRI study

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Objective: Degenerative changes in posterior elements of the spine such as thickening or hypertrophy of the ligamentum flavum (LF) may result in spinal stenosis. In the present study, we aimed to investigate the potential factors including age, intervertebral disc degeneration (IDD), facet joint degeneration (FJD), end plate degeneration (EPD), which may affect LF thickening and to reveal the relationship among those factors at each level of lumbar spine by evaluating the magnetic resonance images (MRI).

Methods: A total of 200 individuals with low back and/or leg pain complains who have undergone lumbar MRI were included in this study. The thickness of LF, FJD, IDD and EPD were assessed at all lumbar levels.

Results: Totally 1000 end plates, 1000 intervertebral discs and 2000 facet joints were evaluated and the thicknesses of 2000 LFs were measured from MRI images of 200 patients (100 males and 100 females). The mean age was 46.87±12.47 years. LF thickness was strongly associated with FJD especially on ipsilateral side. Age and IDD were correlated at whole vertebral levels. The age related changes (LF thickness, FJD, IDD and EPD) were more prominent at L4-L5 vertebral levels. However, gender had no effect on LF thickness.

Conclusion: The results of this study suggest that LF thickening may occur independently or could be associated with FJD especially on ipsilateral side and this relationship is due to the vertebral level. The degree of disc degeneration increases with age and age related changes may be predominantly observed at L4-L5 vertebral level.

Keywords: ligamentum flavum, MRI, end plate degeneration, facet joint, intervertebral disc

P-23

The morphometric analysis and variations of infraorbital canal in terms of surgical approach using computed tomography scans

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Objective: The infraorbital nerve (ION) is responsible for sensory innervation of the midface between the lower eyelid and upper lip. It leaves from the second division of trigeminal nerve through inferior orbital fissure and courses anteriorly in the infraorbital canal (IOC) and exits from infraorbital foramen (IOF). It can easily be damaged especially in endoscopic and orbital reconstructive surgery and transient or permanent paresthesia andneuralgia occur. Also, IOC has clinical importance in radiofrequency ablation neurotomy.

Methods: This retrospective study was performed using paranasal Multidetector Computed Tomography (MDCT) images of 200 patients between the 18–81 years old (Mean: 41.21±17.54) recorded in the digital archive of the Selçuk University Medicine Faculty Radiology Clinic. Four hundred 256-slice MDCT images were obtained with a section thickening of 0.625 mm and analyzed at a Workstation (Syngo Via, Siemens, Germany). We measured the length of IOC, the infraorbital groove (IOG), distance from IOF to the piriform aperture (PA) and from IOF to the infraorbital rim (IOR), the angulation of IOC and the angle of the axis of IOC relative to the coronal plane (angle of entrance of IOF). Statistical analysis of data was performed by using SPSS 22.0. Results were evaluated statistically in 95% confidence interval, and differences were accepted significant if $p<0.05$.

Results: The anatomic variants of IOC were categorized into four types according to the relationship with the maxillary sinus; Type1-within the sinus roof (55.3%); Type2-partially protruding into sinus (26.7%); Type3-within the maxillary sinus (9.5%); Type4-external to the zygomatic recesses of the maxillary sinus (named lateroantral) (8.5%). We evaluated comprehensively the internal angulation of IOC in sagittal and axial sections. The mean length of the IOC and IOG and the angulation of IOC in sagittal sections were 8.5±2.7 mm, 20.0±4.2 mm 151.82±9.2 [IOCs without angulation (37.7%)]. The mean length of the IOC and the angulation of IOC in axial sections; 10.5±2.3 mm, 151.6±10.0 [IOC without angulation (40.5%)] respectively. We found that there was commonly no angulation in IOC Type-3 (68.4%) but, IOC Type-1 and Type-2 shown angulation(69.2% and 57.9%) ($p<0.000$)in sagittal sections. The internal angulation of IOC was commonly seen in all IOC types (>50%), ($p<0.040$)in axial sections. The mean distances from the IOF to AP and IOR were 13.3± 2.6 mm medially and 7.7±1.5 mm inferiorly. The mean angles of the axis of the IOC relative to the coronal plane in sagittal sections 53.43±13.66, on axial sections 33.27±8.21. Maxillary sinus septa was present in 28% of the images (40% with type1). The Haller cell was present in 16% of the images.

Conclusion: In addition to morphometric measurements of IOC, the variations should be kept in mind by surgeons. So, the iatrogenic ION injury not occur during maxillofacial surgery and radiofrequency neurotomy.

Keywords: infraorbital canal, infraorbital groove, multidetector computed tomography

P-24

Fossa cranii posterior volume in healthy children between 0–6 ages

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Objective: The posterior cranial fossa (PCF) is an important region which contains many structures that are vital to life such as cerebellum, fourth ventricle. Some diseases in children have been associated with changes in the size of the PCF or its contents, such as the Chiari and Dandy-Walker malformations. The purpose of current study was to investigate development and to establish normative data of posterior cranial fossa volume (PCFV) in Turkish population according to age and sex by using stereological method.

Methods: This study was performed retrospectively on sagittal computer tomography (CT) images taken from 109 individuals (55 females and 54 males) aged between 0–6 years who had been admitted to Erciyes University Medical Faculty. CT images were analyzed by using stereological (point-counting) method.

Results: The mean PCFV at the age 1 was 157.85±35.16 cm^3 and at 6, 258.61±29.45cm^3 respectively. PCFV was showed positive correlation to age.

Conclusion: Disorders of the posterior fossa and craniovertebral junctions are widespread. Thus knowledge related to the anatomy of this region is important in the proper planning of the management of diseases.

Keywords: children, CT images, posterior cranial fossa, volume

P-25

Anatomical and radiological investigation of buried 3rd molar teeth in maxillary bones of dry cranii

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Objective: Teeth which are unable to break out or emerge from dental alveolar tissues into the oral cavity are called buried teeth. Etiological factors that lead to buried teeth are as follows: lack of space in dental arch, mechanical barriers (such as cyst, tumor), trauma, developmental anomalies of teeth. Surgical extraction of buried teeth may become necessary whether they cause damage to root of adjacent teeth, pain, maxillary-mandibular malocclusion, malposition of other teeth, periodontitis, tooth cavities. The aim of this anatomic and radiologic study is to investigate rate and position of buried 3rd molar teeth in maxillary bones of dry cranii.

Methods: One hundred and fifty maxillary bones of dry adult human cranii with unknown gender and ages were randomly selected from the Gross Anatomy Laboratory of Medical School of Dokuz Eylul University and were macroscopically examined. Cranii which were determined including buried 3rd molar teeth were radiographically examined with orthopantomography (a dental radiographic technique) in radiology unit of Faculty of Dentistry at Ege University. The buried teeth were grouped according to their positions and degree of impaction.

Results: We observed that nine maxillary bones of 150 cranii (9/150; 6.0%) were having 11 buried 3rd molar teeth and the two maxillary bones (2/9; 22.22%) were having bilateral 3rd molar teeth. Eight of the 11 (72.70%) buried 3rd molar teeth were found located vertically and the other third (27.30%) horizontally. Eight 3rd molar teeth (72.70%) were completely buried, and three 3rd molar teeth (27.30%) were partially buried. Seven buried 3rd molar teeth were located left side of maxilla and four were located right side of maxilla.

Conclusion: There is controversy over the treatment options of buried 3rd molar teeth in dentistry. Before the surgical extraction of buried 3rd molar teeth, this treatment option must be meticulosly considered. Third molar teeth have close relationship with maxillary sinus, and also surgical extraction of horizonatlly located buried 3rd molar teeth cause more maxillary bone defect than vertically located buried 3rd molar teeth; therefore, as a treatment option, surgical extraction of buried 3rd molar teeth are rarely preferred. In order to decide the treatment option for buried 3rd molar teeth, or in order to develop novel treatment alternatives, it may be necessary to determine rates and positions of buried 3rd molar teeth.

Keywords: maxilla, buried 3rd molar teeth, cranium

P-26

Morphometric analysis of multidetector CT angiography of the celiac trunk and branches

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Objective: Knowledge of the vascular anomalies has great importance in modern surgery, radiology and organ transplant procedures. The vascular variations may cause serious complications during these process. Multidetector computed tomography (MDCT) is an excellent imaging technique that it is a fast and non-invasive tool provides highly accurate and detailed evaluation of normal vascular anatomy and variants. In this study aimed

to morphometric evaluation the celiac trunk (CT) and its branches of adults and investigate its possible variations using MDCT.

Methods: In the research 104 CT images was analyzed retrospectively who underwent MDCT abdomen for various reasons in Necmettin Erbakan University Meram Medical Faculty Hospital. The mean age 62.5±11.75 in males (n=52) in women 60±10.1 (n=52) were identified as. Abdominal aorta (AA), celiac trunk (CT), splenic a. (SA), common hepatic a. (CHA) and left gastric a. (LGA) diameter measurments were found large statistically significant at men compared with women ($p<0.05$) in our morphometric evaluation. The classical CT trifurcation was detected 90.3% (n=94) in the analyzed images. The types of variation and the distribution was found in the following way: Bifurcation CT 4.8% (n=5), quadrifurcation CT 2.8% (n=3), coeliomesenteric trunk 0.96% (n=1) and absent CT 0.96% (n=1).

Results: The results of our study were consistent with the literature. A detailed knowledge of the abdominal angioarchitecture, whether normal or variant, is thus considered a prerequisite for successful, uncomplicated abdominal surgeries and interventional radiological procedures.

Conclusion: Therefore, should be always considered the anatomy and variations of CT and branches in clinical studies, angiographic procedures and surgical interventions.

Keywords: celiac trunk, morphometry, variation, MDCT

P-27

The investigation of the sagittal and transverse diameters of C3-C6 vertebrae: a morphometric and radiological study

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Objective: Medulla spinalis can be under compression as a result of the contraction in either one or both of the sagittal and transverse width of foramen vertebrale (FV) due to various reasons. The same situation is true for foramen transversarium (FT) and arteria vertebralis passing through it. "Vertebral canal stenosis syndrome", one of the subjects which have aroused intense interests among neurosurgeons and orthopedists recently, is a clinical picture which occurs as a result of the compression of medulla spinalis caused by the contraction of sagittal and/or transverse diameters of canalis vertebralis and which consists of neurological symptoms. This state is also known as "spinal canal stenosis" and it can develop as a result of different reasons. The objective of this study is to compare the FV and FT laterale at C3-C6 vertebrae radiologically.

Methods: CTs of a total of 108 vertebrae, 27 from each of the vertebrae between C3 and C6, which were obtained from patients admitted to İnönü University department of Radiology were used in this study. All the area covered by vertebrae, FV area, sagittal and transverse diameter, the area of right and left FTs were measured radiologically. In addition, 44 dry human bones found at İnönü University, Faculty of medicine, department of anatomy were also measured to compare with radiological images. Metric measurements were made with Astor Digital Caliper and area measurements were made with Digimizer 4.5.1 Medcalc software Picture analysis program.

Results: All the area covered by vertebrae was found to be 1267.97 mm^2 at C3, 1219.40 mm^2 at C4, 1281.41 mm^2 at C5, 1366.04 mm^2 at C6. FV area was found to be 301.32 mm^2 at C3, 296.24 mm^2 at C4, 298.87 mm^2 at C5, 311.67 mm^2 at C6. Transverse and sagittal diameters of FV were measured as 25.58 mm and 16.07 mm at C3, 26.11 mm and 15.65 mm at C4, 26.10 mm and 16.23 mm at C5, 27.20 mmd an 16.72 mm at C6. The areas of right and left FTs were found as 31.40 mm^2 and 32.29 mm^2 at C3, 26.26 mm^2 and 30.06 mm^2 at C4, 32.40 mm^2 and 32.32 mm^2 at C5, 33.62 mm^2 and 37.13 mm^2 at C6. Kruskal Wallis analysis did not show statistically significant difference between C3-C6 vertebrae laterale. Mann-Whitney U test was conducted for paired comparisons. While the analysis results showed no statistically significant difference in paired comparisons of consecutive vertebrae laterale, statistically significant difference was found in non-consecutive vertebra measurements. Correlation analysis showed that the whole area of vertebrae and transverse diameter of FV increased positively from C3 to C6. Mann-Whitney U analysis conducted on measurements between dry human bone and radiological images showed statistically significant difference between C3 and C6 vertebrae in whole area covered by vertebrae and FV area.

Conclusion: We believe that the differences between radiological measurement results and dry bone measurements may have been caused by FV borders not being found for sure. We believe that knowing the morphometric and radiological measurement values associated with sagittal and transverse diameter of cervical canal vertebralis will be extremely important and leading for clinicians who play a role in surgical interventions for this area.

Keywords: cervical vertebra, morphometry, radiology

P-28

Unilateral submandibular gland agenesis: a case report

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Objective: Salivation is responsible digestion, taste, teeth protection and also affects the quality of speaking. Submandibular gland is one of the salivary glands and is located in both the left and right side of the neck. Its location is at mouth floor and it is restricted from upside corpus mandibularis and down side trigonum submandibulare. Corpus of the gland is under the mylohyoid muscle and covered with cervical fascia. There is membrana submandibularis between glandula parotidea and

glandula submandibularis. There are two lobes, one is profound and other superficial. Ductus of the gland takes from profound lobe and enters to deep oral cavity. Agenesis is a rare condition and can be unilateral or bilateral in the lead. It can be also semptomatic and asemptomatic.

Methods: In this case, there is 41-year-old female patient that came to the clinic complaining by pain complain. It is taken from the patient history and radiographic examinations were performed.

Results: In the parotid gland and thyroid gland ultrasonography results, it was not observed the left submandibular gland; and further investigation as magnetic resonance imaging (MRI) has been requested. As a result of MR both parotid glands and right submandibular gland was detected but left submandibular gland was not detected.

Conclusion: Agenesis cases are important in terms of contributing to anatomy, radiology and forensic medicine sciences.

Keywords: glandula submandibularis, agenesis

P-29

Investigation of posterior cranial fossa, cerebellum and foramen magnum morphometry on the cases with Chiari malformation types

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Objective: The Chiari malformation which is a congenital anomaly of the craniovertebral junction is characterized by a caudal descent of the posterior fossa structures through the foramen magnum into the cervical spinal canal. It is important to anatomical features of the foramen magnum during herniation. The MRI scan is the first choice for definitive diagnosis.

Methods: Anatomical features of posterior cranial fossa morphometry, cerebellar volume, foramen magnum such as shape, width (horizontal diameter), length (anteroposterior diameter), foramen magnum index. Surface area was measured using both stereological and Radinsky and Teixeira's formulas. Basal angle (distance between clivus and foramen magnum), occipital angle (distance between foramen magnum and supraoccipital bone), tentorial angle, basion reference, opisthion reference, tentorial opening and tentorium were evaluated for posterior fossa morphometry. A uniform point-grid with a point associated area of 0.25 cm^2 was randomly superimposed on each foramen magnum of patients with Chiari Malformation Type I and controls. To obtain surface area of foramen magnum using stereological technique, the point counts are converted into section areas by multiplying the total number of counted points by the square of the sequential 2 points distance.

Results: The shape of foramen magnum was defined according to foramen magnum index which was calculated by dividing length by width of foramen magnum. Foramen magnum was fined equal or greater than to 1.2 the shape of the foramen magnum was accepted as oval; and less than 1.2, the shape was accepted as round. Whole descriptive data were obtained and evaluated statistically.

Conclusion: When compared oval shape with round shape of foramen magnum, there is no significant herniation degree of cerebellar tonsils between shapes of the foramen magnum in the cases with Chiari malformation. We thought that larger series of Chiari cases required to correlate these morphometric parameters with clinical data.

Keywords: Chiari malformation, foramen magnum, MRI, stereological method

P-30

The evaluation of ischemia forms of brain vessels and risk factors by using three dimensional (3D) imaging methods on ischemic patients

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Objective: The factors whichcauses to ischemia named as risk factors. The subtypes of ischemia can be classifical with the changing of risk factors and ischemia. The purpose of this study is the analyzing of MR and BT cross sectional image of patients. By making 3D version and making correlation of brain and its vessels anatomical characteristic by using risk factors.

Methods: 53 men, 52 women and totally 105 ischemic patients, 23 men, 27 women and 50 normal control groups were evaluated. Transvers, sagittal and coronal cross sectional images were reconstructed by computer. Infarct types are grouped into aterosclerotic, lacunar, criptogenic and transient ischemic ataxia. Infarct types are determined according to hipertension, diabetic, smoking patients and the patients with coronary artery disease. The arteries which nourishes are subdivided. The most biggest in fact sized arteries and the most infarct causing arteries are classified as statistically.

Results: Infarct types are correlated anatomically with infarct sizes and arteries which causes infarcts. This is the first study in literatüre in that which arteries causes what types of infarcts in which risk factors.

Conclusion: Infarct size in brain is so important clinically. If infarct size increases, clinicak findings become so clear. This situation may Show changes according to ischemia localization. Women and men also Show differences in terms of risk factors and infarct types. All these findings are thought to be basic for the exploration of the mechanisms of clinical findings.

Keywords: brain, ischemia, MRI, CT, 3D, infarct types, risk factors, computational neuroscience

P-31

Retrospective analysis of variations of sulcus arteria vertebralis and variations of dimensions of arteria vertebralis at this level detected by CT angiography technique

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Objective: Sulcus arteria vertebralis is the groove that is located on first cervical vertebra (atlas) where vertebral artery passes over the posterior arch of atlas to reach the foramen magnum. An abnormal bridge between the posterior part of the superior articular process and posterolateral part of the posterior arch of the atlas is a common variation detected by radiographies of the patients. This bony bridge is called as ponticulus posticus or a variant of Kimmerle's anomaly. Its prevalance has been reported to be between 5.14–37.83%. This common variation may be a possible cause of the ischemia in posterior circulation and headache. This study aimed to determine and analyse the existence of ponticulus posticus and correlate the dimensions of the vertebral artery with its prevalance.

Methods: Retrospective analysis of 600 CT angiographies (1mm sections) of Department of Radiology, University Hospital of Hacettepe.

Results: We have detected a complete ponticulus posticus in 12.10% of the patients and 27.38% of them were bilateral. Right and left sided post-sulcus arterial dimensions were found to be lesser then the pre-sulcus dimensions with the incomplet ponticulus posticus existence.

Conclusion: Variations of the sulcus arterial vertebralis is a commonly studied variation among different nations. This study will be a preliminary analysis for the clinical problems like headache, vascular diseases and surgical interventions of atlas.

Keywords: sulcus arteria vertebralis, ponticulus posticus, CT angiography

P-32

Hippocampal volume measurements using IBASPM and evaluation of the relation between school success and sex

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Objective: Hippocampus has been known to play important roles in memory and spatial navigation. Hippocampus is one of the most important area in the magnetic resonance imaging volumetric analysis. In various studies the relation between the hippocampal volume and sex, depressive disorders, memory, handedness, multiple sclerosis is researched. The importance of the hippocampus for declarative memory pathways has been reported. However, correlation between declarative memory and hippocampal volume still remains questionable. The aim of our study is to measure the hippocampal volumes using IBASPM and to determine if hippocampal volume has any correlation with school success and sex.

Methods: Our study included 46 healthy volunteer first grade medical students who were study at the Akdeniz University. The volunteers age range was 18–22 years. 46 volunteer (22 male and 24 female) is included to study. MRI was performed with the 3T Siemens Spectra MRI scanner. With the raw datas which obtained from the MRI The hippocampal volume was measured using the IBASPM. Statistical analyses were performed by using the SPSS. The grade-point averages of the male and females and hippocampal volumes are compared by using Student's t-test. Right and left hippocampal volumes and grade-point averages are compared by using Pearson correlation test.

Results: The hippocampal volumes of male's were found bigger from the females on both sides and the difference was statisticaly significant ($p<0.05$). For both sexes left hippocampal volumes were found bigger than the right side ($p<0.05$). Any statisticaly significant difference is found between the male's and female's grade-point averages ($p>0.05$). For both sexes statisticaly significant correlation were not observed between the hippocampal volume and school success ($p>0.05$).

Conclusion: Statisticaly significant correlation hasn't been found between the hippocampal volume and school success.

Keywords: hippocampal volume, school success, MRI, IBASPM

P-33

Anatomical characterization of brain structures in sialidosis type 1 using an atlas-based analysis: a diffusion tensor imaging study

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Objective: Sialidosis is a rare lysosomal storage disease caused by NEU1 gene mutation and a deficiency of the enzyme neuraminidase. Sialidosis type 1 (ST-1) is characterized by macular cherry-red spot, visual defects, action myoclonus, ataxia and occasional seizures. The aim of this study was to examine brain structures using magnetic resonance imaging (MRI)-based volumetric and diffusion (fractional anisotropy (FA), mean (MD), and radial diffusivity (RD) measures) analyses in a ST-1 case and three controls.

Methods: MRI was performed at Erciyes University, Radiology department using a 1.5 T Siemens Aera scanner. 3D

T1-weighted and Diffusion Tensor images were post-processed for volumetric and diffusion analyses respectively. Diffusion Tensor Imaging (DTI) images were processed using MriStudio software. The six elements of the diffusion tensor, FA and MD measures were calculated and compared between the ST-1 case and the control.

Results: We found that right-left cerebellar volumes in ST-1 case were 85.1 cm^3, 84.0 cm^3, respectively. Right-left subthalamic nucleus (STN) volumes were found to be 0.45 cm^3, 0.47 cm^3, respectively. Total brain volume was 1651.50 cm^3. We found that right-left precentral gyrus (PrCG), postcentral gyrus (PoCG) volumes in ST-1 were 38.6 cm^3–34.6 cm^3; 23.6 cm^3–27.3 cm^3, respectively. We found that mean cerebellar volumes in control subjects were 90.6±6.82 cm^3, 88.7±1.99 cm^3, at the right and left side, respectively. In control subjects, right-left STN volumes were found to be were 0.62±0.12 cm^3, 0.48±0.06 cm^3, respectively. Mean total brain volume was 1752.09±84.58 cm^3. We found that right-left PrCG, PoCG mean volumes in control subjects were 39.8±8.80 cm^3, 32.1±3.55 cm^3; 30.0±4.68 cm^3, 31.1±3.01 cm^3 respectively. FA values in the cerebellum at right and left side for ST-1 were 0.19 and 0.18, respectively. MD values in the cerebellum at right and left side were 1.00, 1.04 $\times 10^{-3}$ mm^2/s, respectively. Mean FA values in the cerebellum at right and left side for controls were 0.20, respectively. MD values in the cerebellum at right and left side were 0.99, 0.97 $\times 10^{-3}$ mm^2/s, respectively.

Conclusion: In this very rarely seen case study, we found volume changes in different brain structures. Especially, ST-1 had significantly smaller cerebellar volume compared to control group. ST-1 also had higher MD values in cerebellum. This image-based study indicates abnormalities in ST-1 brain and suggests further investigation on a larger group.

Keywords: sialidosis, diffusion tensor imaging, Mristudio, subthalamic nucleus, volume

P-34

Measurements of humeral retroversion by computed axial tomography slices

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Objective: The mobility and stability of the shoulder joint depends on the humeral retroversion. The retroversion angle of proximal humerus varies among the societies. Because the retroversion angle determines the position of the rotation center, joint stability, and level of external rotation, eliminating the subjective faults by means of standardization of the measurements is important.

Methods: Measurement of the humeral retroversion is evaluated by the computed axial tomography, which is one of the techniques for measuring the humeral retroversion. Patient's shoulder and elbow are fitting parallel to the CT scanner in the supine position by completely in contact with the tomography gantry to get the CT images of proximal and distal part of the humerus in the same plane. The extremity is stabilized by foamed plastic. Using the exposure parameters of 120 Kv, 300 Ma, 0.6 s, in 3 mm thickness and 512×512 matrix slices are obtained at bone algorithm. Angle measurement is performed using the OsiriX MD program (Pixmeo, Geneva, Switzerland), which have been developed to display and process of multi-modal and multi-dimensional computer images. Sections are obtained from proximal humerus to surgical neck and from elbow joint to the end of the condiles at the humerus distal end. The slices, where the diameter of humeral head is longest (including the center of humerus) and epicondiles are the most explicit (the longest transepicondilar distance) are determined. The slices are overlapped using OsiriX MD program. A second line (proximal orientation line) is drawn perpendicular to this line, combines the cartilages for proximal humerus. The angle between mentioned line and transepicondillar line which is called as distal orientation line, determines the humeral retroversion angle.

Results: The measurements that are based on the widespread series, the humeral retroversion angle was determined in a range between 10°–40°. Normal kinematic with the anatomic location and the orientation of humeral and glenoid joint face should be restored in the proper humeral retroversion angle due to the retroversion of humerus affected by glenohumeral joint mechanic. It was supposed that, the differences in the measurement of the humeral retroversion angle are originated from the proximal orientation line. Because of the irregular geometry of the cartilage border, the measurement obtained by using the slice passing through the center of the humerus differs from the both measurements, obtained by measuring one level upper or lower of the slice. During drawing the line that connects the cartilages at the proximal end of the humerus, it is hard to determine the end of the cartilages from anterior and posterior directions and when these points replacing medially or laterally the tilt of the line will be differed.

Conclusion: Humeral retroversion angle varies according to the personal properties including sex and ethnicity. Differences in determining the proximal orientation line and used methods including radiography, computed tomography or sonography, will result in a wide range of results.

Keywords: humerus, retroversion angle, computed axial tomography, OsiriX MD

P-35

Volumetric analysis of the subthalamic nuclei with MRIStudio in patient with Parkinson and healthy people

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Objective: In the etiology of Parkinson's disease dopaminergic neurons that subthalamicus nucleus (SN) is thought to play a role with the degeneration of dopaminergic neurons. In this

study, because STN volume change can be used as a marker of disease prognosis to as in healthy individuals and Parkinson patients STN volume measurement is examined comparatively.

Methods: On 20 healthy, 20 with Parkinson's MR images by using MRIStudio software SN volume measurement was made. The expropriation of the 69 region that made in the brain volume quantitative values (on voxel counts) were obtained. The volume of SN that found in this region was calculated with the numerical data obtained between the groups of Parkinson's disease patients and healthy individuals were compared. The comparison of patients and control group independent t-test and in the paired t test was performed. P value under 0.05 was considered significant.

Results: The control group's right-average SN value is 71.40 mm3, the left SN volume's value is 50.85 mm3, in the group of Parkinson's patients, the right-volume's value was obtained as 52,00 mm^3. In healthy women with respect to gender differences in the values of volume right- SN is 63.70 mm^3, in men is 71.40 mm^3, left SN volume average is 41.30 mm^3 in women, in men it is found 60.40 mm3. The right value of SN volume in the women patient group is 64.80 mm^3, in men 66.30 mm^3, left SN volume value is 50.70 mm^3 in women, in men 53.30 mm^3. The control group in left SN is found to be smaller than right SN ($p<0.003$).

Conclusions: In the control group and patients with Parkinson's SN measurement that made with MRIStudio no difference was observed. In our next studies by examining the volume of the lens by different methods of measurements we are thinking of making a comparison between the methods.

Keywords: MRIStudio, Parkinson disease, subthalamic nuclei, volumetric analysis

P-36

Three-dimensional reconstruction of nasolacrimal duct

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Objective: A research on three-dimensional reconstruction of nasolacrimal duct on paranasal sinus computed tomography (PNS CT). There is not much information about it in textbooks.

Methods: The nasolacrimal duct's three-dimensional reconstruction was made on OsiriX MD by using 20 cases each with 20 sections.

Results: Three-dimensional reconstruction was made seamlessly and the nasolacrimal duct's anatomic neighborhood was evaluated.

Conclusion: Useful data was obtained about the nasolacrimal duct's anatomy which there is limited information in literature.

Keywords: nasolacrimal duct, three-dimensional reconstruction, paranasal sinus computed tomography (PNS CT)

P-37

The effects of low intensity/high repetition exercise on muscle fibers: a DTI study

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Objective: Diffusion tensor imaging (DTI), which has become popular in recent years is an imaging method capable of mapping diffusion of water molecules in tissues. When it was first introduced, it was mainly used for white matter tracts but more recently, it has been employed for muscle tissues as well. In the present study, we aimed to demonstrate the effects of low-intensity/high repetition concentric contraction exercise on diffusion parameters of the muscle fibers.

Methods: Four healthy adults who did not exercise regularly and agreed to participate in the study were recruited. MR images were acquired with diffusion weighted SE-EPI sequence using the following imaging parameters: TR: 6200 ms, TE: 87.7 ms, TM: 150 ms, slice thickness: 8 mm, receiver bandwidth: 2004 Hz/Px, matrix: 64×64, Field of View: 240×240 mm, b-value: 500 s/mm. Diffusion coefficient, Apparent Diffusion coefficient, Fractional anisotropy, Mean diffusivity, Axial diffusivity and Radial diffusivity were calculated.

Results: On the day of the MR scanning, maximal muscle strength of the right m. quadriceps femoris were measured and a 4-week personalized exercise program was prescribed for each participant. Participants performed 3 cycles of 12 repetitions of concentric contraction exercise with a load of 50% of the maximal muscle strength of the right m. quadriceps femoris, with a resting period of 45 seconds between each cycle, 3 times-a-week. At the end of each week, muscle strength was re-measured and necessary modifications were made on the program. At the end of 4 weeks, DTI was repeated with identical imaging parameters and diffusion parameters were re-calculated.

Conclusion: The results are discussed in the light of the literature data.

Keywords: DTI, intensity, m. quadriceps femoris, exercise

P-38

The effects of high intensity/few repetition exercise on muscle fibers: a DTI study

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Objective: Diffusion tensor imaging (DTI) is a relatively new method that is capable of showing diffusional anisotropy in a tissue. It was first used to depict neuronal extensions and later it has become available for showing tissue characteristics and cellular pathologies non-invasively. In the present study, we aimed to demonstrate the effects of high-intensity/few repetition concentric contraction exercise on diffusion parameters of the muscle fibers.

Methods: Four healthy adults who did not exercise regularly and agreed to participate in the study were recruited. MR images were acquired with SE-EPI sequence using the following imaging parameters: TR: 6200 ms, TE: 87.7 ms, TM: 150 ms, slice thickness: 8 mm, receiver bandwidth: 2004 Hz/Px, matrix: 64×64, Field of View: 240×240 mm, b-value: 500 s/mm. Diffusion coefficient, Apparent Diffusion coefficient, Fractional anisotropy, Mean diffusivity, Axial diffusivity and Radial diffusivity were calculated.

Results: On the day of the MR scanning, maximal muscle strength of the right m. quadriceps femoris were measured and a 4-week personalized exercise program was prescribed for each participant. Participants performed 3 cycles of 5 repetitions of concentric contraction exercise with a load of 90% of the maximal muscle strength of the right m. quadriceps femoris, with a resting period of 1 minute between each cycle, 3 times-a-week. At the end of each week, muscle strength was re-measured and necessary modifications were made on the program. At the end of 4 weeks, DTI was repeated with identical imaging parameters and diffusion parameters were re-calculated.

Conclusion: The results are discussed in the light of the literature data.

Keywords: DTI, intensity, m. quadriceps femoris, exercise

P-39

Three-dimensional reconstruction of frontal sinus

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Objective: A research on three-dimensional reconstruction of frontal sinus on paranasal sinus computed tomography (PNS CT). There is not much information about it in textbooks.

Methods: The frontal sinus' three-dimensional reconstruction was made on OsiriX-Lite by using 20 cases each with 20 sections.

Results: Three-dimensional reconstruction was made seamlessly and the frontal sinus' anatomic neighborhood was evaluated.

Conclusion: Useful data was obtained about the frontal sinus' anatomy which there is limited information in literature.

Keywords: frontal sinus, three-dimensional reconstruction, paranasal sinus computed tomography (PNS CT)

P-40

Evaluation of infraorbital canal anatomy and related anatomical structures with multi-slice CT

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Objective: Infraorbital canal (IOC) is a bony canal that is located in the superior - lateral wall of the maxillary sinus. IOC is continuous with the inferior orbital fissure and anteriorly opens into the infraorbital foramen (IOF). IOC contains important anatomic structures, such as inferior orbital nerve (ION) and inferior orbital artery (IOA). Anterior – superior alveolar nerve (ASAN) is one of the three distinct branches of ION and branches from the ION at the level of the 1/3 anterior portion of the IOC and runs within a tiny canal, named as anterior – superior alveolar canal (ASAC). ASAC might join into IOC just before the opening of IOF, or may have a separate foramen. IOC is an area of interest in patients with intractable or pharmacologically unresponsive trigeminal neuralgia for nerve block therapy purposes. In addition, ION and IOA might come under iatrogenic trauma during maxillofacial, orbital and dental surgery. Preoperative assessment with multi-slice computed tomography (CT) of both IOC and IOF may help treatment planning and avoid from complications. In this study, we aimed to investigate the anatomy of IOC and related structures with multi-detector CT in the adult population.

Methods: Digitally archived paranasal sinus CT images of 492 IOC of 246 adult patients (mean age; 36.7±24.4 year, M/F: 154/92) were retrospectively reviewed. Course and bony structure of the IOC, existence of anterior superior alveolar canal (ASAC) and number of the infraorbital foramen (IOF) were evaluated.

Results: IOC was observed as a groove, without a superior wall, rather than a canal in the majority of the images (64%). Presence of a true canal was observed in the 23% of the images. IOC coursed along the superior – lateral wall of the adjacent maxillary sinus in 83% of images (n=408). IOF was single in 88% of images (n=433). ASAC was detected in 44% of the images (n=216). In comparison to IOC, ASAC had a lateral (n=135, 62.5%) or inferior (n=81, 37.5%) course. In the 72.6% of the patients presenting with ASAC, conjunction with IOC was detected just before the IOF.

Conclusion: Multi-slice CT can provide accurate data in the evaluation of IOC anatomy and related structures. Correlative anatomical studies would strengthen the imaging.

Keywords: infraorbital canal, anterior superior alveolar canal, inferior alveolar nerve, multi-detector computed tomography

P-41

Sectional observation of magnetic resonance images of structures in canalis carpi on unileteral carpal tunnel syndrome events

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Objective: Carpal tunnel Syndrome (CTS) is the most common peripheral nerve entrapment syndrome and its cause is mostly idiopatic. According to the reports we get from patients with CTS, due to the intensive usage of wrist in hard works, formation of CTS is triggered depending on the hypertrophy of the

tenosynovitis and lumbrical muscles. A diagnosis of CTS is based on clinical information and nerve conduction studies. Anatomic information about structures forming canaliscarpi (CC) can be gotten by Magnetic Resonance images (MRG). In this study, it is aimed to compare cross sectional areas of the structures passing through CC in the MRG images of both wrists of the patients with unileteral Carpal Tunnel Sydnrome.

Methods: In this present study, five female patients are included who applied to Kahramanmaras Sutcu Imam University (KSU) Clinic of Physical Theraphy and Rehabilitation (CPTR)with the complaints of power loss on hands and parastesia and who are diagnosed to have uniletateral idiopatic carpal tunnel syndrome (CTS) as a result of their past stories, physical examinations and elektromyography (EMG). MRI images are contucted in this study at KSU CPTR and Analyze 12.0 is used to measure nervus medianus (NM) cross sectional areas of structures in canalis carpi. Also, SPSS 15.0 statistical analysis program is used to in the statistical analysis of findings obtained.

Results: In this study, the statistical relation between the ill side and fit side of structures passing through canalis carpi are compared in the axial sections from carpal bones located in proximal line of wrists. When the proportion of MedianNervus (NM/ CC) of ill side and fit side was compared, NM/CC of ill side was found as 0.10±0.03, and also value of fit side was found as 0.10±0.04. It shows that there is a signicant difference between statistical findings ($p \leq 0.05$). When crosssectional area of ill side and crosssectional area of fit side was compared, the value of ill side was found as (28.3766±8.52713) and thevalue of fit side as (27.0718±9.18656) which means it is bigger than the fit side. And also when the tendons in CC were compared; crossectional area of tendons in ill side was found as (100.1966± 7.81720) and value of fit side was found as (94.7878±7.59041) which means ill side is bigger than the fit side. All these findings provide a significant difference ($p \leq 0.05$).

Conclusion: In this study, it was found that the crosssectional area of tendons in CC and NM in patients with CTS was increased. All these findings support other studies on CTS. Also, it is expected that these findings will contribute to the future studies and clinics.

Keywords: median nervus, idiopatic, canalis carpi, cross sectional area

P-42

Capitulum humeri: an anatomical and clinical review

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Objective: Capitulum humeri is a spheroid eminence on the distal extremity of humerus and it is also named as capitellum in clinics. The distal part of humerus subdivides into medial and lateral columns on the mediolateral plane. Lateral column makes a 20° angle anteriorly with the long axis of the diaphysis of humerus to form the capitulum at the distal end. Capitulum forms the humeral component of humeroradial joint at the elbow. It is covered with hyaline cartilage which is about 2 mm thick anteriorly. The border of this cartilage also limits the replacement of the plaque in surgery. Trochleacapitellar groove is found between the capitulum and trochlea of humerus, during flexion head of radius replaces in this groove. Humeroradial (radiocapitellar) joint is spheroid type and the rotation axis of this joint is also the mechanical axis of the rotation of forearm. This axis is the oblique line between the center of the head of radius and head of ulna on the distal. Fractures of capitulum are rare; it makes up 1% of elbow fractures and 6% of distal humerus fractures. These isolated fractures are generally because of the extended elbow strained by the shear forces. Fractures may lead to avascular necrosis such as Panner's disease and osteochondritis dissecans. These patients have a limited range of motion, especially extension is affected. In radiography, epiphyseal and contour irregularity and fragmentation of the capitulum are often observed (Panner's). Avascular necrosis of the subchondral bone may result in the loss of adjacent cartilage structures. Conservative treatment; decreasing the activity of the elbow, immobilization and anti-inflammatory drugs are used for treatment. In the persistent cases, arthroscopy is an option for diagnosis and treatment.

Conclusion: In this review, we aimed to focus on the anatomy of the capitulum humeri, its ligaments, vascular pattern and the pathologies of this area. Also the biomechanics of the elbow joint is considered by keeping up to date with the literature. Especially, we put emphasis on the arthroscopy of the elbow joint for evaluating the anatomy and pathologies of the capitulum. Also the differences in the terminology of capitulum between anatomy and surgery are discussed.

Keywords: capitulum humeri, capitellum, humeroradial joint, avascular necrosis, osteochondritis

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Relationship between spatial memory and parahippocampal cortex: a voxel-based morphometric study

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Objective: It has long been known that gyrus parahippocampalis is involved in episodic memory. The cortical area of gyrus parahippocampalis comprised perirhinal and parahippocampal cortices. The parahippocampal cortex has been argued to play a role especially in spatial memory processes. In the present study, we examined the relationship between the volume of the parahippokampal cortex and spatial memory using voxel-based morphometry (VBM).

Methods: Forty-eight healthy, right-handed males participated in the study. The participants completed Weschler Memory Scale-Revised (WMS-R) test. 1 After that, high resolution T1

weighted MR images were acquired on a 1.5 T system. SPM8 was used for voxel-based morphometry. SPM8 spatially normalizes MR data sets, segments the images into grey matter white matter and cerebrospinal fluid compartments. Voxel-by-voxel regression analysis was performed, taking spatial memory score of WMS-R as covariate. Results were presented as statistical parametric maps.

Results: VBM did not reveal a significant relationship between grey matter density of parahippocampal cortex and spatial memory.

Conclusion: Results suggest that better spatial memory cannot be explained by grey matter density of the parahippocampal cortex and that other factors such as amount of synaptic connections may be more important.

Keywords: spatial memory, parahippocampal cortex, VBM

P-44

Lip thickness by age and races: a preliminary study

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Objective: Eyes on the top half of the face and lips on bottom half of the face is important as regards looking attractive and beautiful. Harmony in facial anesthetic and functional loss are considered as important targets in reconstructive surgery and orthodontic treatments. Thickness of soft tissue in lips, in addition to face, change based on age, gender and race. Our objective is to evaluate thickness of soft tissue of upper and lower lips in Turkish society by gender and compare the results with different races.

Methods: Lateral cephalometric images of 48 individuals between 20–25 years of age (26 males, 22 females) and 117 (26 males, 22 females) individuals between 26–74 years of age (87 males, 30 females) with Class I malocclusion were used. Individuals who underwent orthodontic treatment, not showing normal growth and development features and who did not have surgical treatment on the face were excluded. Upper and lower lip thicknesses were measured on cephalometric images of individuals. Results were compared with results obtained from individuals of different races and ethnicity.

Results: Thickness of upper lip was 30.0±4.5 mm in men and 22.8±3.9 mm in women between 20–25 years of age and considered statistically significant between genders (p=0.0001). Thickness of upper lip was found to be thinner in men and women between 26–74 years of age years and there were differences between genders (p=0.0001). It was revealed that upper lips were thicker than lower lips in both races and age range. When studies conducted in different races were examined, nearest value to our results was in Japanese race. It was observed in measurements made in Indian individuals that lip thickness was thinner in both genders (males: 22.33 mm; females: 19.62 mm) and lower lips were thicker in both genders in Southern Indian individuals (males: 48.82 mm; females: 41.13 mm). Although upper lip thicknesses were close to our results lower lip thickness values were different in Sudan and Yemen races. Upper lips of the Turkish people were thicker compared to those of European-American white individuals, while there was no difference between two races in lower lip thicknesses.

Conclusion: We think that in addition to this study's constituting normative cephalometric data for diagnosis and treatment planning in Turkish population, it will also help to reveal racial differences. Our study continues by increasing the number of data and receiving data from different regions.

Keywords: lip thickness, racial differences, cephalometry

P-45

Relationship of handgrip strength and body composition: a preliminary study

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Objective: Handgrip strength is an essential function of hand for everyday life activities. Handgrip strength is the maximal power of forceful voluntary flexion of all fingers under normal biokinetic conditions. Handgrip strength is an important indicator of nutritional status, physical performance and health. It is a physiological variable that is affected by age, sex and body mass. In this study our objective was to asses the relationship of body composition and hangrip strength.

Methods: In this study, 150 Baskent University students between 18–25 years old were participated. The participants' height, weight, skinfold thicknesses were measured and noted along with their both hands grip strength. Handgrip strength was evaluated with hand dynamometer (Lafayette instruments, USA). Biceps, triceps, subscapular, suprailiac skinfold thicknesses were measured. Body mass index (BMI) was calculated as kg/m^2 and lean body mass (LBM) was evaluated by measuring height, weight and four skinfold thicknesses using the formula reported by Kulkarni B (2013).

Results: There was a significant difference between male and female subjects of both right and left handgrip strengths statistically (p=0.00). The mean handgrip strength of right and left hands in males were higher than in female subjects. There were no significant difference between the four groups according to BMI values (underweight, normal range, overweight and obese groups) of handgrip strengths statistically (p=0.015). The relationship between handgrip strength and LBM was stronger than the relationship between handgrip strength and BMI.

Conclusion: As a conclusion the results of this preliminary study of handgrip strength provides reference material for different therapy and surgical treatment modalities.

Keywords: handgrip strength, BMI (Body mass index), LBM (Lean body mass)

P-46

3D quantitative evaluation of facial soft tissue asymmetry in healthy subjects

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Objective: Facial symmetry is the primary goal of facial aesthetic and reconstructive surgery. Cosmetic reconstruction of the face, such as recovery of facial symmetry, is a matter of concern to patients with facial deformities. a range of normal asymmetry can occur in healthy population. In order to compare the facial deformities, such reference asymmetry values can be beneficial for the surgeons. The aim of the present study was to analyze asymmetry of facial soft tissue in healthy subjects.

Methods: Facial asymmetry analyzes was performed on the 3D images of 51 subjects (23 males: mean, 22±2.2 years; 28 females: mean, 21.1±2.1 years) acquired by a 3D hand held scanner. A mirror image of a facial mask was generated and superimposed on the original mask. Afterwards, root mean square (RMS) value were calculated between original and mirror images.

Results: The mean RMS value of the original facial mask versus the mirror facial mask comparison for the total face was 0.95±0.29 mm, for upper face 0.89±0.39 mm, for mid face 0.93±0.33 mm, for lower face 0.91±0.4 mm, for eye 0.81±.029 mm, for nose 0.9±0.49 mm, for mouth 0.79±0.39 mm, for chin 0.89±0.56 mm and for cheek 0.87±0.31 mm.

Conclusion: Our study presents the total and partial facial soft tissue asymmetry data obtained from healthy young subjects. Our results, indicate that more study should be performed on facial asymmetry analyses in order to get normative RMS values.

Keywords: facial asymmetry, 3D imaging, root mean square

P-47

Facial reconstruction: an anatomical and anthropological perspective

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Objective: Facial reconstruction is an anatomical and anthropological technique to form an individual's three dimensional facial appearance from his/her skull by using clay. While it is used for different purposes in anatomy, anthropology, art or archaeology it is an auxiliary method in forensic sciences to help identification of the unknown individual by assessing anatomic, morphological structures and metric, geometric and morphometric dimensions of the skull. Aim of this study is to review history of facial reconstruction, different applied methods and area of usage in the field of forensic identification.

Methods: Face reconstruction is performed using three techniques; two dimensional (2D), three dimensional (3D) and computer assisted three dimensional (CA3D) techniques. In each technique, three different methods have been developed as; anatomic method (Russian method), facial tissue thickness method (American method) and combine method (Manchester method). 2D facial reconstruction can be performed by drawing on a photo of the skull, which is taken on a required standard plane. However 3D facial reconstruction is performed by modeling plastelin or clay on a 3D duplicated skull. Regarding CA3D face reconstruction technique, laser scanner and 3D software are required. All of these techniques and preferred methods have both advantages and disadvantages on the basis of cost, period, theoretical/practical skills and success rate.

Results: Facial reconstruction techniques have great benefits in solution of a forensic case. It was used for forensic purpose primarily in 1940s. Facial reconstruction has developed in USA seriously and helped solution of many forensic cases and contributed identification of unknown individuals in 1970 right after the studies of Snow and friends. In Turkey facial reconstruction studies started in Department of Forensic Medicine in 1994 for the first time and facial reconstruction studies were carried on a few forensic cases. In 2010 Forensic Anthropology Laboratory was built in Police Department. Since then facial reconstruction studies has been used often. In 2014 and 2015, a series of radiological studies, carried on 320, 420 and 167 cases, provided to determine the average facial tissue thickness of Anatolian population. In facial reconstruction not only facial tissue thickness, but also several regression formulas to find out facial morphological characteristics are used. However, there is no regression formula for modeling facial structures and characteristics of Anatolian population.

Conclusion: Finding out regression formulas of the Anatolian population or adjusting existing formulas will result in increasing similarity level and success rate of facial reconstruction in our country.

Keywords: forensic anthropology, facial reconstruction, identification, facial tissue thickness, regression formula

P-48

Linear and angular photographic-anthropometric analysis of Turkish young adult's facial soft tissue: a preliminary report

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Objective: This study is aimed to define the mean values of the different anthropometric measurements of facial soft tissue in young Turkish population and compare the obtained measurements between genders.

Methods: 41 students (30 female and 11 males) from İstanbul Medipol University participated in this study. The age of the participants were ranging from 18 to 25 years. The participants

were examined with class 1 skeletal patterns. The photographic records were taken of the subjects in lateral and natural head posture, then analyzed using the ImageJ software program for Windows. Twenty two measurements were digitally analyzed on each photographs. The distances of frontotemporal width (FT-FT), frontozygomatic width (FZ-FZ), trichion-glabella (TR-G), trichion-nasion (TR-N), glabella-subnasale (G-SN), bi-zygion (BZG), bi-gonion (BGO), trichion-gnathion (TR-GN), nasion-gnathion (N-GN), stomion-nasion (STO-N), stomion-gnathion (STO-GN), sublabiale-gnathion (SL-GN), gnathion-subnasale (GN-SN), bi-cheillion (BCH), bi-endocanthion (BEN), right and left exocanthion-endochanthion (EX-EN), bi-alare width (BAL), nasion-subnasale (N-SN) and the angles of nasofrontal (NFrA), middle facial height (MFHA) and lower facial height (LFHA) were measured.

Results: The mean values of TR-N, N-GN, STO-GN, SL-GN, GN-SN, BAL, N-SN and MFHA parameters were higher in males than in females. However, statistically significant differences between genders were present for STO-GN ve NFrA parameters ($p<0.05$). When the young Turkish population were compared according to facial types which are defined short-broad (type 1) – normal (type 2) and long-narrow (type 3), most common facial types were type 1 (46.7%) for females, and type 2 (81.8%) for males. Significant difference was found between the genders ($p<0.05$).

Conclusion: The normative anthropometric data was presented in this study would be useful for researchers of anatomy, anthropology, forensic medicine, dentsitry and also surgeons working on this area when planning aesthetic and posttraumatic surgical interventions as reference points.

Keywords: facial anthropometry, photogrammetric analysis, anthropometric soft tissue profile, young Turkish population

P-49

The proportions of middle finger (hand) length to some facial lengths in young adults males

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Objective: Hand is both an organ of movement and sense. It is the second part of the human body after the face for hiding. The aim of this study is to investigate the relationship of middle finger (hand) length with some facial lengths.

Methods: This study was carried out on a population of 100 males with the mean age of 22.8±2.1 years. In each subject, body height (BH), middle finger length (MFL), facial height (FH), nose length (NL), ear length (EL), lower facial height (LFH) and mouth width (MW) were measured.

Results: The anthropometric measurements of the subjects in millimeters (mm) was; MFL: 116+4.6, BH: 1769±9.2, FH 197.5+9.2, NL: 55.2±4.5, EL: 62.2±5.2, LFH: 70.7±6.3, MW: 57±4.6. The proportions of these measurements to MFL were; FH/MFL: 1.7, NL/MFL: 0.5, EL/MFL: 0.5, LFH/MFL: 0.6, MW/MFL: 0.5.

Conclusion: As a result, nose length, ear length and mouth width were approximately equal to the middle finger length. These findings will be used as a database for the future studies.

Keywords: proportion, middle finger, ear, nose, mouth

P-50

The analysis of stress-induced cortisol increase on the sense of ankle proprioception

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Objective: Medicine faculty students are acknowledged to experience intense stress. Stress influences hypothalamic-pituitary-adrenal axis (HPA) and causes cortisol levels to increase. The objective of this study is to analyze stress-induced cortisol increase on the sense of ankle proprioception.

Methods: 60 İnönü University Medicine Faculty freshmen students participated in the study. Separate measurements were made for right and left foot to make ankle proprioception measurements on students a month before the committee exam during their relaxed period with the help of a device designed with digital inclinometer. The sense of ankle proprioception was measured at 10º dorsiflexion, 11º plantar flexion and 25º plantar flexion angles with open eyes and closed eyes by using active reproduction test. Deviations from these angles were assessed as proprioception score. Salivary samples were taken for stress assessment and STAI-I state anxiety inventory was conducted. The same tests were repeated on the day of committee exam, salivary samples were taken again for stress assessment and STAI-I was conducted. Cortisol concentration was found in salivary samples. Thus, the association between relaxed period and stressed period ankle proprioception test scores and stress was found. Shapiro-Wilk test was used to find out whether the data were normally distributed and the result showed that they were not normally distributed. Wilcoxon paired 2 sample test was used to analyze the data. Spearmann Rho coefficient was used to calculate correlations. $p<0.05$ values were considered as significant. IBM SPSS Statistics 22.0 for Windows package program was used.

Results: Wilcoxon test results showed no statistical difference between right and left foot proprioception scores of 10º dorsiflexion, 11º plantar flexion and 25º plantar flexion angles with open eyes ($p>0.05$). Statistically significant difference was found between right and left foot proprioception scores at the same angles with closed eyes ($p<0.05$). According to the Wilcoxon analysis conducted for the comparison of the relaxed and stressed periods of cortisol and STAI inventory, statistically significant difference was found ($p<0.05$). Spearmann Rho analysis showed no significant correlation between right and left foot proprioception scores and cortisol and STAI state anxiety inventory with open eyes, while statistically significant positive correlation was found between the same angles with closed eyes.

Conclusion: It was concluded that stress-induced cortisol increase had negative influences on the proprioception scores of Medicine Faculty students. It was found that the students were able to cope with the deviation in proprioception scores with open eyes during stressed periods while this was not possible with closed eyes.

Keywords: cortisol, stress, proprioception

P-51

The effects of fasting on the sense of ankle proprioception

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Objectives: Human body is like a machine. If a working machine lacks care and rest, it will lose efficiency. Human body also needs rest and care. Fasting helps a body to rest and not to get exhausted. In addition, toxic substances in a body help to maintain the physical balance by disposing of the fat that causes obesity. The objective of this study is to research the effect of fasting on the sense of ankle proprioception.

Methods: 30 İnönü University Medicine Faculty freshmen students participated in this study. Ankle proprioception measurements for the right and left foot were conducted with the help of a device designed with digital inclinometer two weeks before Ramadan while the students were continuing their normal lives. Ankle proprioception sense was evaluated for both eyes open and eyes closed conditions at angles of 10º dorsiflexion, 11º plantar flexion and 25º plantar flexion by using active reproduction test. Deviations from these angles were recorded as proprioception score. The same test was repeated on the day Ramadan started and on the days the students who participated in the study was fasting. Thus, the ankle proprioception association between fasting days and non-fasting days were shown. The results of the Shapiro-Wilk test showed that the data were not normally distributed. Wilcoxon paired 2 sample test was used for the analysis of the data. $p<0.05$ values were considered as significant.

Results: Wilcoxon test results showed that fasting was statistically significantly associated with angles of 10º dorsiflexion, 11º plantar flexion with eyes closed right foot ($p<0.05$), while it was statistically insignificantly associated with the angle of 25º plantar flexion at all angles and with eyes closed ($p>0.05$). It was also found to be statistically significantly associated with the angle of 11º plantar flexion with eyes open left foot ($p<0.05$) and insignificantly associated with all angles when the eyes were open and with the angles of 10º dorsiflexionand 25º plantar flexion when the eyes were closed ($p>0.05$).

Conclusion: This study, which examined the effects of fasting on ankleproprioception sense found no negative effects of fasting. We believe that this study will be a reference for future studies. More efficient results can be obtained by increasing the experimental group.

Keywords: fasting, ankle, proprioception

P-52

The effect of exam stress on static balance scores and cortisol levels

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Objective: The severity of mental health complaints, symptoms and problems and the number of mental health cases have been increasing at the universities. Medical education is considered stressful in all societies. There are studies reporting that stress is induced by academic demands, exams, the feeling of inadequacy, despair, increasing psychological pressure, mental strain and overload. Many studies conducted on medical students also revealed that these students suffer from intense stress during their period of study. Stress affects the hypothalamic-pituitary-adrenal (HPA) axis, leading to an increase in the cortisol level. This study aims to examine the effect of stress-induced increases in cortisol levels on the static balance scores of medical students.

Methods: This study was conducted with the participation of 107 students from Inonu University Faculty of Medicine (Second Term). To examine the static balance of the students, the one-leg standing test was performed separately on right and left feet of the students during the period of relax one month before he committee exams. Static balance was measured using one leg standing test on stable platform with both eyes open for 60 second and eyes closed for 30 second and the students were told to maintain their balance for maximum duration. Test was stopped when the stance foot shifted in any way or the non-stance foot touched the ground. Saliva samples were taken and the State-Trait Anxiety Inventory (STAI-1) was performed to analyze the stress levels. The same tests were repeated on the day of the committee exam. Saliva samples were obtained and STAI-1 was performed again for the stress analysis. Cortisol concentrations in the saliva samples were analyzed. In doing so, we determined the relationship between the static balance scores and stress during the period of relax and period of stress. In line with the measurements, the Wilcoxon test and correlation analysis were also used to analyze the data obtained from the tests.

Results: The statistical analysis shows that there is a statistically significant relationship between the results obtained from the analysis of cortisol as a stress indicator and the static balance test conducted during the period of relax and the results of the same tests performed during the period of stress ($p<0.05$). The correlation analysis shows that balance scores decrease with increased level of stress.

Conclusion: The study found that stress-induced increases in cortisol levels have a negative effect on the static balance scores of the medical students.

Keywords: cortisol, exam stress, static balance

P-53

Analysis of the association between the incidence of hand preference in young healthy individuals and dominant eye, gender, 2D:4D ratio and hand grip strength

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Objective: Cerebral lateralization is known as the anatomical and functional difference on both hemispheres of the brain. Although speech is the first to be analyzed in the concept of cerebral dominance, the most studied subject by researchers as an indicator of motor dominance is hand preference. Therefore, a great number of researchers have emphasized that the dominant eye should be found in order to find out the actual lateralization in the brain and to reach basic and reliable conclusions on the subject. Hand grip strength (HGS) is considered to be an objective measurement for the upper limb. Hand grip strength is frequently used in clinic by physiotherapists and doctors in order to evaluate the treatment results of upper limb injuries. The objective of this study is to examine the association between the incidence of hand preference in young healthy individuals and dominant eye, gender, 2D:4D ratio and HGS.

Methods: A total of 198 İnönü University students, 111 male and 87 female, participated in this study. Turkish translation of Oldfield hand preference questions, which were modified, by Geschwind and Behan were used in order to find out the hand preference. The questions which were asked to the subjects were about the functions conducted within daily activities and the hands used by the subjects while conducting these functions were found. Baseline hand dynamometer was used to find out HGS. Right and left HGSs of the participants were measured with two repetitions. The higher value was accepted as HGS. The test developed by Rosenbach was used for the dominant eye. IBM SPSS Statistics 22.0 for Windows package program was used for statistical analysis. The data were expressed as arithmetic mean (X), standard deviation (sd) and significance level was accepted as $p<0.05$. For 2D:4D ratio, the distance between metacarpophalangeal joint and the distal end of the finger was found.

Results: Mann-Whitney U analysis results did not show a statistical difference between dominant eye, hand preference, 2D:4D ratios for both hands in terms of gender ($p>0,05$), while statistical difference was found between right and left hand ($p<0.05$). Mann-Whitney U test was conducted to analyze the association between right and left hand 2D:4D ratio and HGS in female and male students and no statistical association was found ($p>0.05$). A significant association was found between dominant eye and hand preference ($p<0.05$).

Conclusion: During the education period starting from childhood to school life, children are led by parents and teachers about holding pencil and similar tools. In addition, studies have found that culture and interaction do not have an influence on changing hand preference. This study reveals the association between dominant hand preference and dominant eye and how HGS varies based on gender. We believe that this study will be a reference for future studies.

Keywords: hand preference, dominant eye, gender, 2D:4D, hand grip strength

P-54

Morphometric analysis of processus mastoideus using the human skull from Byzantine and contemporary periods

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Objective: In cases of disruption of skeletal integrity, estimation of sex, age or race can be made using by different parts of the skeleton. The identification of burials of human bodies is conducted by multidisciplinary studies of sciences such as forensic medicine, anatomy, orthodontics and radiology. Skull and pelvis are parts of the skeleton that we could observe sex differences clearly. Processus mastoideus can be used in sex and race analyses regarding its trauma-resistant structure. In this study, morphometric features and relationship with the other craniometric points of processus mastoideus are used to compare the bones from Byzantine periods with present-day human skeleton.

Methods: Twentyeight contemporary skulls and 22 Byzantine-period skulls cataloged in Department of Anatomy, Uludağ University Medical Faculty are investigated within this study. The measurements were obtained by the manual caliper and from digitally photographed skulls' images. Somet Inox (1/20) Caliper is used for measurements. Digital measurements were carried out by ImageJ program. Analyses of the parameters were made by using SPSS Version 22.0.

Results: A total of 20 parameters measured on Byzantine and contemporary skulls, all measurements except the mastoid convergence angle and distance between processus mastoidei were measured and analyzed separately for the left and right sides in each skull. In comparison of periods when the data having highest validity was evaluated regardless side, porion (meatus externus acousticus upper limit) - mastoidale ($p=0.000$) and mastoid convergence angle ($p=0.002$) has been achieved. The distances between mastoidale and the most prominent point of convex outer surface of mastoid ($p=0.010$), processus mastoideus area ($p=0.039$) and processus mastoideus perimeter ($p=0.018$) were found the other parameters that indicate a significant difference between the periods. In assessments the distances between craniometric points, the results of inion – mastoidale ($p=0.007$), porion – asterion ($p=0.007$), pterion - asterion ($p=0.006$), vertex – mastoidale ($p=0.012$), articular tubercul – asterion ($p=0.008$), obelion – mastoidale ($p=0.013$) and Frankfort horizontal plane – mastoidale ($p=0.014$) indicated a statistically significant difference.

Conclusion: This study reveals the importance of evaluating the bone parts as processus mastoideus in gender and race analysis. Although a sectional assessment does not represent the whole population, the obtained data can also be used in

head and neck surgery (especially mastoiditis cases) and facial reconstruction, besides in the field of forensic medicine,

Keywords: processus mastoideus, craniometry, anatomy, morphometry

P-55

Assessment of facial golden proportions among Turkish young adults by photoanthropometrical examination: a preliminary report

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Objective: This study aimed to evaluate golden ratio using a variety of anthropologic soft tissue reference landmarks and facial forms using these ratios.

Methods: This study was conducted on 41 healthy volunteer students (30 female, 11 male) aged 18 to 25 years, as a preliminary study. Same digital camera was used to take frontal full-face photogrammetric image of each person standing at normal anatomical head position and neutral occlusion. Photographic images were digitized for analysis, and 7 antropometic landmarks were used. Various linear measurements were taken by same researcher for three times. 11 rational values were calculated related to these measurements. Data were analyzed statistically using the SPSS software.

Results: It is found that 7 mean values out of 11 rational values that were calculated in order to evaluate golden ratio, were higher in males then in females. Comparison of same rational values between females and males showed statistically significant differences except 4 parameters ($p<0.05$). According to the golden ratio values, all subjects were found to have short facial type (100%).

Conclusion: Golden ratio is considered as an essential measure for detection of balance of the parameters related to eyes, nose and mouth in facial region. These rational values are significant for maxillofacial surgery both pre-and post-operative period. We recommend and think that further studies are needed with larger populational groups on different ages.

Keywords: golden ratio, cranio-facial proportions, soft tissue analysis, anthropometry

P-56

Evaluation of normal tibial tuberosity to trochlear groove (TT-TG) distance in adult Anatolian population: a preliminary report

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Objective: Many studies have confirmed that tibial tuberosity-trochlear groove (TT-TG) distance measurement have significance in the preoperative assessment of arthroscopic surgery such as tibial tubercle osteotomy or refixation. TT-TG distance is used as threshold. The main purpose of this study is to find normal value of TT-TG distance of healthy adult Anatolian population and obtain an index.

Methods: This study was conducted on 50 patients (29 female, 21 male) aged between 18 to 70 years, who had magnetic resonance imaging retrospectively at İstanbul Medipol Mega University Hospital Radiology Department. Morphometric and statistical analyses of the scans were done using PACS (Picture Archiving Communication Systems) and SPSS respectively.

Results: The mean TT-TG distance was found 10.82±2.11 mm in males, 10.59±1.76 in females and 10.69±1.90 mm for total cases. There was no statistically significant difference between genders ($p>0.05$).

Conclusion: Normal TT-TG distance is reported as 10±1mm in many studies. MRI measurements considered as a reliable method for measuring TT-TG. Results of our pilot study shows similar values with other populations however further researches recommended with increased number of cases to make an accurate populational index decision.

Keywords: TT-TG, MRI, patellar dislocation

P-57

The relationship with the temporomandibular joint movements of neck motion and anthropometry

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Objective: Temporomandibular joint is one of the most complex joints in the human body. There are studies reporting that 10 out of 8 patients applied to the dentist are suffer from teeth grinding (bruxism) or the joint work disorders (dysfunction). It is important to determine the parameters which help to detect these joint dysfunctions. In this study, we aimed to determine the normal values for the range of the joint motion for both sexes and to investigate the relationship between those parameters to the neck anthropometry.

Methods: In our study, 14 healthy men and 14 women volunteers over 18 years were involved. The joint motions were measured with zebris© CMS20P-2 device. Harpenden Anthropometer and floating caliper for the anthropometric measurements were used.

Results: As a result of the measurement were found minimal correlation between neck flexion and extention movements with temporomandibular joint movement (respectively rs=-0.578; rs=-0.604).

Conclusion: We believe that will create a basic resource for researchers to be conducted on healthy individuals using technology developed in recent years of this study. The study was supported by TÜBAP (TÜBAP 2013/165).

Keywords: temporomandibular joint, anthropometry, joint, cervical motions

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Mallampati score and temporomandibular joint movements

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Objective: The Mallampati score (MS) is commonly used as a standard method for the anesthesiologist to assess the difficulty of securing the airway. The preoperative anesthesia evaluation shuld include an assessment of oropharynx. MS may play an imported role in the evaluation of oropharynx. The aim of this study was to determine the relationship between MS and Temporomandibular joint movements.

Methods: 48 volunteers who were studying at our university participated in this study. The temporomandibular joint movements were measured with zebris© CMS20P-2 device. MS was assessed with the volunteers in anatomical neutral position by the volunteers sitting down on a chair and with the tongue protruded maximally and downward with no phonation.

Results: This study showed a negative correlation between MS and Opening (OP) (rs=-0.798; p<0.001), Maximal Opening (MO) (rs=-0.611; p<0.001), Maximal opening velocity (MOV) (rs=-0.417; p=0.003), Opening Right (OR) (rs=-0.405; p=0.004), Maximal Closing Velocity (MCV) (rs=-0.352; p=0.014), Opening Left (OL) (rs =-0.306; p=0.035). According to this; when Buna göre OP, MO, MOV, OR, MCV and OL increase, MS score decreases. There is no significant correlation between MS and Retrusion right, Retrusion Left, laterotrusion right, laterotrusion left (p>0.05).

Conclusion: Mallampati score is a widely used preoperative assessment in predicting difficult tracheal intubation. Difficult tracheal intubation increases with decreasing orapharyngeal view. Temporomandibular joint anatomy is important to assessment oropharyngeal view. More comprehensive studies are needed on this topic.

Keywords: Mallampati score, temporomandibular joint,

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Morphometric analysis of the anatomical structures of tibial plateau

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Objective: Tibial plateau fractures are bony fractures of the proximal part of the tibia, which sits where the articular surface of the femoral condyle. The tibial plateau fractures represent 1% of all fractures and 8% of the fractures in elderly person approximately. The tibial plateau is clinically important area because this area contains menisci, ligaments and weight-bearing. The aim of this present study is to determine that morphometric analysis of the anatomical structures of the tibial plateau.

Methods: In our study, we examined totally eighty tibia bones (fourty right/fourty left tibia) in Akdeniz University Faculty of Medicine, Department of Anatomy Laboratory. We measured transverse and anteroposterior diamater of right and left tibial condyle, intercondylar area and transverse diamater of intercondylar eminence. We used Inox brand caliper to measure.

Results: Mean transverse and anteroposterior diamater of right medial condyle was measured as 2.87 cm–3.98 cm respectively. Mean transverse and anteroposterior diamater of left medial condyle was measured as 2.87 cm–4.21 cm respectively. In right lateral condyle, we measured mean transverse and anteroposterior diamater as 2.66 cm–3.7 cm respectively. In left lateral condyle, we measured mean transverse and anteroposterior diamater as 2.91 cm–3.77 cm respectively. Mean anteroposterior diamater of tibial plateau was measured as 4.55 cm in right tibia, 4.48 cm in left tibia. Mean transverse and anteroposterior diamater of right and left tibia of the anterior intercondylar area were measured as 1.65 cm–2.18 cm and 1.93 cm–2.06 cm respectively. Mean transverse and anteroposterior diamater of right and left tibia of the posterior intercondylar area were measured as 1.47 cm–1.62 cm and 1.54 cm–1.59 cm respectively. Mean transverse diamater of intercondylar eminence was measured as 1.13 cm in right tibia, 1.08 cm in left tibia.

Conclusion: We think that knowledge of the quantitative measurements of tibial plateau to specific fractures of condyle should be kept in mind during the knee artroplasty and also orthopedic surgeon.

Keywords: tibia plateau, proximal tibia, morphometric analysis, epidemiology

P-60

Pre-study report: facial asymmetry evaluation with photographic measurement in young Turkish population

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Objective: Facial symmetry's role in beauty and attractiveness of people has been argued for a long time. The prevalance of esthetic concerns especially among youth has increased the incidence of maxillofacial and plastic surgeons for compliance with the facial asymmetry. The aim of this study is to evaluate the normal facial asymmetry of the right and left side.

Methods: 41 volunteer students of İstanbul Medipol University, aged between 18–25 years participated in this study. Facial assymetry was evaluated with the participants' frontal images, photographed in anatomic position. ImageJ 1.50i programme was used to evaluate the right and left facial assymetry. Each measurement was repeated for three times by the same person and the mean value was taken in consideration. Nasion (N) and

subnasale (Sn) points were marked and a midline was drawn. The space between midline (L) and 8 different points in right and left (that is the top point of eye brow –Eup, endocanthion-En, exchocanthion-Ex, supraaurale-SpA, subaurale-SbA, alar curve – Ala, cheilion- Ch, gonion-G) and the space between G-pogonion (Pog) and G-N were measured in each photograph. SPSS 18.0 version was used for statistical analysis of right and left photographic evaluation of for assymetric index (AI).

Results: AI results were found between 1.34 (Ex-L) and 2.48 (SpA-L) in males and between 1.35 (Ex-L) and 2.20 (SpA-L) in females. No significant difference was found between the AI values of males and females ($p>0.05$). Significant difference was found only between SbA-L parameter in total 20 right and left space measurements among all participants ($p<0.05$).

Conclusion: Facial asymmetry data evaluation results show that there is assymetry among healthy, young adults in low and middle level. It is found that left side of the face is bigger than the right side in average for both genders. It is believed that the data of this pre-research will be of assistance to similar future researches.

Keywords: anthrpometry, morphometry, photographic analysis, assymetry index

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Assessment of head and neck development in in boys and girls with cerebral palsy aged between 12–18 using anthropometric measurements

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Objective: Our objective is to investigate head and neck circumference development in children with cerebral palsy (CP) by genders using anthropometric measurements.

Methods: This study was carried out 20 children (10 girls: 10 boys) with CP and normal children as control group (21 girls: 6 boys) at the same age. Anthropometric measurements taken by the tape measure around the child's head and neck. The results were compared between CP and control groups.

Results: Neck cicumference was statistically different between CP and normal (control) groups except for spastic CP ($p<0.05$). When children with damage to cerebellum and bazal nuclei compared to normal children, neck circumference was also statistically significant ($p<0.05$).There was not any statistically significant difference for neck circumference between spastic CP and normal groups. ($p>0.05$). So that, statistically significant differences only found for the children with cerebellar and bazal nuclei damage group and there was no significant difference for all other research groups. Head circumference values weren't statistically significant for both CP groups in comparison with normal children ($p>0.05$)

Conclusion: Head circumference anthropometric measurements did not show differences.

Keywords: cerebral palsy, anthropometry, head and neck, morphometry, gender differences

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Assessment of upper extremity development in boys and girls with cerebral palsy aged between 12–18 using anthropometric measurements

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Objective: Our objective is to investigate upper extremity development in children with cerebral palsy (CP) by genders using anthropometric measurements.

Methods: This study was carried out 20 children (10 girls: 10 boys) with CP and normal children as control group (21 girls: 6 boys) at the same age. Anthropometric measurements of the upper extremities were compared between CP and control groups.

Results: The parameters of left hand width (at level of thumb), right hand's length and width (at the level of the proximal ends of the metacarpal bones), right and left palm lengths were statistically significant between all study groups and normal (control) group ($p<0.05$). Comparison of children with cerebellum and basal nuclei damage with spastic CP children showed statistically significant differences for the parameters of right wrist circumference and width. Secondly, comparison of children with cerebellum and basal nuclei damage with normal children showed also statistically significant differences for the parameters of right wrist circumference and width at level of the thumb ($p<0.05$). When children with spastic CP compared to normal children, the parameters of right wrist width and hand length, right and left palm lengths were statistically significant ($p<0.05$). It was not found statistically significant difference between genders ($p>0.05$).

Conclusion: When the data obtained in our study are evaluated, distal upper extremity development in children with CP was found to be lesser than normal children. Cause of this diferrence could limit motor activity.

Keywords: cerebral palsy, anthropometry, upper extremity, morphometry, gender differences

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Determination of motor hand grip strength and body composition in healthy children

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Objective: In our study, it was aimed to determine body composition of children age between 3–6 years with objective measurement methods. Also elbow-knee joint diamater, head-neck and arm-thigh circumference were performed because of evaluating the normal motor development, growth and nutrition of children at this age. So, it was aimed to help to compose or develop normal standards and to make a contribution to the literature.

Methods: 73 healthy individuals age between 3–6 years (34 males, 39 females) were included to our study. Anthropometric

measurements were performed to determine the body composition of children included in the study. From these measurements, the head - neck, arm - thigh circumference measurements and elbow - knee joint diameter measurements, hand motor grip strength and subcutaneous fat thickness were calculated. Also, while Mitutoyo vernier caliper was used for the diameter measurements, inflexible tape measure was used for circumference measurements. Moreover, hand motor grip strength was measured by Lafayette 78010 hand-held dynamometer. From these measurements, minimum, maximum, mean and standard deviation were obtained. Statistical analysis of the data by Pearson Spearman correlation analysis and Independent Samples T test was performed using the SPSS software package 21.00. The study was approved by "Non-invasive Clinical Research Ethics Committee" to make measurements at children aged 3–6 years in the study. Moreover, "Voluntary Informed Consent Form" was signed to families of the children who are included in the study before making measurements.

Results: When girls and boys are compared in terms of (age, body weight, height and BMI) demographic data, age, body weight, height and Body Mass Index-BMI of girls were measured respectively 4.41 (0.91) years, 18.90 (3.70) kg, 106.90 (7.04) 16.45 cm (2.07) kg/m^2 and the same parameters of boys were measured 4.50 (0.90) years, 18.82 (3.52) kg, 108.40 (7.14) and 15.89 cm (1.44) kg/m^2 respectively. Significant difference was not found between the genders in terms of demographic data ($p>0.05$). Significant difference was found between genders in terms of arm circumference measurement and hand motor grip strength ($p<0.05$). Significant difference was not found between the genders in terms of the other measurement parameters ($p>0.05$).

Conclusion: Development is similar in both genders. As known, difference may arise between the genders are seen from puberty period in development process.

Keywords: body composition, nutrition, development and anthropometry

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Body mass estimation in young adults: a preliminary study

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Objective: During the evaluation of skeletal remains available from anthropological excavations besides age and stature, body mass is also of importance for the researcher, especially to determine the nutritional habitudes and lifestyle of the ancient populations. Besides in forensic cases body mass estimation is also important for the identification of incomplete corpses. There are various studies on body mass estimation. Even though equations based on skull dimension for body mass estimation were calculated it is generally agreed that postcranial features which have a more direct relationship to body size are better for body mass estimation. Depending on the cylindrical model of human body Christopher Ruff calculated equations depending on body height and biiliac width for estimating body mass and had accurate results. Since the main of Ruff was doing predictions for skeletal populations his studies were commonly on thin and muscled individuals. The aim of the present study is to evaluate the validity of Ruff's method depending on stature, shoulder and heap widths on inactive and sportive individuals.

Methods: 82 inactive and 67 sportive, a total of 149 male subjects were participated to the study. Besides socio-demographic variables, stature and body weight, biacromial and biiliac widths of the subjects and biceps, triceps, subscapular and suprailiac skin fold thicknesses of the individuals were measured. Descriptive statistics were calculated for all the variables. Lean Body Mass (LMB) was calculated by using formula reported in Kulkarni B (2013). Regression models were established to predict body mass and LBM for the whole sample and separately for inactive and sportive groups using stature, biiliac and biacromial as the independent variables.

Results: Regression models contributed to predict body mass for both inactive and sportive groups were statistically significant with a confidence interval of 99%.Coefficient of determination of the modelswere $R^2_{inactive}$= 0.555 and $R^2_{sportive}$=0.550 respectively. Correspondinglyfor LBM prediction was $R^2_{inactive}$= 0.730 and $R^2_{sportive}$=0.821 respectively. The independent variables in the models explain high percent of the variation in the dependent variable and the models fit the data especially in case of LBM considered as the dependent variable.

Conclusion: The method by Ruff indicates acceptable results for body mass estimation especially for young and active adults.

Keywords: body mass, Lean Body Mass (LBM), stature, shoulder width, heap bone width

P-65

Investigation of relationship between breast volume and body composition on female students

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Objective: The female breast position, shape and size could be variable between people and races. Woman breast volume may be variable according to the breast tissue, age, body composition and the weight exchanges. Knowing the breast volume and breast measurements will facilitate the work of plastic surgeons and will be useful in the cosmetic industry manufactured bra, making more comfortable products for women. The aim of this study is investigate the relationship between breast size and body composition parameters in adult, healthy, unmarried women to calculate breast volume and breast capacity.

Methods: A total of 93 healthy volunteers (18–24 age range female) were include in this study. People were informed about the study and informed consent was received. To calculate the breast volume on each volunteer for the right and left breast we made four measurements which include breast projection (BP), breast medial radii (BMR), breast lateral radii (BLR), nipple

inframammarial sulcus distance (NIR). Breast volume was calculated by the following Formula BV=1/3*3.14*BP2* (BMR+BLR+NIR-BP). For measuring's stretch tape measure millimeter (baseline circumference) was used. Additionally, with the help of body composition analyzer InBody 720; Body Mass Index (BMI), Skeletal Muscle Mass (SMM), Percent Body Fat (PBF), Body Fat Mass (BFM), Body Mass Weight (BCM) was measured. The obtained data were analyzed by computer program SPSS (version 18.0). According to the result of Kolmogrov Smirnov tests, data were abnormally distribution so that we used data as median (25–75) percentile. The comparisons between right and left breast volume investigated with Mann Whitney U test. Also body composition parameters and breast volume relationships investigated with Spearman Correlation Analyzes.

Results: Right breast volume (RBV); 199.95cc (165.50–232.25cc), Left breast volume (LBV); 200.90cc (171.99–231.35cc), BMI; 20.70 kg/m^2 (18.80–23.45 kg/m^2), BCM; 26.50 kg (24.70–29.65 kg), PBF; 24.50 kg (19.50–31.00). BFM; 13.80 kg (10.00–18.45 kg), SMM; 22.10 kg (20.70–25.00 kg) were found. According to the result of Man Whitney U tests there have been no significant differences between right and left breast volume ($p>0.05$). According to the Spearman correlation test results, we observed too low correlation between body composition measurements and breast volume ($r<0.2$).

Conclusion: Some of breast cancer cases result in loss of breast. For these conditions surgeons make esthetically breast reconstruction surgeries in post-mastectomy patients. Our results will be useful in aesthetic surgery of the breast prosthesis calculation for measuring perfect breast shape. Also these measurements will be helpful in cosmetic industry, manufactured bra, making comfortable products for women.

Keywords: breast volume, body composition, body mass index

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Morphological and topographical anatomy of nutrient foramina in human patella bones and their surgical importance

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Objective: To study the morphology and topography of nutrient foramina and to determine the foraminal index of the patella bones.

Methods: In our study, 50 os patella obtained from the bone collection of Department of Anatomy, Akdeniz University, Faculty of Medicine were evaluated. The bones had gross morphologic deformities were excluded from the study. The dominant NF determined and the bones were macroscopically observed under the stereomicroscope according to the number, location and direction of the NF. The total patella length (TL; maximum distance from proximal to distal end of the bone) and the distance from the proximal end of the bone to the NF (DNF) were measured.

Results: According to measurements of TL and DNF at left and right patella averages were 3.97±0.24 / 3.78±0.49 and 2.12 ±0.50/9.089±0.48 respectively. The mean foraminal index for the patella bones were 57.25% for the right patella, whereas the left patella of the foraminal index were 52.42%.

Conclusion: The study has provided additional information on the morphology and topography of nutrient foramina in patella bone. The knowledge about these foramina is useful in certain surgical procedures to preserve the circulation.

Keywords: nutrient foramina, foraminal index, morphology, patella

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Anatomy of fovea capitis femoris in Turkey and comparison with the femur of the early Byzantine

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Objective: To compare the fovea capitis femoris with the femurs from the Byzantine period.

Methods: In our study, Akdeniz University University School of Medicine have not encountered a deformed anatomy lab 50 femur (25 right and 25 left) and from the Byzantine period, the femur of the fovea capitis femoris in longitudinal, made the measurement using the transverse diameters INOX caliper. In addition, the fovea capitis femoris in shape and morphology were evaluated localization.

Results: Fovea capitis femoris measurement of the longitudinal and transverse diameters, respectively; the left and right of the Turkish population fovea capitis femoris in longitudinal and transverse diameters average: 1.11 cm/1.45 cm–1.16 cm/1.46 cm. Early Byzantine period between the right and left fovea capitis femoris in longitudinal and transverse diameters average: 1.20 cm/1.36 cm–1.24 cm/1.42 cm. The shape and location of the Turkish population: 65% oval will 85posterior-inferi% Early Byzantine period between the shape and location of the fovea capitis femoris: 73.91% specimen was found to be 86.95% of posteriorinferiori.

Conclusion: In our study, Turkey and the Byzantine period, the fovea capitis femoris shape the information we have provided for both the localization, we think it is worth the tips to be considered for surgical procedures, but also to work in anthropological sciences will contribute.

Keywords: fovea capitis femoris, Turkish population, early Byzantine, anthropology

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Hand dominancy between normal and congenital deaf female students

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Objective: There are many functional asymmetries such as hand dominancy and hearing asymmetry depending on the hemispheric asymmetry of human brain. Many genetic and environmental factors are being blamed for hand dominancy. In this study we aimed to compare the hand dominancy rates between the students who were congenitally deaf and no loss of hearing in order to determine the dominant hemisphere in deaf individuals.

Methods: The rate of hand dominancy between 44 congenitally deaf and 137 normal female students were compared. The hand dominancy was determined by using "Edinburgh Handedness Inventory" and "Geschwind Scoring System". Statistical analysis was done after subgrouping students as right-handed, left-handed and using both hands with no hand dominancy

Results: Forty of 44 deaf female students (90.9%) had right hand dominancy whilst 4 (9.1%) were left-handed with no individuals using both hands in this group. In normal student group, 130 of 137 (94. 9%) were right-handed, 3 (2.2%) were left-handed and 4 (2.9%) were using both hands a strong but insignificant difference was detected for left handedness in congenital deaf group (p= 0.065).

Conclusion: The left hand dominancy was higher in deaf students than ones with no loss of hearing. The high rate of left hand dominancy in deaf individuals conceived the functional asymmetry depending on the high probability of dominant right hemisphere in these patients

Keywords: congenital deafness, hand dominancy, hemispheric asymmetry, left-handedness

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The evaluation of nutrient foramina in ulnae in terms of surgical applications

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Objective: There are some holes in ulna called "nutrient foramen" through which arteries nourishing the bone pass, as in the case with all long bones of extremities. Nutrient arteries that reach the medullary cavity by passing through this foramen are important in the development stage of the embryo and fetus and the early phase of ossification. Ulna is a bone that is used as a bone graft in surgical treatments such as mandibular reconstruction or nasal reconstruction. Therefore, the blood supply of ulna is clinically important for operations on the distal end of ulna and autograft applications.

Methods: A total of 12 right and 18 left ulna of a human skeleton present in the laboratory of the Department of Anatomy at Pamukkale University were examined in terms of vascular foramen and nutrient foramen. The nutrient foramens were counted and the diameters were measured in each bone.

Results: There were two nutrient foraminas in 3 of ulna and a single nutrient foramen in the other 27 bones. All nutrient foramens were in facies anterior of ulnae. Many vascular foramens of varying sizes in the distal and proximal ends of the bones were found in the bones where there were no nutrient foramina. The diameter of each nutrient foramen was measured. The mean diameter of all the nutrient foramens was measured as 1.36 mm. In this study, the bones were divided into two parts as upper and lower half parts. Totally, 92.9% of the nutrient foramina in the right ulna were observed to be in the upper half part while 7.1% of them were observed to be in the lower half part. All of the nutrient foramina in the left ulna were found to be in the upper half part. The distance of the holes to the proximal edge was measured. The mean value for this distance was calculated as 8.1 cm.

Conclusion: This study indicates that the place, number, and size features of the nutrient foramens in the ulna have variations. The knowledge of the variations and blood supply properties of the ulna used as the graft is important to avoid complications after surgery.

Keywords: ulnae, nutrient foramen, vascular foramen

P-70

Stereological morphological analysis of foramen magnum on dry skulls

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Objective: We aim to obtain anatomical anthropological, criminal and clinical contribution via evaluating foramen magnum morphology and morphometry on dry skulls.

Methods: Anatomical features of Foramen magnum such as shape, width, length, foramen magnum index and stereological surface area measurements were evaluated on 150 Adult skull bones. During stereological analysis, a uniform point-grid with a point associated area of 0.25 cm^2 was randomly superimposed on each foramen magnum of dry skulls. To obtain surface area of foramen magnum using stereological technique, the point counts are converted into section areas by multiplying the total number of counted points by the square of the sequential 2 points distance. The shape of foramen magnum was defined according to foramen magnum index which was calculated by dividing length by width of foramen magnum. Foramen magnum was fined equal or greater than to 1,2 the shape of the foramen magnum was accepted as oval; and less than 1, 2, the shape was accepted as round.

Results: Anatomical features of foramen magnum such as shape, width, length, foramen magnum index and stereological area measurements were measured. According to estimated foramen magnum index of the 150 adult dry skulls, 87 of skulls were defined as being round in shape and 63 of skulls were defined as being oval in shape. Whole descriptive data were obtained and evaluated statistically.

Conclusion: We conclude that findings of the present study may provide additional knowledge on morphological data of

foramen magnum and may contribute researchers dealing with neurosurgery, forensic medicine, anatomy and anthropology in their expertise area.

Keywords: foramen magnum, cranium, morphometry, stereology

P-71

The anthropometric measurements of nose for clinical approach

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Objective: The nose is a peripheral olfactor organ and upper respiratory tract. Since the nose is located on the center of face, its shape and proportion makes a great contribution to the face aesthetics. Moreover, nose-induced breathing problems (sleep apnea) have negative effects not only on sleep but also on behavior and daily activity. Septal deviation is a health problem which usually assessed by ear nose and throat specialists while aesthetic and plastic surgeons treat both inside and outside of the nose as a whole. Non-surgical rhinoplasty (filler rhinoplasty) is a noninvasive procedure including the filling of depressed areas, lifting the angle of the tip or smoothing of the nose bridge. This is not only a cosmetic procedure but it is used to correct functional problems with the nose, such as breathing difficulties. Since anatomic and morphologic features of nose varies according to race, ethnic groups, age and gender, the knowledge of anthropometric data and variations of the nose helps the surgeon to schedule of operation plan and to prevent undesired surgical results. Therefore, in this study, it is aimed to gather anthropometric data and to classify the nose types based on Martin & Sallar's classification.

Methods: In this study, nose anthropometric measurements were obtained from 60 adults (30 males and 30 females) aged between 18–71 years. Measurements which were performed by using caliper are; nasal length, nasal bridge length, nostril length, nasal height, morphologic width of nose, anatomic width of nose, nasal root width, superior and inferior nostril length, maximum face width and nasal depth. Based on these measurements; external nasal surface areas, nasal volumes, nasal index and nose-face width index were calculated.

Results: The mean values of measurements (in mm) were: Nasal length=1.8±5.97, 51.77±7.05; nasal bridge length= 51.61±5.05, 49.50±5.34; left nostril length=17.34±2.77, 14.83±2.33; right nostril length=17.01±3.07, 14.89±2.17; nasal height=56.35± 4.61, 55.46±5.45; morphologic nasal width=37.07±4.74, 34.30± 5; anatomic nasal width=28.98±3.44, 26.52±3.68; nasal root width=15.79±2.30, 14.67±2.80; left superior nostril width= 8.38±2.22, 6.41±1.47; left inferior nostril width=6.90±2.34, 6.04±1.59; right superior nostril width=8.26±2.46, 6.76±1.36; right inferior nostril width=6.67±2.19, 6.16±1.55; maximum face width=121.85±8.04, 118.34±7.12; nasal depth=23.82±2.88, 20.28±3.6 (for male and female respectively). External nasal surface area=2188.93±291.57, 1787.48±272.39 mm^2 and nasal volume=6791.60±2678.65, 5733.53±2093.10 mm^3. The most common nose type was Leptorrhine.

Conclusion: It is expected that the findings of this study will make a contribution to the literature and they will be found useful by ear nose and throat specialists and by aesthetic and plastic surgeons.

Keywords: nose, anthropometry, morphometry of the nose, nose type

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Regression formulas for prediction of size of surgical structures of posterolateral structures of the knee

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Objective: To evaluate statistical predictability of the size of the surgical structures of lower limb regarding posterolateral corner of the knee detected before surgical procedures.

Methods: Average 66.9±18.9 (ranging between 45–104 years) years old ten male cadavers were dissected bilaterally in the anatomy laboratory of Mersin University. The correlation of extremity and leg lengths with certain reference points was evaluated. The regressions of extremity and leg lengths, distances of lateral epicondyle-head of fibula and Gerdy's tubercle-head of fibula with morphometries of tendo popliteus, lateral collateral ligament and popliteofibular ligament were determined. Also, regressions of certain distances of some measurements indicating the location of common peroneal nerve and inferior lateral genicular vessels were investigated. Shapiro Wilk test was used for control the normality of continuous measurements. The relationship between these variables was tested by Pearson's correlation coefficient. The hierarchical regression analysis was used to define the continuous variables considered to affect a variable to describe the relationships of cause and effect results. Statistical significance was considered as $p<0.05$.

Results: According to the regression analysis results; To describe the length of popliteofibular ligament, limb length was the only variable to be explained in the model and found to be statistically significant (p=0.041). To describe the width of popliteofibular ligament; width of popliteus tendon and the distance between Gerdy's tubercle and head of fibula were the variables of the model and found to be statically significant (p=0.02). The formulas of "Length of popliteofibular ligament=25.528–0.020 lower limb length" and "Width of popliteofibular ligament=5.31–0.348+thickness of tendo popliteus+ 0.595 distance between Gerdy's tubercle –head of fibula" were unveiled. Also, the formula of "distance between inferior lateral genicular vessels-head of fibula=3.689+0.606 distance between Gerdy's tubercle-head of fibula" were explained (p=0.034).

Conclusion: By this study, statistically significant regression formulas were demonstrated during estimation of morphometric properties of popliteofibular ligament regarding length and width parameters, known to carry clinical significance in the posterolateral corner of the knee surgeries. Also, by using distances between certain bony structures, useful regression formula was found to estimate the position of inferior lateral

genicular vessels. It was expected that these results may contribute to design the most appropriate graft instead of injured popliteofibular ligament during reconstruction.

Keywords: lateral collateral ligament, popliteofibular ligament, length of extremity, regression, correlation.

P-73

Numerical and topographical study of major nutrient foramina (MFN) of long bones of the lower extremity

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Objective: The primary blood supply to long bones is through nutrient arteries. These arteries are using nutrient foramina (FN) to get into the bones. The understanding of localization of these foramina can give critical clues in situations like; maintain circulation in bone during microvascular bone transfer; correct prediction of recovery period related to distance between fractures and FN. However, there are a lot of FN in a long bone that can cause problems. The present study is based on determination of the localizations of major nutrient foramina (MFN) which are foramens that have relatively larger diameter.

Methods: This study was performed on 144 lower extremity long bones. All bones were obtained from the department of anatomy, university of Osmangazi. Total bone length (TL) was determined by measuring from proximal to distal. Only MFNs were measured. Foramina those diameters are larger than 1 mm on femur and tibia are determined as MFN; for fibula those larger than 0.5 mm. Determined MFNs were investigated in number and localization.

Results: Totally 50 femura were measured and the mean length of them were detected as 436.8 mm. One of them had 3, 12 of them had two MFNs. All detected MFNs were located on the posterior surface. 53% of all MFNs were on the second 1/3 of femur. 55% of all MFNs were on the linea aspera. Mean distance between MFN and proximal endpoint (PU) was detected as 206.2 mm and the proportion of this data to total bone length (foraminal index, FI) was 47.14. Mean total length of tibiae was calculated as 360.2. Whereas 1 of them had 2 MFNs, 4 of them had no MFN. All MFNs were observed on the posterior surface. All MFNs were found on the upper half of the bones and 82% of all MFNs were detected on the fourth 1/10 of the tibia. Mean PU was detected 118.2 and FI was 32.6. While 14 of 44 fibulae had no MFN, 4 of 44 had 2 MFNs. Mean TL of fibulae was calculated as 351.7 mm. 68.5% of all MFNs were on posterior surface. Except one of them, all MFNs were on the second 1/3 of the fibulae. Mean PU was 172.5 and FI was 48.5.

Conclusion: Most of MFNs were on the posterior surfaces. It may be related to the course of the great vessels. It should be noted that in the leg, MFNs were located on the same side where powerful extremity muscles are.

Keywords: foramen nutricium, nutrient arteries, lower extremity, long bone

P-74

Morphology and topography of the nutrient foramen on the humerus, radius and ulna

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Objective: Nutrient arteries pass through the nutrient foramina and supply the bones. Nutrient foramina of bones are useful in surgical procedures such as micro vascular bone transfer in order to preserve the circulation.

Methods: In this study, 150 upper limb long bones, which included 50 humerus, 50 radius and 50 ulna, were examined. All bones were obtained from Department of Anatomy, Faculty of Medicine, Eskişehir Osmangazi University. The age and sex characteristics of the bones were unknown. Nutrient foramina bigger than 0.5 mm diameter were considered as major nutrient foramina (MFN), while smaller foramina were accepted as minor nutrient foramina. We used only MFN on bones. We determined total bone length (TL) by measuring from proximal endpoint to distal endpoint and dominant nutrient foramina distance (DFD) by measuring from proximal endpoint to MFN. The location of MFN was determined by calculating a foraminal index (FI) using the formula: FI= (DFD/TL) ?100

Results: Among 50 humeri, 33 humerus had single MFN, 2 had double MFN and the rest had no MFN. In turn, the mean TL, mean DFD and mean FI of femurs were 310.2 mm, 175.5 mm and 55.7%. MFN of the humerus were located mostly on anteromedial surface. Among 50 radii, 37 radius had single MFN, 1 had double MFN and the rest had not MFN. The mean TL, mean DFD and mean FI of radius were 227.6 mm, 81.5 mm and 35.9%. MFN of the radius was located generally on the anterior surface. Between 50 ulna, 41 ulna had single MFN and the rest had not MFN. The mean TL, mean DFD and mean FI of femurs were 249.9 mm, 95.8 mm and 38.3%. MFN of ulna were located commonly on the anterior surface.

Conclusion: The aim of this study was to provide information about location of the nutrient foramina on humerus, ulna and radius, for clinicians and researchers. The location of MFN on humeri was mostly on the 4/6 distal part of the anteromedial surface while for radius and ulna MFN was commonly located on the 3/6 upper part of the anterior surface.

Keywords: radius, ulna, humerus, foramen nutricium, location

P-75

Evaluation of the clinical anatomy of asterion morphometry

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Objectives: The asterion is defined as the junction of lambdoid, parietomastoid, and occipitomastoid sutures. Asterion, which is an

important anthropometric landmark, should be considered for lateral surgical approaches to posterior cranial fossa. In terms of surgery, accurate localization of transverse-sigmoid sinus complex is significant and this junction has very close relationship with asterion. This study aimed to examine the accurate anatomical localization of asterion by using some palpable anatomical landmarks which will help to surgeons during surgical interventions.

Methods: Twenty dried adult human skulls were obtained from Hacettepe University Section of Anthropology for this study. These skulls were in between 18–50 years of age. 11 of them were male and nine of them were female skulls. Measurements were made by using a digital calliper. Distances in between the asterion and apex of mastoid process, the posterior root of zygomatic arch, external occipital protuberance, lambda were measured. The statistical analysis of all these morphometric measurements was done in order to compare the results.

Results: A total of 40 asterions were considered in twenty dried skulls. Distance from the left side of mastoid process to asterion was 43.64±6.75 mm, on the right side it was 45.01±6.04 mm. The distance from asterion to the left side of posterior root of zygomatic arch was 43.97±7.37 mm, on the right side it was 43.95±7.02 mm. The distance from external occipital protuberance to asterion on the left side was 62.59±8.83 mm, on the right side it was 64.75±5.57 mm. The distance from lambda to asterion was 81.40±7.36 mm on the left side and it was 82±4.96 mm on the right side. Secondly; relationship in between the asterion and dural venous sinuses was also detected. In 84% of cases, the asterion was found at the junction of tranverse and sigmoid sinuses. In 12% of cases, it was behind the junction of sinuses and in 4% of cases, asterion was above the junction of these sinuses.

Conclusion: The surgical interventions from the posteroinferior part of asterion are very important in the surgery of transverse and sigmoid sinuses. The findings obtained in this study will be very helpful to the surgeons during their microvascular surgical manipulations.

Keywords: Asterion, morphometry, cranium, anatomy, skull

P-76

Clinical importance of the morphometry of greater and lesser palatine foramina

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Objectives: Exact location of greater and lesser palatine foramina is rarely described. From greater (GPF) and lesser (LPF) palatine foramina passes important structures. Damage to them leads to severe hemorrhage and necrosis. According to anatomical studies, they seem to be various. It is important to determine morphometry of GPF and LPF for helping to surgeons during palatal surgery.

Methods: Study was done on twenty dry human skulls (10 male, 10 female) from Section of Anthropology, Hacettepe University. Measurements were performed bilaterally by a digital caliper. GPF was detected according to localization, number, relations to maxillary molars, anteroposterior and mediolateral diameters, distances between each foramen and midline maxillary suture (MMS), posterior palatal border (PPB), incisive foramen (İF). LPF was examined quantitatively.

Results: Localization of GPF on left in males were on palatine bone 50%, at junction of palatine and maxillary bones 50%. In females; these were 30% and 70%, respectively. Localization of GPF on right in males were on palatine bone 40%, at junction of palatine and maxillary bone 60%. In females; these were 10% and 90%, respectively. GPF was found as single foramen in all cases. Position of GPF in relation to maxillary molars on left side in males were in between 2nd-3rd molars 30%, 3rd molar 70%; in females in between 2nd-3rd molars 10%, 3rd molar 70%, distal to 3rd molar 20%. Positions of GPF in relation to maxillary molars on right side in males were in between 2nd-3rd molars 20%, 3rd molar 50%, distal to 3rd molar 30%; in females in between 2nd-3rd molars 30%, 3rd molar 70%, distal to 3rd molar 20%. Mean measurements in millimeters were as follows: Anteroposterior diameter of GFP on left side 5.73±1.59 in males and 4.54±1.22 in females; on right side 5.14±1.22 in males and 4.05±1.16 in females. Mediolateral diameter of GFP on left was 3.98±1.15 in males and 3.39±0.75 in females; on right side 3.90±0.93 in males and 3.30±0.57 in females. Distance between GFP and MMS on left was 15.21± 1.14 in males and 15.94±1.89 in females; on right side 15.72± 1.43 in males and 16.03±1.60 in females. Distance between GFP and PPK on left was 7.05±1.43 in males and 7.10±2.13 in females; on right side 7.12±1.42 in males and 6.44±2.25 in females. Distance between GFP and FI on left was 38.49±2.73 in males and 38.26±2.51 in females; on right side 39.84±3.55 in males and 38.95±2.75 in females. LPF on left sides occurred as a single 60%, double 40% in males and as a single 40%, double 50%, triple 10% in females. LPF on right sides occurred as a single 60%, double 40% in males and as a single 80%, double 10%, triple 10% in females.

Conclusion: Better understanding of the morphometry of GPF and LPF is helpful for the surgeons in order to avoid hemorrhages and procedures of anesthesia.

Keywords: greater palatine foramen, lesser palatine foramen, morphometry, midline maxillary suture, anatomy

P-77

Morphometric evaluation of the relationships in between the pharyngeal tubercle and foramina in cranial base

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Objectives: Base of the cranium is one of the most important regions to be studied because of its complex structure and its anatomical relations with the important anatomical structures. The pharyngeal tubercle is one of the important anatomical

landmarks in base of the cranium because of its easily recognition in radiographies. In the study; the morphometric measurements in between the pharyngeal tubercle (PT) and major foramina were studied for helping to the surgical procedures of the region.

Methods: The study was performed in 18 craniums of Anthropology Section of Hacettepe University. The ages of the craniums were in between 18 and 50 years. 12 of them were males and 6 of them were females. The measurements were done by using a digital calliper. The distance of pharyngeal tubercle (PT) to the following anatomical landmarks were measured morphologically: Most anterior and most posterior point of foramen magnum, the most anterior and most posterior point of jugular foramen, distances to the foramen ovale, foramen spinosum and stylomastoid foramen were measured morphologically.

Results: The measured 12 parameters were consisted of the distances in between the pharyngeal tubercle and the five anatomically important foramina. The average values which is the descriptive statistics of resulting measurements, mean, standard deviation, maximum and minimum values were calculated by using SPSS version 22. The distance of PT to the most anterior point of foramen magnum was 11.37±1.73 mm and to the most posterior point 45.71±3.53 mm. On the left side; the distance of PT to the most anterior point of jugular foramen was 24.83±3.43 mm and on the right side it was 25.48±3.44 mm. On the left side; the distance of PT to the most posterior point of jugular foramen was 35.87±3.69 mm and on the right side it was 37.9±3.03 mm. The distance in between the left foramen ovale and PT was 29.07±2.31 mm and on the right side it was 28.82±2.05 mm. The distance in between the left foramen spinosum and PT was 29.99±1.89 mm on the left side and it was 30.72±2.17 mm on the right side. The distance in between the left stylomastoid foramen and PT was 42.86±3.04 mm and it was 43.57±2.18 mm on the right side.

Conclusion: The pharyngeal tubercle is an easily recognisable anatomic landmark. Its morphometry with the important foramina of the base of cranium will help to the surgeons during the surgical procedures.

Keywords: cranial base, pharyngeal tubercle, cranium, morphometry

P-78

The relationship between finger length rates (2D:4D) and quantitative, verbal talent

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Objectıve: The aim of this study was to investigate the relationship between 2D: 4D (ratio of second finger length to fourth finger length) finger length ratios of mainly studying in verbal and quantitative weighted concepts students and quantitative, verbal talents and to determine the correlation of these ratios with some anthropometric measurements.

Methods: For this purpose; hand length, hand width, lengths of second and fourth finger and waist, hip and neck circumferences were taken from totally 264 (134 women, 130 male) students, aged 17–27 years, by using millimetric calipers and non-elastic standard measuring tape. Demographic data were also taken. Moreover, body mass index (BMI) and 2D: 4D finger length ratios of study group were calculated.

Results: The mean values of hand length-width, lengths of the second and fourth fingers and 2D: 4D were found 17.83±0.72 cm (right), 17.89±0.71 cm (left), 77.65±4.58 mm (right), 76.70±4.3 mm (left), 67.57±3.99 mm (right), 67.65±4.06 mm (left), 68.30±3.59 mm (right) 68.06±3.56 mm (left), 0.99±0.03 mm (right), 0.99±0.03 mm (left), respectively in women studying quantitative weighted concepts, while the same measurements were 17.71±0.78 cm (right), 17.8±0.69 (left), 78.07±2.83 mm (right), 77.07±2.77 mm (left), 67.54±3.70 mm (right), 67.51±3.78 mm (left), 67.69±4.53 mm (right), 67.94±4.29 mm (left), 1±0.04 mm (right), 1.1±0.03 mm (left) respectively in women studying verbal weighted concepts. The same values were found 18.93±0.92 cm (right), 18.91±0.92 cm (left), 87.09±4.58 mm (right), 86.36±4.54 mm (left), 72.70±4.30 mm (right), 72.88±4.21 mm (left), 72.99±4.53 mm (right), 73.19±4.09 mm (left), 0.97±0.04 mm (right), 1±0.03 mm (left) respectively in men studying quantitative weighted concepts, while the same measurements were 18.79±0.83 cm (right), 18.94±1.01 cm (left), 86.70±4.09 mm (right), 85.99±4.24 mm (left), 71.90±4.48 mm (right), 72.22±4.56 mm (left), 72.48±3.95 mm (right), 72.38±4.10 mm (left), 0.98±0.04 mm (right), 0.99±0.04 mm (left) respectively in men studying verbal weighted concepts. Additionally, the average of BMI values for women studying in quantitative and verbal weighted concepts and men studying in quantitative and verbal weighted concepts were found 22.23±3.46 kg/m^2, 19.92±1.60 kg/m^2, 24.13±3.23 kg/m^2, 23.71±2.98 kg/m^2, respectively.

Conclusion: We think that the data obtained in this study could be a quide for planning of career goals of persons according to their quantative and verbal talents.

Keywords: finger length rates, quantitative, verbal talent

P-79

The determination of the carrying angle in healthy subjects

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Objective: The carrying angle which is defined as the acute angle made by the median axis and fully extended arm and supinated forearm, becomes even more important in ergonomics, manual terapy, the elbow implantation, orthopaedic reduction and surgery because of restoration of the elbow joint range of motion. Therefore, it is aimed to research the means values of the carrying angle parameters in our young population.

Methods: The study group consisted of 204 healthy medical students (94 women, 110 men) aged 18–25 years and carrying angle, arm-forearm length, bi-trochanteric diameter and bi-acromial diameter measurements were performed with tape

measure, pelvimeter and universal goniometer. Additionally, demographic data were taken.

Results: The mean values of subjects including age, weight and height in this study were found as 19.43±1.53 years, 56.86±9.05 kg and 164.28±5.36 cm in women respectively, whereas the same values were 20.95±5.89 years, 74.65±10.11 kg and 178.42±6.31 cm in men respectively. Moreover, the mean values of carrying angle, forearm length and arm length were found as 13.46º (right), 12.82º (left); 24.58 cm (right), 24.28 cm (left) and 30.30 cm (right), 30.01 cm (left) in women, whereas in men the same values were established as 9.72º (right) 8.98º (left); 27.57 cm (right), 27.17 cm (left) and 34.58 cm (right), 34.33 cm (left). Additionally, bi-trochanteric and bi-acromial diameter measurements were to be 33.16±2.44 cm and 36.78±1.97 cm respectively in women, 33.91± 1.99 cm and 41.84±2.26 cm in men respectively.

Conclusion: As a result, we believe that this study could be helpful for having fully range of motion in elbow joint, designed hand equipments and to determine the anatomic parameters about ergonomics. Moreover, we think that our values will make a significant contribution to literature for minimize the complications. This project was supported by the Unit of Scientific Research Projects in Çukurova University.

Keywords: carrying angle, arm and forearm length, bi-trochanteric, bi-acromial diameter

P-80

The comparison of muscle strength evaluation methods in healthy subjects

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Objective: The hand region besides the importance of ergonomics, becomes even more important in the motion of the fine motor skills, hand implantation and orthopaedic surgery for determining the value of the muscle strength should be in this area. Therefore, it was aimed to research the mean values of the muscle strength parameters in our young population.

Methods: The study group consisted of 104 (57 men, 47 women) healthy subjects aged between 18–25 years. Muscle strength evaluation of wrist, hand and thumb were performed to determine the physical fitness level using NMMT and manual muscle test.

Results: The mean values of age, weight, height and body mass index (BMI) were 19.06±1.05 years, 59.77±10.08 kg, 165.15± 8.67 cm and 21.84±2.72 kg/m2 in women respectively, whereas, the same values were found as 20.77±1.56 years, 73.16±10.18 kg, 176.96±6.37 cm and 23.35±2.99 kg/m^2 in men respectively. Moreover, when the weight, height and BMI parameters were compared in terms of gender, there was significant difference as statistically ($p<0.05$), while there was no difference according to age ($p>0.05$). Furthermore, there were significant differences in all parameters (exclude left thumb extension, right and left thumb adduction and right radial deviation) between two genders. All muscle strengths were higher in men than in women. However, according to the manual muscle test results, significantly difference was seen in some parameters excluding left wrist flexion and right –left thumb extension.

Conclusion: We think that our data will give critical support to parameters about this field. Because, there is not study enough about NMMT using in hand region. Moreover, we believe that this obtained data will help the identification of problems in the hand region for evaluation of the treatment effects of rheumatology, orthopaedics, rehabilitation, tools equipments and ergonomics.

Keywords: Nicholas manual muscle tester, ergonomy, muscle strength

P-81

Preliminary study of photographic measurement of the head and neck posture on health high school students

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Objective: In this study, we aimed to determine the relationship between working status, phone and computer using, ergonomic conditions, head, neck pain and postural changes on health high school students.

Methods: This study was performed on 50 volunteer students of Afyon Kocatepe University Health High School, whose age range is 18–24. Participants was photographed from 160 cm distance in the frontal view and 200 cm distance on the right side view in the standing position. Head angle (eye-ear-vertical), neck angle (ear-C7-vertical), craniocervical angle (eye-ear-C7) and protraction-retraction angle (c7-shoulder-transverse) were measured. Measurements were performed in Fiji Imagej program on the Windows 10 software. Statistical analysis was made using frequency, chi-square, mean±SD and Pearson's correlation test via SPSS 17.0 software. The level of significance was set at $\alpha=0.05$.

Results: Average age of students is 20±1.32; 76.5% are female and 86.3% aren't working. In the study, 54.9% of participants use phone 3–6 hours per a day, 86.3% use computer less than 2 hours, 60.8% sit in the chair 3–6 hours. 64.7% of students aren't paying attention to ergonomic conditions while sitting in the chair. Students head angle, neck angle, craniocervical angle and protraction-retraction angle was found to be 71.6±6.5; 44.1±4.5; 152.4±7.4; 125.9±10.9 respectively. A weak positive relationship was detected between age, working status and protraction-retraction angle, statistically ($p<0.05$; $r=0.3$). When neck pain was compared in terms of gender, female were found to be more likely to neck pain ($p<0.05$). A negative moderate relationship was found between ergonomic status, head and neck pain, statistically ($p<0.05$; $r=0.395$).

Conclusion: Increasing age and working may lead to development of round shoulder. Therefore doing posture exercises at early age by health high school students can prevent posture disorders. Also the incidence of neck pain may increase in

female. Improving the ergonomic conditions can reduce head and neck pain. Therefore our study is evaluating the posture with objective methods and contributes to the literature about the prevention of postural disorders in students clinically.

Keywords: posture, head pain, neck pain

P-82

Relation between intracranial volume, basis cranii externa surface area and foramen magnum cross-sectional area

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Objective: The inferior surface of skull base is called basis cranii externa (BCE), which has a big hole on named FM. Meanwhile, bony palate (BP) is formed by palatal process of maxilla, which can be seen on the skull base, and horizontal lamina of palate bone. In this respect, dimensions of FM are considered vital in terms of critical structures passing through it and sex determination over the skull. In literature, while there are a lot of studies about FM area, intracranial volume (ICV), but there isn't any studies on the relation of BCE with BP. The purpose of our study was to explore the relation between ICV, BCE surface area, as well as FM cross-sectional area and BP area.

Methods: The study was performed on 25 human skulls in the laboratories at Anatomy Department of Pamukkale University, Faculty of Medicine. Photographs of skull base taken by a Canon 650d professional camera. Meanwhile, ICV measurements were done through bags by filling water into the cranial cavity through the FM. On the other hand, thanks to point-counting (PC) method, the areas of BCE, FM, and BP were estimated. By area fraction (AF) method how much area FM and BP were located on BCE was calculated as percent. Which gender the skulls belong to were detected antroposcopic method by two free groups of experts, based on 13 criteria used in forensic medicine.

Results: Mean of ICV was found for male 1307.5±100.17 cm^3, for female it was 1289.29±151.97 cm^3 calculated. Mean of BCE area for male was 325.94±47.60 cm^2, for female it was 316.29± 39.36 cm^2 estimated. Mean of FM area for male was seen 18. 28±4.23 cm^2, but for female it was estimated as 17.14±2.61 cm^2. Meanwhile, the mean of BP area for male was 58.72±13.78 cm^2, but for female 57.29±9.93 cm^2 estimated. Concerning the values of male, AF method was used, and FM had 5.60% area, while BP had 18.01% area was located on BCE. However, for female, we used AF method, and FM had 5.52% area, while BP had 18.45% area spaced on BCE.

Conclusion: As a result, there is and statistically important relationship between BCE and FM, BCE and BP, FM and BP areas. In our hypothesis, we considered a probable relationship between ICV and BCE, but we didn't find any concrete evidence. This study was supported by the Pamukkale University Scientific Search Projects Coordination Unit (Project Number 2015SBE003).

Keywords: intracranial volume, skull base, foramen magnum, point-counting, area fraction

P-83

Evaluation of attention-motivation level, studying environment and methods of medical faculty students

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Objective: The evaluation of studying environments, attention-motivation levels during studying process and studying methods of students is extremely important for obtaining purposed results. In this study, it was purposed to determine studying environments, attention-motivation levels during studying process and studying methods of medicine faculty students.

Methods: Gaziantep University Medicine Faculty students filled in the questionnaire including questions about studying environments, attention-motivation levels and studying methods. The 11 open ended questions and 29 Likert type questions were asked to students. The statistical analyses of these questions were performed and some of questions correlated among them.

Results: The statistical significant differences were determined between the average grade and the questions; "I have difficulty in focusing on the subject before started to study", "I lose my concentration easily while study", "I use some pharmaceuticals (except vitamins) for increasing my motivation while study", "I use some pharmaceuticals (except vitamins) for increasing my attention while study", "I only study during exam times". A significant relation was also determined between the average grade and accommodation place of students.

Conclusion: In conclusion, the improving of physical conditions of studying environment of medicine faculty students will contribute to increasing academic success of them. To make students conscious about negatively affecting components of attention and motivation will also affect academic success of students positively. The determination of studying methods of medicine faculty students will contribute to improve personal education strategies.

Keywords: medical education, attention, motivation, studying environment, studying method

P-84

The evaluation of the efficiency and teaching type of medical faculty lessons and attendance check of the students

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Objective: Determination of the ideal timings of lessons and breaks preferred by the students and teachers and most appropriate course hours in a day and examining the opinions about attending the lessons will be useful for increasing the education given. In addition, examining the factors which impacts the level of attention of the student during the lesson will provide more efficiently teaching about the lessons.

Methods: In this study, the timings of lessons and breaks of medical faculty students and teachers, most efficient time period for the lessons, compulsory attendance to the lessons, determining of the thoughts of students about lecturing method and determining of the thoughts of teachers about the attitudes of students in lessons were purposed. This research which is descriptive was performed on 44 teachers and 480 students. Data were obtained with questionnaire form about 29 questions prepared by Likert Scale which scrutinizes the ideas of students over the open ended questions that queries the descriptive characteristics of participants and efficiency and processing of theoretical courses and participation to theoretical courses.

Results: The students and teachers thought that periods of theoretical and practical lessons were enough and the lessons were more efficient in morning hours. It was seen that the students focused on lessons in a better way in the days when they had a breakfast. The students and teachers thought that the attendance check application performed by fingerprint method did not have any positive impact over the interest in the lessons and academic achievement. The students were having difficulty about focusing on the subject in the lessons which includes many slides but, the teachers thought that this situation did not affect the interest of students in subject.

Conclusion: We believe that these data will provide contribution about preparing the academic programs efficiently, developing the behaviors of students about breakfast and developing the teaching methodologies.

Keywords: efficiency, biometric control, attention level, medical faculty

P-85

Researching the effect of the practical applications performed with cadaver dissection and anatomical models on anatomy education

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Objective: The most important element in providing good quality of healthcare is well training of healthcare staff, especially doctors. The way of being a good and successful healthcare staff is to learn the human anatomy accurately and permanently. Practical applications as well as theoretical courses are also highly important in learning human anatomy. In classical anatomy education, using cadaver is accepted to be indispensable. However, along with the new medical faculties, there has been an increase in the shortage of cadaver, and anatomy practices have mainly begun to be carried out on models or mockups. Therefore, we aimed to study with anatomic models in practical applications and to research the effect of cadaver dissection on learning anatomy.

Methods: During the 2015–2016 academic period, 120-second grade students that their achievement levels are close to each other and the students who followed the theoretical anatomy lectures where participated in the study. To realize this, students were divided into four groups (1st group were include students only listening to theoretical course, 2nd group theoretical course and performing application with anatomic models, 3rd group theoretical course and performing application with cadaver dissection, and 4th group theoretical course and performing application with anatomic models and cadaver dissection) each consisting of 30 individual. Written and practical exams which consists of 10 questions where applied after the theoretical and practical courses on each committee to detect the levels of students' understanding the subject. The SPSS 15.0. software were used for data analysis. The One-way anova, mann-whitney U and chi-squared tests were performed and p values les then 5% was considered as statistically significant.

Results: After the lecture in the course of the circulatory system committee, the average point of students who practice on both models and cadavers were markedly higher than other groups ($p<0.05$). Also, after the lecture in the course of the sensory and nervous system committee, the average point of the students in Group III and IV were statistically significant higher than the other two groups ($p<0.05$). Although the average scores of males were lower than females this difference was not statistically significant ($p>0.05$).

Conclusion: The results obtained from our study indicate that anatomy practical training is carried out with the dissection of cadavers that made it easier to understand of the anatomy and increasing success rate. The results obtained from the study give information about the effectiveness of existing applications in anatomy practice and be a guide for educators in planning class hours and including or excluding new topics and subjects from curriculum. This work was supported by the Scientific Research Project Fund of Cumhuriyet University under the Project number "RGD-7"

Keywords: cadaver, anatomy education, anatomical models

P-86

The views of the school of medicine students of Balıkesir University on cross- sectional and radiological anatomy study

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Objective: This study was done for evaluating the school of medicine students' thoughts of Balikesir University on the classical anatomy lesson they are current studying and determining the benefits of the radiological and the cross-sectional anatomy education addings to the classical anatomy education.

Methods: The study consisted term 1, term 2, term 3 and term 4 school of medicine students of Balikesir University by the end of the 2015–2016 school year. The survey forms were sent to the students via e-mails in order to gain more reliable results and the collected data were processed by imputing to the SPSS for Windows program.

Results: 246 students out of 295 from the Balikesir university school involved the study (83.4%). 128 of them male were (52%), 118 of them were female (48%). 89 students were (36.2%) from term 1, 82 students were (33.3%) from term 2, 41 students were (16.7%) from term 3 and 34 students were (13.8%) from term 4. 76.4% of the student were not repeated students. The 211 of the students (85%) who joined the survey have stated that radiological and cross sectional anatomy is also necessary in addition to existing classical anatomy training, the 201 (81.7%) of them have stated that radiological and cross sectional anatomy will make the lesson more enjoyable and more useful to understand. Also 223 (90.7%) of the students have stated that they can see more structure at once on radiological and cross sectional images and this can provide a better understanding. 187 (76%) of the students have stated that radiological and cross sectional anatomy training will reduce the rote learning. 204 (82.9%) of the students have stated that radiological and cross sectional anatomy training can help them pass their theoretical and practical exams easier. 237 (96.3%) of the students have stated that radiological and cross sectional anatomy training can help them during their medical career. Also they have answered to the question of 'do you think that you can identify the structure in the radiological and sectional images?', 92 (37.4%) of them have replied as 'neutral' and 50 (20.3%) of them have replied as 'do not agree'.

Conclusion: It is known that using the technology and the visual expressions more often in addition to the recent training will help mainly the anatomy lesson making more enjoyable and permanent to improve and optimize the medical training by the help of student's feedback. It has been understood that the by the help of the data has been gained during this study will reduce the rote learning and make the radiological and cross sectional anatomy lesson more enjoyable. In addition to this it has been understood that the radiological and cross sectional anatomy training will be beneficial during the medical career. As a result, it has been identified that the radiological and cross sectional anatomy training is essential to make the classical anatomy training more effective and enjoyable and to make the anatomy which is the main structure of medicine more permanent.

Keywords: anatomy, training, cross sectional, students' views, radiological

P-87

Learning styles of first years medical students in anatomy courses

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Objective: Anatomy education has an important in medical schools. The main differences will have important consequences for learning and teaching as shown learning styles, level of learning and development approach. The differences in the general characteristics of students are observed in their learning process. Taking into consideration the necessity of learning styles of the students, the educational activities are important for the successful process. The aim of the present study is to determine the learning styles of the medical student in anatomy education. In this respect, we think that knowledge of the students learning style will lead to educators in anatomy practical methods.

Methods: Kolb Learning Style Inventory and VARK questionnaire were administered to 309 first year medical students at the beginning of the anatomy education in university of Akdeniz, school of medicine. In this study, all data were analyzed by SPSS for statistical program.

Results: We determined significant differences in VARK questionnaire ($p<0.05$). In total, 20 students (6.5%) were categorized as having a form of visual learning preferences. 92 students (29.8%) were categorized as having a form of auditory learning preferences. 84 students (27.2%) were categorized as having a form of reading/writing learning preferences. 19 students (6.1%) were categorized as having a form of kinesthetic learning preferences. 50 students (16.2%) preferred multimodal learning style and 44 students (14.2%) preferred bimodal learning style. Most common learning style was found to be auditory, reading/writing and multimodal learning preferences respectively ($p<0.05$). According to the KOLB Learning style Inventory, most common learning style was found to be converger learning style (46.9%, n=145), followed by assimilators (35%, n=108), diverger (9.7%, n=30) and accommodator (8.4%, n=26) styles. There was not statistical significant differences between KOLB and VARK analysis ($p>0.05$). However, we determined that having a form of assimilators and convergers learning styles preferred auditory and reading/writing learning preferences. VARK questionnaire, there was not differences between the age/sex with the learning style. However, higher proportion of male than female students preferred assimilators, higher proportion of female than male students preferred converger learning style.

Conclusion: Knowledge of the learning styles of the students at the beginning of the anatomy practice is important to help planning the teaching strategies and also important for the support to improve the learning styles of students.

Keywords: VARK, KOLB, anatomy, learning styles

P-88

Thoughts of the medical students on anatomy education and lessons

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Objective: Hippocrates (B.C. 460–377), who was considered as the father of modern medicine, accepted the human anatomy as fundament of the medicine. Galenus (B.C. 130–200), who was considered as the most impressive writer of all times, had used the phrase of "A doctor who has no knowledge about human anatomy likes an architect which has no plan". Anatomy is obviously essential for medical education. Therefore, the thoughts of the students were taken by questionnaire forms in order to improve the efficiency of anatomy education.

Methods: The study was conducted by participating of 263 volunteer 2nd year class students who had already taken basic anatomy education at Medical Faculty of Uludag University. The questionnaires that took nearly 3 minutes were given to the volunteers. The personal information weren't taken because of the privacy of the answers. The questionnaire forms that were filled inelaborately and randomly weren't included at statistical analyses because of the precision of the statistical results.

Results: The 89,0% of the volunteers reported positive opinion about necessity of anatomy education. The 95,5% of the participants replied the clause includes "anatomy education should be at compulsory syllabus" as "I agree". Feedback has been taken by 78.5% as "I agree", according to the clause included "The best way of learning anatomy is to attend the practice classes". The 91.7% of the participants reported their ideas as "I agree" according the clause included" Giving anatomy education associating with clinical information makes learning easily. The clause included "The role of anatomy education at feeling working at health department is important" got positive idea as 81.8% of participants.

Conclusion: The awareness of the participants on necessity of anatomy education for practice of medicine and the motivating role of anatomy at medical profession were presented. We believe that organizing the anatomy education by associating with clinical information and consolidating with practical knowledge will improve the anatomy education more efficient and more effective.

Keywords: anatomy classes, medical education, anatomy education

P-89

Several students opinions about anatomy education and teaching methods

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Objective: The education and teaching methods in anatomy are varied: Cadaver, plastinated samples, models, a variety of videos on the Internet and 3D modeling. Students have some of comments and suggestions about this methods' utilization.

Methods: The emerging trends in anatomy education: less dissection, less course more plastine samples.

Results: Also web-based and computer-based interactive multimedia learning modules, learning to find more space due to make more active and simultaneously. The fact that students in the gross anatomy lab gained some experiences such as the sense of touching, seeing and hearing and computer couldn't supply them. So, traditional anatomy instructors support gross anatomy lab. Students in a study, 15 people were divided into 4 groups and came out the opinions: They think that wasting the time to achieve the desired region while working with cadavers; formaldehyde is irritant to the eyes; vessels and nerves of cadaver is being damaged by time. In a study conducted among medical students in the United States, who want to learn anatomy with 3D system and who want to learn by working with cadavers, more satisfied with the students working with cadavers and were found to be more than the success rate. This group of students were more attentive to their work and provide access to the course when they want investigators. A study in Australia again put forward the importance of the cadaver examination. The study has been done in 2011, 2012, 2013 routine musculoskeletal course that 75% of student advocated that opinions: "Doing Dissection thrown my respect for the human body, helped me to understand the anatomy of a more detailed, provided anatomical structures in 3D for me, also ensured attractive interest and made more permanent and good information."

Conclusion: Cadaver is considered to be the closest to the real one in teaching material for many students. The educators and the students consider that Cadaver's education gives the students the notion of medicine that is basic opinion.

Keywords: anatomy education, plastinated models, medical students

P-90

A special example for special study modules in Akdeniz University Faculty of Medicine: cross-sectional anatomy

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Objective: Special Study Modules (SSMs) provide opportunities for students to develop their learning skills and to develop areas of interest. Special Study Modules were firstly introduced at Akdeniz University Faculty of Medicine in 2008–2009 educational years. The aim of this study is to evaluate with student's satisfaction and measure the student's feedback who have participated in cross-sectional Anatomy SSMs performed between the 2009–2016 educational years.

Methods: Data were collected from student's feedbacks who have participated in cross-sectional anatomy SSMs obtained at the beginning and the end of the study. A total of 69 students gave feedbacks about the cross-sectional anatomy SSMs. Data from students were collected about expectations and why they choose to write about a text in the first SSMs meeting. Firstly, students had been learning anatomy of structures then radiological images of these structures in SSMs with contributions of faculty members, department of anatomy and radiology.

Results: 95% of the students had been admitted the initial expectations for the cross-sectional anatomy SSMs and at the end of the SSMs they have stated with feedback's that cross-sectional anatomy SSMs were very beneficial because the anatomy lesson who have received in basic medicine so they integrate to clinic through radiology.

Conclusion: According to research conclusion students have stated that the cross-sectional anatomy SSMs were very beneficial. Results obtained by the students increased to identify anatomical structures in sections, have been easier to distinguish structures which obtained from the different level and region and increased using of the imaging techniques, atlas and internet.

Keywords: special study modules, special modules, medical education

P-91

The effect of anatomy education to motivation and anxiety of students in Pamukkale University School of Medicine Grade I

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Objective: Anatomy, one of the primary lessons of medicine education, provide an valuable environment to medical faculty for both it provides important contribution to education and in terms of allowing a professional attitude development. In the studies carried out to date, many issues such as the importance of the anatomy education, thoughts of students on anatomy education, anatomy learning techniques and the best anatomy teaching methods have been investigated. But in the literature there is not any study about the effects of anatomy education on feeling, thought and motivation of students. The aim of this study is to investigate the effect of anatomy education on Medicine Faculty Grade I students feelings, thoughts and motivations of them in a one-year period of education and training period. And also to present the changes in the level of anxiety.

Methods: A survey was prepared to search the effects of anatomy lesson on feelings, thoughts and motivations of students and to detect the level of anxiety. Survey form which includes sociodemographic features was consisted of 28 multiple choices and 1 open-ended questions. This survey form was performed to Grade I students of Medicine Faculty of Pamukkale University under observation at the end of 2015–2016 academic year. 264 students (47.3% male, 52.7% female) participated to the survey voluntarily.

Results: According to the results of survey, students were found statistically decreasing in their anxiety level about "study intensity, degree of difficulty in anatomy lesson, orientation to memorize, learning a new language" in end of the first anatomy lesson presentation compared with the academic year end periods ($p<0.05$). But there is no alteration detected statistically in anxieties about "challenging the medical education, inability to manage anxiety, it will be very useful to them in terms of professional knowledge" ($p>0.05$).

Conclusion: Knowledge of student psychology by academician is important in terms of students were understanded. Results of this study show that anxieties related with anatomy has changed positively in the academic year, but there is not a significant change in the medical education anxieties. It is thought would be beneficial order to provide compliance with the anatomy lesson to beginner students to medical school the following subjects; analyzing the psychological effect of anatomy lesson on the grade I students of medical school, knowing their thoughts and determination of the effect to the anxiety level of students of lessons.

Keywords: anatomy education, medical student, motivation, anxiety level

P-92

Analysis of body donations to our department of anatomy and presentations of sample applications

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Objective: Cadaver is an indispensable part of medical education for medical and postgraduate students. Various novel teaching methods are used in Anatomy teaching, the cornerstones of medical education. However, using cadaver in teaching of Anatomy is essential. Although the use of cadaver in Anatomy teaching is as old as human history, no more effective technological approaches that can substitute it have been developed so far. The aim of the present study was to analyze body donation behaver of those applied to the Anatomy Department of Medical School of Eskişehir Osmangazi University (ESOGU) and to encourage body donation.

Methods: We evaluated body donations to the Anatomy Department of Medical School of Eskişehir Osmangazi University since 1982 and examined their gender, age and occupations. In addition, our sample applications have been compiled to encourage body donations.

Results: A total of 68 body donations have been made to our department so far. Of the donations, 21 were female and 47 were male. The average age of the body donations was 57.4. Their jobs were from discrete occupations including doctor, retired teacher, retired worker, journalist, and house-wife. After the use of the bodies, two donations were returned to

their families for their burial. The other donors asked for the use of their skeletons at the end of the cadaveric studies as well. Both written and visual media have been extensively used in our department to increase the public awareness and encourage whole body donations throughout Eskişehir and Turkey. For this purpose, public ceremonies were arranged in our medical school for the cadavers returned to their families. First year students, the students who used the cadavers, relatives of the donors, and members of the press attended to these public ceremonies.

Conclusion: In Turkey, the numbers of the medical schools and their quotas have been increasing year by year and this increase making the existing situation more difficult because the numbers of cadavers available are limited currently. Practices on cadavers are critical for teaching and development of novel surgery techniques and treatment approaches in addition to the training of the medical students. Therefore, increasing awareness of the community and their will for voluntary body donation is going to contribute to the development of science and training of high quality physicians. The news in the both written and visual press is going to inspire whole body donations similar to the organ donations.

Keywords: body donation, cadaver, anatomy

P-93

An investigation of the effects of maternal age and smoking on biometric parameters in the fetal period

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Objectives: To investigate the effect of maternal age and smoking on fetal development in the fetal period.

Methods: 914 pregnant women who have pregnancy weeks between 11 and 40 weeks and age ranging from 17 to 41 years old (average 27.05±5.75) were included into the study. Pregnant women were categorized five different classes according to their age which includes those who are under or equal to 20 years old, those between 21 and 25 years old, those between 26 and 30 years old, between 31 and 35 years old and greater than 35 years old. Additionally, they were divided into two groups as smokers and non-smokers. Then, parameters about fetuses' weight, head circumference (HC), bi-parietal diameter (BPD), abdominal circumference (AC), femur length (FL) were taken.

Results: All parameters which were taken during fetal period were determined according to weeks, trimesters, months, age, means for smoking and standard deviation. It was observed that all parameters were meaningfully correlated with gestational age ($p<0.001$). When fetal biometric parameters which were taken during pregnancy was compared to trimesters and months, it was observed that there was a statistical difference among the groups ($p<0.05$). Moreover, in the comparison of age and smoking groups, it was seen that there was not a statistical difference among the groups ($p>0.05$).

Conclusion: Maternal age and smoking are important maternal factors that influence fetal parameters in the fetal period. We observed that maternal age smoking affect fetal parameters. As a result of our study, it is considered that findings provided with this study help to evaluate the effects of maternal age and smoking on fetal parameters.

Keywords: pregnancy, fetus, ultrasonography, age, smoke

P-94

Protective effect of thymoquinone on methotrexate-induced liver damage

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Objective: Methotrexate (MTX) is a folate antogonist, antineoplastic agent. It is commonly used for the treatment of various hematologic malignancies such as leukemia and lymphoma, as well as against autoimmune diseases such as psoriasis and rheumatoid arthritis. In the literature, there are studies reporting that combining MTX with antioxidant agents reduces the side effects of MTX. Thymoquinone (TQ) is a bioactive component with high antioxidant activitiy which is found in the plant Nigella sativa. In the literature, MTX is noted to have anti-inflammatory, anti-tumoral, anti-microbial, anti-histaminic, and immunomodulatory properties. In this study, we will investigate whether TQ has any protective effect on liver damage experimentally induced by MTX, a chemotherapeutic agent.

Methods: A total of 40 male rats were used in the study. Rrats were split into four groups, each containing 10 rats: Group I, controls; Group II, MTX; Group III TQ; and Group IV MTX + TQ group. TQ was delivered via intraperitoneal route at a dose of 5 mg/kg/day for 10 days. MTX was administered two times, at 3th and 7th days, at a dose of 15 mg/kg intraperitoneallly. At 10th day, the rats were sacrificed under general anesthesia with ketamine + xylazine combination via decapitation, after which blood and tissue samples were collected. AST and ALT levels were measured to evaluate liver functions, while malondialdehyde (MDA), superoxide dismutase (SOD), and catalase (CAT) activity levels were assessed to evaluate the tissue oxidative system. To evaluate normal morphology Hematoxylin and Eosin stain, to assess fibrosis Masson's trichrome stain, and to analyze apoptosis TUNEL assay was applied.

Results: When the liver sections were examined, the liver tissue of the control group and only TQ treated subjects exhibited normal histomorphology. Liver necrosis, especially in the peripheral region of the liver seen in the MTX group. TQ

group which was given TQ for protective purpose were observed necrotic areas. No statistically significant difference between the groups in terms of apoptotic index was determined. While there is no significant change in liver tissue SOD and CAT values, MTX were determined by increase in MDA levels. The addition of protective purpose TQ showed a reduction in the increase.

Conclusion: This is the first study in the literature which investigates the possible protective effects of TQ on MTX-induced liver toxicity. We think that the results of this study will be the basis of future studies focusing on the treatment of this disease.

Keywords: methotrexate, liver, thymoquinone, apoptosis, rat.

P-95

The effects of dexamethasone on fore limb development in rat fetuses and neonates

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Objective: Chemical substances and drugs when were taken within pregnancy period, passes into fetal circulation and causes fetal malformations. Our aim is to reveal skeletal system changes of fore limb in dexamethasone administered pregnant rats' fetuses and neonates with using double staining method.

Methods: We used female Wistar albino pregnant rats. Pregnant rats are distributed into experiment and control groups. Dexamethasone was administered to experiment group at 9th, 11th and 13th day of gestation whereas saline administered to control group. Fetuses and neonates are divided into 3 subgroups (18th day of birth, the day of birth and, 5th day after birth). Each group had 10 neonates or fetus (total of 60). After length and weight of fetuses and neonates were measured, they were investigated with double staining method. The lengths and ossification status of humerus, radius and ulna were measured. Data was analyzed statistically.

Results: There was no difference in the length and weight measurements of fetuses and neonates between experiment and control groups. While there was a significant difference in ossification zone length ($p<0.05$), no difference was determined in bone lengths between the 18-day experiment and control groups. At the day of birth, the length of bones and ossification zones were longer in the experimental group and this difference was statistically significant ($p<0.05$). There was no difference in the length of bones and ossification zones between the 5-day experiment and control groups.

Conclusion: According to our findings, using dexamethasone in pregnancy period delays ossification, but after removal of drugs' effect; it's seen that the retardation of ossification reverts, and the effect of the drugs is not permanent

Keywords: rat, dexamethasone, ossification

P-96

End-to-side hypoglossal-facial coaptation with a "Y" tube conduit after minimal damage of hypoglossal nerve

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Objective: Peripheral nerves may be damaged due to variety traumatic conditions. In these cases requiring surgery, functional recovery is suboptimal. Various surgical repair methods have been used in order to repair the facial nerve injury. Hypoglossal-facial nerve neurorraphy is a surgical technique when the facial nerve stump is not accessible. In our study, we performed terminolateral hypoglossal-facial coaptation with "Y" tube conduit after facial nerve injury. We investigated the effect of the collateral sprouting at the lesion site, vibrisseal motor performans, muscle innervation and tongue muscle performance.

Methods: Fourty eight adult female and twenty-four male (for the "Y" tubes) wistar rats were used. As surgical procedure, Y tube HFA and end-to-side Y tube HFA were applied. In the Y tube HFA group, proximal stump of the hypoglossal nerve was cut and sutured into the long arm of a Y tube. Zygomatic and buccal facial branches were entubulated and sutured into the short arms of the Y tube. In the end-to side coaptation, epineurial window was opened to the hypoglossal nerve. This nerve was damaged minimum level (30% fiber approximately) and sutured into the long arm of the Y tube. Zygomatic and buccal facial branches were entubulated and sutured into the short arms of the Y tube.

Results: We determined collateral sprouting in the Y tube HFA group and ETS HFA group as %13±1, %3±1 respectively. We determined statistically significant differences between each groups. Determining LLS muscle, we observed poli-innervated motor endplates each groups (%23±5 in the Y tube HFA group and %22±4 ETS HFA group). We didn't determine significant differences in the poli-innervation pattern. Analysis of the vibrisseal motor performance showed functional impairment. The evaluation of the tongue muscle performance analysis revealed the 41±6 and 6± 4 degrees' deviation of the tongue in in the Y tube HFA and ETS HFA group, respectively.

Conclusion: In this study, collateral axonal sprouting at the lesion site were reduced by end-to-side caoptation. However, it didn't improve functional outcome. Hypoglossal nerve injury by creating epineural window caused moderate functional deficit in the tongue muscle functions. Although collateral axonal sprouting was reduced with this technique, it did not lead to functional recovery. We think that it is necessary the elucidation of the underlying mechanism for the functional recovery and discovering new surgical methods in future studies.

Keywords: facial nerve, hypoglossal nerve, end-to-side coaptation

P-97

The effects of collagen-based suture used in chicken tendon surgery on tendon cells

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Objective: More than 30 million tendon and ligament injuries are reported globally every year. The most common injuries of tendons is rupture and laceration. Suturing is the standard of repair for lacerated flexor tendons. Past studies focused on delivering growth factors to the repair site by incorporating growth factors to nylon sutures which are commonly used in the repair procedure. However, conjugation of growth factors to nylon or other synthetic sutures is not straightforward. Collagen holds promise as a suture material by way of providing chemical sites for conjugation of growth factors. On the other hand, collagen also needs to be reconstituted as a mechanically robust thread that can be sutured. In this study, we focused that the effects of collagen suture with growth factor on tendon-delivered cell.

Methods: Six white leghorn chicken, aged 12 weeks, were used under a protocol approved by the Institutional Animal Care andUse Committee (IACUC) at Case Western Reserve University (protocol No. 2013–0075). Totally six chicken were used as three tendons were operated collagen suture with PDFG-BB (n=3) and three tendons were operated with nylon suture (n=3). Flexor digitorum profundus muscle was used for all injuries, operation and cell isolation. In this study, we reconstituted collagen solutions as suturable collagen threads by using linear electrochemical compaction. Prolonged release of PDGF-BB (Platelet derived growth factor-BB) was achieved by covalent bonding of heparin to the collagen sutures

Results: Strength of lacerated tendons sutured with epitendinous collagen sutures (11.2±0.7 N) converged to that of the standard nylon suture (14.9±2.9 N). ($p<0.005$). PDGF-BB release up to 15 days f rom the tendon-derived cells after operation. Addition of PDGF-BB to collagen sutures resulted in a moderate decline in the expression of the tendon-associated markers scleraxis, collagen I, tenomodulin, and COMP; however, expression levels were still greater than the cells seeded on collagen gel. ($p<0.005$).

Conclusion: The data indicate that the effects of PDGF-BB on tendon-derived cells mainly occur through increased cell proliferation and that longer term studies are needed to focus whether this proliferation is outweighs the moderate reduction in the expression of tendon-associated genes.

Keywords: tendon, suture, proliferation

P-98

Anatomical features of the experimental animals commonly used in experimental studies and their areas of use in experimental studies

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Objective: Experimental animals are used in many scientific studies. The purpose of this paper is to identify the anatomical features of the experimental animals which is used commonly in experimental studies and to provide information in order to ensure the correct and appropriate choice of animals depending on the field of experimental studies.

Methods: It was identified that the most commonly used experimental animals in experimental studies included rats, mouse, and rabbit; and the experimental animals moderately used in experimental studies comprised guinea pigs, pigs, hamsters, monkeys, dogs and cats. The anatomical and physiological features of these animals and their areas of use in experimental studies were put forward and explained.

Results: Whereas rats and mice belong to the group of rodents, rabbits are not included in this group. Since rats are small and robust experimental animals, they are the most practical and economical options in studies where a large number of animals are to be used. Their sense of hearing and sense of smell are well developed. However, their vision is not at a good level and do not have a gallbladder. Rats are most commonly used in drug (effect and development), food, behavior, and toxicity studies. Mice (Mus musculus) are less in size and weight compared to rats. As is the rats, their sense of hearing and sense of smell are developed but their vision is poor. Mice are principally used in genetic research, cancer, immunology, toxicology, metabolism, diabetes, aging, cardiovascular research, vaccine preparation and safety tests. Because rabbits (Oryctolagus cuniculus) are used in toxicity tests, studies on teratogens, the measurement of biologically active products, skin-eye irritation tests, ophthalmology studies, and antiserum production studies. Guinea pigs, hamsters, dogs, cats, pigs, monkeys are the experimental animals that are moderately used. Guinea pigs (Cavia porcellus) are mostly used in the production and control of serum, in the diagnosis of infectious diseases, in immunological research and in otology studies. Pigs (Suidae) are used in course studies and laparoscopic robotic surgery studies; hamsters (Mesocricetus) are used in physiology, toxicology and cancer research; monkeys (Simiiformes) are used in studies associated with AIDS, hepatitis, neurology, behaviour, genetics and in organ transplantation; and finally dogs (Canis) and cats (Felis) are mostly used in neurological and immunological research.

Conclusion: Identifying anatomical and physiological features of experimental animals and ensuring the correct and appropriate choice of animals based on the field in scientific studies is important.

Keywords: experimental animals, anatomy, experimental study

P-99

Protective effect of vitamin C from gentamicin induced testicular damage in rats

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Objective: Aminoglycosides are commonly used in clinical practice today. Gentamicin, gram (-) used in the treatment of bacterial infection is an antibiotic of the aminoglycoside derivatives. The most important feature is the restriction of the use of aminoglycoside toxicity. Gentamicin in testes reveal the structural and cytotoxic changes. Cells and tissue can be protected from gentamicin toxicity from antioxidants such as vitamin C. In this study we aimed to investigate the role of vitamin C in the protection of rat testes from gentamicin toxicity.

Methods: In our study 28 Sprague-Dawley rats were used in four groups of 7. Rats in each group of 7 male rats were controlled to 5 mg/kg of gentamicin, 5 mg/kg gentamicin + 200 mg/kg of vitamin C and 200 mg/kg of vitamin C. After the experiment, the body weight and testicles were measured and comparisons were made. For follow-up is left testes tissue taken up in Bouin solution, while the right testis was taken up in 10% buffered formalin for routine histological processing then tissue preparation. Obtained from paraffin blocks were serially sectioned at 3 mm thick hematoxylin and sections stained with hematoxylin and periodic acid-Schiff microscopic examination was performed.

Results: Significant differences between groups in terms of body weight were observed. Microscopic examination revealed gentamicin caused significant damage to the testes punctuate and start a new sentence, because it makes the next sentence sound stronger.

Conclusion: This damage decreased in the group treated with gentamicin + Vitamin C. From the resulting findings it can be concluded that gentamicin toxicity in the rat testes can be prevented by the administration of vitamin C.

Keywords: gentamicin, vitamin c, rat, testis

P-100

Effect of quercetin on CCl_4 induced testicular injury in adult male rats

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Objective: Carbon tetrachloride (CCl_4), the industry refrigerant is an organic compound used in the production of chlorofluorocarbon. Damage to testicular cells by CCl_4 adversely affect male reproductive functions. Quercetin is a flavonoid antioxidant properties are well known. In this study, the testes of male rats on applied CCl_4 damage caused by CCl_4 aimed to investigate the effect of quercetin.

Methods: In this study, a total of 28 adult male Spraque Dawley rats were used. Laboratory animals; Control group, CCl_4 group, quercetin group, including CCl_4 + quercetin group was divided into 4 groups. These experimental animals; control group for 7 days, once daily determined dose of olive oil, CCl_4 group daily for 7 days of a 0.5 ml/kg CCl_4, quercetin group daily for 7 days in a single dose of 20 mg/kg of quercetin, CCl_4 + quercetin group for 7 days once a day 0.5 ml/kg daily for 7 days CCl_4 20 mg/kg were injected with quercetin. Experimental animals were anesthetized with anesthetic agent at the end of test period, and testis tissue samples taken up in Bouin solution. After the staining process was blocked. 3 mm sections taken from each block hematoxylin and eosin and periodic acid-Schiff + were stained with hematoxylin and microscopic examinations were performed.

Results: According to the findings obtained from the study, the normal histological structure of the testis of rats in the control group, intense spermatogenic cells in the testes of rats by CCl_4 injury, CCl_4 + quercetin decreased cell damage was observed in the group.

Conclusion: As a result, the testes of male rats on CCl_4-induced toxicity, quercetin is formed in the testes of CCl_4 was found to reduce this damage.

Keywords: carbon tetrachlorid, quercetin, rat, testes

P-101

Effect of melatonin on testicular damage induced by 2.4 D-amine in adult mice

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Objective: Dichlorophenoxy acetic acid (2.4 D-amine) used in herbicidal agent. 2.4 Damine negatively affects male reproductive functions by damaging testicular cells. Melatonin is a hormone secreted by pineal gland with well-known whose antioxidant properties. In this study, we aimed to investigate the effects of melatonin on the damage induced by 2.4 D-amine of testicles of male mice.

Methods: In this study, a total of 28 adult male Swiss-albino mice were used. Experimental animals were divided into four groups which were control group, 2.4 D-amine group, melatonin group, 2.4 D-amine+melatonin (55 days). Control group this group was applied serum a determined dose SF was applied once a day for 55 days into the control group. 2.4 D-amine group has been applied 320 mg/kg of 2.4 D-amine every 3 days for 55 days, Melatonin group was applied 10 mg/kg melatonin with a single dose every three days for 55 days. 2, 4 Damine+ melatonin (55 days) was applied 320 mg/kg of 2.4 every in 3 days for 55 days and 10 mg/kg of melatonin every 3 days for 55 days intraperitoneally. At the end of the experimental period all the groups were sacrificed anesthesia and testis tissue samples were fixed in bouin solution, 3 µm sections were obtained from each block and stained with Hematoksilin Eosin and Periodic Acid Schiff+Hematoksilin staining and finally were investigated under the light microscope.

Results: According to the findings of the study, the normal histological structure of testes of rats were observed in the control group, intense spermatogenic cell damage in the testes of male rats treated 2.4 D-amine and decreased cell damage in the 2.4 D-amine and melatonin treated group were.

Conclusion: In conclusion, it was observed that the 2.4 D-amine causes toxicity on male mice testes, and melatonin reduces that damage of the 2.4 D-amine in the testes.

Keywords: 2.4 D-amine, melatonin, mice, testes

P-102

Long-term administration of tamoxifen's effect on the heart tissue

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Objective: Tamoxifen is a nonsteroidal antiestrogen agent. It has been used in the treatment of breast cancer more than 30 years. It is also used as a prophylactic for women who have high risk for breast cancer. Despite Tamoxifen is classified as an antiestrogen, it is also an estrogen agonist effects. According to the literature; in several studies different informations are located about the effects of tamoxifen that's estrogen agonist properties in some cases or also as estrogen antagonists. Long term used of tamoxifen for the treatment cause endometrial problems in women. Estrogen has therapeutic and regulatory effects on cardiac tissue that has been formed trauma, sepsis, reperfusion in experimental models. Parallel to all of there results, it has been shown that tamoxifen reduce the risk of coronary heart disease. In our study, we aim to investigate that long- term administration of tamoxifen's effect on the heart muscle tissue in the microscopic level.

Methods: 14 Swiss albino rats were divided into two groups. Saline was administered the control group (n=7) for 60 days and 10 mg / kg was administered by oral gavage in experiment group (n=7). At the end of the experiment histochemical (hematoxylin-eosin and periodic acid Schiff) and immunohistochemistry (PCNA antibody) applications have been applied.

Results: According to histochemical and immunohistochemical parameters, structure of the fibers and centrally located nucleus are normal in two groups and also in tamoxifen group PCNA expressions are similar to control group.

Conclusion: Long-term administration of tamoxifen didn't cause any detrimental effects on the cardiac muscle tissue.

Keywords: tamoxifen, PCNA, heart, mice

P-103

Morphological evaluation of testis in rats exposed to chronic unpredictable stress

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Objective: Diverse environmental conditions and toxic agents have adverse effects in many organs including the gonads. In this study, we aimed to investigate the effects of chronic unpredictable stress exposure on the testicular tissue by using morphometric methods.

Methods: Spraque-Dawley rats were divided into two groups containing 8 rats in each group. Animals in experimental group were exposed to chronic unpredictable stress for 21 days. Animals in control group left undisturbed at their cages. At the end of the stress protocol, animals were fixed via intracardiac perfusion with 4% paraformaldehyde solution. Then, testis tissues were embedded in paraffin blocks, sectioned at a thickness of 3 μm and stained with hematoxylin and eosin. Digital images of the stained sections were captured by an imaging software (Micro Bright Field Inc.) connected to the microscope. The proportion of interstitial area to seminiferous tubules was calculated using a point counting grid. The areas of the seminiferous tubules were measured by Image J software.

Results: In control group, histological features of the testicular tissue were intact. On the other hand, epithelial lining of the seminiferous tubules was lost and irregular shapes of tubules were observed in stress group. The mean area of the seminiferous tubules was significantly ($p<0.01$) decreased in stress group (41292±1160) in comparison to control group (49281± 1673). The volume proportion of interstitial area to seminiferous tubules of stress rats (35.9±0.58) was significantly ($p<0.001$) higher than those of control groups (27.4±0.70).

Conclusion: Stress exposure caused a decrease in the volume of seminiferous tubules while an increase in the mean interstitial area. Therefore, there was a significant difference between control and stress groups in the volume proportions of testicular tissues. These alterations might be associated with the stress dependent decrease of the testicular hormones and increase in the level of LH and FSH or interstitial edema. Reduction in the mean area of seminiferous tubules might cause negative effects in spermatogenesis.

Keywords: stress, testis, seminiferous tubules, interstitial area

P-104

Effects of chronic unpredictable stress on intestinal morphology

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Objective: Chronic stress is one of the most important factors that lead adverse effects on the gastrointestinal, nervous and immune systems. In this experimental study, the alterations occurring in the intestinal tract following chronic unpredictable stress exposure was evaluated by using morphometric methods.

Methods: In our study, a total of 16 adult male Wistar rats were divided into control and stress groups. Unpredictable chronic stress model, often used as depression model in the literature, was applied to the stress group. During 21 days, rats were randomly exposed to stressors two times a day, including

change of dark/light cycle, 45-degree tilted cage, wet bedding, crowded conditions, cold environment, predator odor, isolation in steel cage, exposure to bright light, water and food deprivation. No intervention was applied to control animals, except weekly body weight measurements. At the end of 21th day, animals were perfused with neutral phosphate-buffer and 4% paraformaldehyde solution. Intestinal tissue samples were obtained from three different regions, 3–6 cm after from pylorus, 3–6 cm prior to ileocecal valve and from the middle of descending colon. 3 µm thick sections taken from tissues embedded in paraffin blocks were stained with hematoxylin-eosin and periodic acid-Shiff (PAS). Villi lengths were measured by the StereoInvestigator-10 software program, the number of granulating and degranulating mast cells per unit area were determined by point counting method.

Results: There were no irregularities in the glandular structure of the intestinal tissue and mucosal integrity was maintained in the stress group. Neither ulceration nor inflammatory infiltration was seen in the intestinal wall. However, the average length of the villi (292.4 µm) significantly ($p<0.01$) increased in the stress group compared to those in the control group (229.1 µm). In addition, a significant increase in the density of mast cells was detected. While degranulation/granulation ratio was 30% in the control group, it was 54% in the stress group.

Conclusion: In animals exposed to chronic stress, a significant activation occurs in the mast cells, possibly due to corticotropin-releasing hormone stimulation. In addition to chemical mediators, such as histamine, heparin, and neutral proteases; a group of growth factors, including colony stimulating factors (CSF), basic fibroblast growth factor (b-FGF), nerve growth factor (NGF) and vasoactive intestinal polypeptide (VIP) are released from degranulating mast cells. Therefore, alterations observed in villi morphology might be developed due to the activation of protective mechanisms in the intestinal tract.

Keywords: chronic stress, rats, mast cells, villus, degranulation

P-105

The evaluation of auditory brainstem response in cranially irradiated mice

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Objective: Cranial ionizing radiation therapy (CR) is used an effective tool in the treatment of commonly observed cancers in childhood such as acute lymphoblastic lymphoma, besides both short and long term undesirable side effects can be seen. In the long term, it is known that CR can cause many disorders as well as decrease in hearing acuity, radiation-induced otitis media and hearing loss. In this study, it is aimed to investigate the auditory pathway changes of early CR treated mice, in adulthood stages with Auditory Brainstem Response (ABR) test.

Methods: A group of 41 C57BL/6J female pups were used in this study. After the mice were randomly divided into five groups; Single dose of 8 Gray (Gy) whole cranial irradiation at postnatal day 14 (P14) (Rad+ Group) (n=7) or double doses (Rad++ Group) of 8 Gy both at P14 and P21 (a total of 16 Gy) (n=11) were administered to the pups. Additionally, a group of age and body weight matched mice were assigned as Sham+ group (single dose anesthetic control) (n=8), Sham++ group (double dose anesthetic control) (n=7) and Normal Control group (not exposed to any application) (n=8). Seven months after the CR therapy, ABR were recorded by using electrodes.

Results: Auditory Evoked Potentials amplitude (AEPA) and latency (AEPL) of auditory brainstem response (ABR) were measured and assessed by One-Way ANOVA. The left AEPL of Rad++ group were found to be significantly increase as compared to the NC and Sham++ groups ($p=0.000$ and $p=0.000$), and AEPA were found to be significantly decrease ($p=0.001$ and $p=0.012$). Furthermore, the right AEPL of Rad++ group were found to be significantly increase as compared to the NK ($p=0.005$), but in the right AEPA, there was no significant difference between Rad++ and Sham++ groups ($p=0.326$). The right AEPL of Rad+ group were found to be significantly increase as compared to the NC and Sham+ groups ($p= 0.014$ and $p=0.035$), and in the right AEPA, there was no significant difference among each groups ($p=0.7$ and $p=0.4$). Additionally, the left AEPL of Rad+ group were found to be significantly increase as compared to the NC group ($p=0.021$), but in no significant difference was observed between Rad+ and Sham+ groups ($p=0.2$).

Conclusion: Our overall data suggests that exposure of cranial irradiation to the young brain can cause to auditory dysfunctions and these effects may be dose-dependent.

Keywords: ABR, cranial ionizing irradiation, C57BL/6J

P-106

The apoptotic effect of interleukin-12 on endothelial cells

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Objective: Angiogenesis depended on balance between angiogenic and antiangiogenic factors. Previous studies reported that Interleukin-12 (IL-12) has antiangiogenic effect on vessel development. The aim of this study was to investigate the apoptotic effects of the different doses of IL-12 on endothelial cell proliferation using were assessed by Western blott analysis.

Methods: Umbilical cord obtained at Caesarean from Erciyes University hospital. After washing PBS, the cord vein lumen was filled with PBS containing 10 mg/ml collagenase and incubated 15 minute at 37°C. The contents of vein were flushed out with 30 ml medium in centrifuge tube then centrifugated at 1000 rpm for 10 minute yielded white pellet which was resuspended in culture medium. The cells were plated in 2 ml of medium at flasks. The endothelial cells were passaged.The cells were counted by Thoma slide.Then cells were divided into control and four experimental groups. 25–50–100 and 200 ng/ml IL-12 were added to medium (n=16) Also, caspase-9 expression levels were measured by Western-Blotting technique.

Results: After 48 hours cells were counted in groups. While mean cell number of control group was 58.4×105(±10.72), experiment groups were 23.6×10^5 (±4.70), 16.4×10^5 (±2.10), 12.4×10^5 (±2.37), and 11.6×10^5 (±2.20) respectively. There was a reduction on cell number in experimental groups when compared to the control. This reduction was statistically significant. In addition, increased expression of caspase-9 in a dose dependent, showed an increase in apoptosis.

Conclusion: Consequently, IL-12 could prevent the vessel formation by decreasing endothelial cell growth.

Keywords: Interleukin-12, endothelial cell, caspase-9

P-107

Congenital anatomic malformations associated with maternal antidepressant use in pregnancy

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Objective: Many studies have been published on the use of antidepressants during pregnancy, notably selective serotonin reuptake inhibitors (SSRI). The other antidepressant groups, tricyclic antidepressants (TCA) and serotonin/noradrenalin inhibitors (SNRI/NRI) have been comparatively little discussed. The results of previous studies assessing the risk of birth defects after use of antidepressants in pregnancy have been conflicting. The purpose of this analysis is to establish the relationship between congenital malformations and maternal antidepressant treatment using a relevant dataset of published studies.

Methods: PubMed, ScopeMed, PsycInfo and Reprotox were searched for articles published up to January 2016. All studies that examined the relationship between antidepressant medications during pregnancy and congenital malformations were evaluated. The reference lists of retrieved articles were manually checked for any studies not identified by the computerized literature search.

Results: A total of 60 studies were included in this analysis. Of them, 13 studies on the association between SSRI use and infant congenital malformation have reported a significant risk increase. An association between SSRI use and cardiovascular defects has been suggested by some authors. One study found an increased risk for congenital club foot after the use of SSRI (OR:2.2, 95% CI: 1.4- 3.6), and this association was confirmed by 3 other studies published in years 2014 and 2015 . In recently published studies, congenital omphalocele, gastroschisis, anencephaly, hydrocephaly, craniosynostosis, hypospadias, renal dysplasia, anorectal stenosis and median cleft palate were also found to be associated with maternal use of SSRI. Relatively little has been published on TCA or SNRI, 6 studies were retrieved from the literature, and only 2 of them have linked use of TCA and notably clomipramine with an increased risk for any major congenital malformation (OR:1.36, 95% CI: 1.07–1.72), especially for cardiovascular defects (OR:1.63, 95% CI:1.12–2.36), and for septum defects (OR:1.84, 95% CI: 1.13–2.97).

Conclusion: There are no antidepressant drugs that are considered completely safe to take during pregnancy. Antidepressant drugs during pregnancy constitute both the potential risk to developing fetus as well as possible benefit through improvement of the disease state. Although some results of the studies on the relationship between maternal antidepressant treatment and congenital malformations were statistically significant, one must consider clinical significance.

Keywords: malformation, teratogen, depression, pregnancy, antidepressant

P-108

The anti-apoptotic and anti-angiogenic effects of rhamnetin on Ehrlich solid tumor model that induced in Balb/C mice

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Objective: Rhamnetin is a flavonoid which contained in especially clove, such as apple, tea, onion plant. Rhamnetin has been used in cancer research due to its antitumor and antioxidant properties. Present study is aim to investigate the anti-apoptotic and anti-angiogenic effects of rhamnetin administration at different doses on Ehrlich ascites tumor model that induced in Balb/C mice.

Methods: Overall, 46 Balb-c mice (6 as stock animal) were used in this study. Ehrlich ascites tumor (EAT) cells (1x106 EAT cells) harvested from stock animals were injected to all rats via subcutan route. Doses of 100 µg/kg and 200 µg/kg (i.p.) rhamnetin were given over 15 days to the animals in the treatment groups. Throughout experiments, weight changes were recorded in all groups. All animals were sacrificed at the end of experiment and the tumor tissues were removed from animals for histopathological examination. Volume of tumor tissues was measured and angiogenesis and apoptosis were assessed

immunohistochemically by Factor VIII expression and Tunnel method in tumor tissues respectively and the differences were assessed among all groups.

Results: At the end of experiment, it was observed that vessel intensity was decreased and number of apoptotic cells were increased in the treatment groups compared to control group and these differences were statistically significant ($p<0.05$).

Conclusion: Anti-tumor activity of rhamnetin in solid tumor development was showed by apoptotic and angiogenic results. We believe that our results may contribute to currently known about tumor therapy.

Keywords: Ehrlich Ascites Tumor, rhamnetin, apoptosis, factor VIII

P-109

Determination of the forelimb's bones development in the fetuses of female rats exposed to Bisphenol A during pregnancy by using double staining

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Objective: Bisphenol A (BPA) is one of the most produced chemicals in the world. BPA takes part in the products such as food, personal care products, detergents, plastic bottles. BPA has been identified in amniotic fluid, maternal and fetal plasma, placenta, breast milk, fat tissue, semen, colostrum and saliva. Therefore, the aim of our study is to determine the effect of BPA's exposure during pregnancy on fetal bone development.

Methods: In this study, 16 adult pregnant female Sprague-Dawley rats were used. Rats were divided into 4 groups; the control group, 0.5 mg/kg/day BPA, 5 mg/kg/day BPA and 50 mg/kg/day BPA. Indicated BPA doses were given between first and 20th day of gestation. The fetus were removed out on the 20th day of pregnancy by cesarean. Skeletal system development of fetuses was examined with double staining method. The rate of bone-cartilage in forelimb bones (humerus, ulna, raidus) were determined with the ImageJ software program and the data was analyzed using SPSS statistical software.

Results: While the most ossification areas of humerus, ulna and radius were detected as 1.82 ± 0.14 mm^2, 0.93 ± 0.15 mm^2, 0.58 ± 0.70 mm^2 in the control group, the least ossification areas were detected as $.20\pm0.20$ mm^2, 0.63 ± 0.10 mm^2, 0.48 ± 0.70 mm^2 in the high dose BFA group respectively. The differences among the groups that related to the ossification areas and the lenghts of humerus, ulna, radius were determined statistically significant ($p<0.001$).

Conclusion: According to these data, exposure to BPA during pregnancy reduces the ossification in skeleton system and affects bone growth negatively. "This study was supported by Erciyes University BAP Commission, with the project number of TDK-2015-6181"

Keywords: Bisphenol A, rat, double staining, bone development

P-110

Mirtazapine's effect on appetite metabolism in diabetic liver

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Objective: Diabetes mellitus is among the high mortality and morbidity risk of the disease. Researchers have some ideas about leptin plays a role glucose homeostasis and possibly the overall obesity-related metabolic syndromes. Leptin hormone, besides the regulation of appetite and energy metabolism, is associated with many hormone and plays very important role in maintaining body homeostasis. Besides, in recent years it has been reported in studies that leptin shows both diabetogenic and antidiabetogenic properties and associated with free radical generations. Galanin is 29 aa neuropeptides and it's functions are regulation of pituarity hormones, insulin secretion, alcoholosim, neuropathic pain and energy balance. Mirtazapine, a noradrenergic and specific serotonergic anti-depression used in the treatment of major depression. It blocks $\alpha2$ adrenergic oto/heteroreceptors and so it is increased to secrete serotonine and it demonstrates the activity by selectively antagonize 5-HT2 and 5-HT3 serotonine receptors. α-adrenergic antagonists, reducing the concentration of glucose in plasma but are involved in glycogen stored without changing the insulin response. We investigated leptin and galanin thats are associated with appetite in diabetic rat livers, and despite the effect of mirtazapine.

Methods: 21 female Sprague Dawley rats were used in our study. Diabetes model formed with 55mg/kg streptozotocin (STZ, i.p.) (0.1mol/l citric asid tampon pH4.5) and blood/glucose level was measured after 3 days of STZ injection, and the ones higher than 300 mg/dl were considered to be diabetes. 2 weeks after the STZ application, 20 mg/kg Mirtazapine was applied for 14 days. The liver samples were taken at the end of the experiment to be fixed with 10% formaldehyde for the process of Hematoxylin-Eosin(H-E)and PAS histochemistry staining, leptin immunohistochemistry and western blot analysis for leptin and galanin.

Results: As a result of our study, there are healthy hepatocytes having radial structure in H-E staining in the control group and hepatocytes containing stored glycogen in PAS reaction. There are necrotic cells in HE staining, vacuolization and infiltration, decreased glycogen amount in PAS reaction in diabetic group. In Mirtazapine group, increased glycogen in PAS reaction were observed. According to the results of the immunohistochemistry and western blot of leptin, there is a decreasing in diabetic group compared to control and increasing in the mirtazapine group. Galanin expression is higher in

diabetic group than control and it is the highest in mirtazapine group.

Conclusion: In conclusion, in diabetic people leptin levels are decreased and galanin levels are increased and impaired of appetite metabolism are seen. In mirtazapine group, leptin, galanin and glycogen levels are nearly like control groups. We think that mirtazapine can be used for regulatory of appetite metabolism in diabetic people.

Keywords: diabet, liver, mirtazapine, leptin, galanin

P-111

Rats hindlimb ischemia-reperfusion injury against the protective effect of nesfatin and IL-18 BP (Interleukin-18 binding protein)

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Objective: An organ damage after ischemia / reperfusion (IR), is more than just the damage caused by only ischemia. The research for specific drugs for the prevention of reperfusion injury continues. So far, a variety of drugs have been reported to prevent the hindlimb IR injury in experimental models. However, the use of these drugs could not find wide application in clinical practice. We aimed to investigate the protective effects of nesfatin and IL-18 BP which is powerful antioxidant and anti-inflammatory on damage in hindlimb caused by systemic inflammatory response syndrome after ischemia-reperfusion.

Methods: A total of thirty-two 220–320 g weight of an adult male Sprague Dawley rats were equally divided into four groups as follows: Sham, IR, IR+Nesfatin and IR+IL-18 BP. After anesthesia, the infrarenal aort was carefully explored and clamped using an atraumatic microvascular clamp. IR model was created; one hour infrarenal aortic occlusion (IAO) and two hours of reperfusion performing. Group 1 Sham (n:8); Laparotomy and infrarenal aort dissection were done with the same surgical duration and stress as in other groups, but no clamping was done to infrarenal aort. After three hours the rats were sacrificed and tissue samples were taken. Group 2 IR (n:8); 30 minutes before surgical procedure 1 mL SF was administered intraperitoneally. IR procedure was performed afterwards. Group 3 IR+Nesfatin (n:8); 30 minutes before surgical procedure 10 µg/kg nesfatin (N) was given intraperitoneally. IR procedure was performed afterwards. Group 4 IR+IL-18 BP (n:8); 30 minutes before surgical procedure 100 µg/kg IL-18 BP was given intraperitoneally. IR procedure was performed afterwards. Histopathological tissue damage was evaluated by hematoksilen & eozin and gomori trichrom. IL-6 and caspase-3 expression changes was evaluated by immunohistochemically. Biochemical analysis; inflammatory cytokine levels and parameters of oxidative stress were measured by Elisa kits.

Results: Histopathological examination revealed; tissue injury, expression of caspase-3 and IL-6 were remarkably higher in IR group, when compared with sham group, and the laboratory tests returned to normal level in treatment groups. Biochemically; while TNF-α, IL-1α, IFN-γ, IL-18, IL-6, C, M, NO, TOS and OSI levels increased in the IR group, all of them significantly decreased in the treatment groups ($p<0.05$). Whereas SOD, GSH, TAS levels decreased in the IR group, they significantly increased in the treatment groups ($p<0.05$).

Conclusion: This study suggested that Nesfatin and IL-18BP have antioxidant, anti-inflammatory and antiapoptotic effects in cases of IR with infrarenal aort induced hindlimb IR injury.

Keywords: ischemia, reperfusion, IL-18 BP, nesfatin, hindlimb

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Determination of the light microscopy, IMHC and electron microscopy properties of the digestive system tissues of axolotl

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Objective: The aim of this study is to gather detailed information of the axolotl digestive system with using light microscopy (LM), immunofluorescein (IF) and scanning electron microscopy (SEM) techniques.

Methods: This study protocol was approved by the ethical committee of the Istanbul Medipol University (Number: 38828770-604.01.01-E.7754). Six axolotl including 3 neotenic, 3 metamorphic were used in this study. The anesthesia was achieved by adding 0.1% benzocaine to the water in which the animals live. The tongue, esophagus, stomach and intestine of the axolotl were harvested. The tissues were fixed in appropriate way. IM investigation: After utilizing routine histological tissue protocols the tissues were imbedded in paraffin. Sections of 4 µm thick were cut with electronic rotary microtome They were stained with hematoxylin-eosin (HE), Masson's trichrome and PAS for morphological analysis. Evaluations were documented with Nikon DS-Fi2-U3 digital camera. IF investigation: The harvested tissues were sectioned at 4 µm for immunohistochemistry. Incubation was carried out with primary and seconder antibodies in a humidified chamber at 4° C overnight. After incubation with the secondary antibodies, the cells were rinsed with PBS for the last time, and coverslips were mounted using ProLong Gold antifade reagent with DAPI. Images were captured using a confocal microscope with an objective equipped with appropriate laser and filter sets. SEM investigation: Tissues were fixed with 2.5% glutaraldehyde and rinsed with PBS and post fixed with 1% OsO_4. Tissues, which were initially rinsed with ascending alcohol and then with acetone, were evaluated with Zeiss EVO HD 15 electron microscope.

Results: Tongue: The tongue surface is covered with non-stratified squamous epithelium. It is rich with blood vessels and striated muscle. In addition, hyaline cartilage areas were detected Stomach: Mucosa, submucosa, muscular and serosal layers were detected. Lumen is lined with mucous secreting columellar and gastric cells were found in large quantities. Serous and mucous glands were noted at the lamina propria. After metamorphoses it was noted that the connective tissue is more organized, the submucosa is rich in vessels and tunica muscularis is in smooth muscle character. Intestines: The metamorphic axolotl intestine is shorter than netechnique axolotl intestine. Abundant epithelia folds were noted and the lumen is covered with multi layered epithelial cells. Abundant goblet cells, very thin connective tissue and muscle tissue was noted. IF and SEM imaging and evaluations are still undergoing.

Conclusion: gastrointestinal system is very important for animals to survive. GIS morphology and histology gives us clues and information about how the certain animal feeds, digests and defecates. While general histological characters are noticed with IM, SEM is employed to elaborate these structures. Aksolotl (A. Mexicanum) is an animal under tailed amphibian class. It is capable of regenerating its heart, tail spine, gills, brain and limbs without any scar formation. While it has high regeneration capacity, very little known about the healing properties of the gastrointestinal system of the axolotl. Therefore, we initially studied and mapped the detailed ultrastructural anatomy of the gastrointestinal system of the axolotl.

Keywords: axolotl, neotenic, metamorphic, gastrointestinal system, SEM

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Cabazitaxel causes a dose-dependent central nervous system toxicity in rats

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Objective: The primary aim of this study was to investigate the central nervous system toxicity of Cabazitaxel. Secondary aim was to investigate the safety dose of Cabazitaxel for the central nervous system.

Methods: A total of 24 adult male Wistar-Albino rats were equally and randomly divided into four groups as follows: group 1 (Controls), group 2 (Cabazitaxel 0.5 mg/kg), group 3 (Cabazitaxel 1.0 mg/kg) and group 4 (Cabazitaxel 1.5 mg/kg). Cabazitaxel (Jevtana, Sanofi-Aventis USA) was intraperitoneally administered to groups 2, 3 and 4 at 0.5, 1.0 and 1.5 mg/kg (body-weight/week) doses, respectively for four consecutive weeks. Beside this, group 1 received only i.p. saline at the same volume and time. At the end of the study, animals were sacrificed and bilateral brain hemispheres were removed for biochemical, histopathological and immunohistochemical examinations.

Results: Intraperitoneal administration of Cabazitaxel has exerted neurotoxic effect on rat brain. We have observed that biochemical and immunohistochemical results became worse in a dose dependent manner.

Conclusion: Our findings have suggested that Cabazitaxel may be a neurotoxic agent and can trigger apoptosis in neuron cells especially at high doses.

Keywords: cabazitaxel, central nervous system, neurotoxicity, rat

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Investigation of the effect of safranal and crocin pre-treatment on hepatic injury induced by infrarenal aortic occlusion

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Objective: Ischemia-reperfusion (IR) injury of the liver is an unresolved problem that occurs during certain surgical approaches, including hepatic, cardiac and aortic operations. In this study we aimed to investigate whether crocin and safranal had protective effects on liver IR injury induced in an infrarenal aortic clamping (IRAC) model.

Methods: Male Wistar-Albino rats (n=32) were divided into four groups with 8 animals each as follows: Sham, IR, IR + crocin, and IR + safranal. The infrarenal aorta (IRA) was clamped for 60 min for the ischemic period and allowed to reperfuse for 120 min. Blood and tissue samples were collected for biochemical, histological and immunohistological analysis.

Results: Plasma alanine aminotransferase (ALT) and aspartate aminotransferase (AST) were found to be significantly higher in the IR group than the sham group (respectively; $p=0.015$, $p<0.001$). There were significant differences between the IR group and the IR + crocin group or the IR + safranal group in AST levels (respectively; $p=0.02$, $p<0.001$). ALT showed a significant decrease in the IR + crocin group compared to the IR group ($p<0.05$). We also observed histopathological changes among the groups. Bax and Caspase-3 expression in the IR group was remarkably higher than in the other groups.

Caspase-3 and Bax expression in the IR + crocin and the IR + safranal groups were significantly lower than in the IR group. Nevertheless, there were no significant differences in BCL2 expression among the groups.

Conclusion: IRAC is a cause of IR injury in the liver. This study showed that crocin and safranal have protective effects on IR induced liver injury.

Keywords: ischemia-reperfusion, liver injury, bax, blc-2, caspase-3

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Neuroprotective effect of IL-18bp on encephalopathy induced by liver ischemia reperfusion

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Objective: Hepatic ischemia–reperfusion injury (HIRI) influences different body cells, causing serious damage and affecting distant organs. Interleukin-18 bindingprotein (IL-18BP) is an antioxidant agent in ischemia/reperfusion injury. We investigated the anti-inflammatory and antioxidant effects of interleukin-18 bindingprotein (IL-18BP) on encephalopathy induced by liver ischemia ischemia/reperfusion (I/R) injury in rats.

Methods: Forty adult male rats were divided into five groups: sham, ischemia reperfusion-2h, ischemia reperfusion-2h+IL18BP, ischemia reperfusion-4h, ischemia reperfusion4h+ IL18BP. The ischemia procedure was achieved by inhibiting the liver perfusion with "bulldog clamp"on hepatic artery and portal vein Blood and tissue samples (both lobes of the brain) were taken from the animals due to histopathological evaluation and biochemical analysis of serum alanine aminotransferase, aspartate aminotransferase and lactate dehydrogenase, malondialdehyde, glutathione, nitric oxcide (ALT, AST, LDH, MDA, GSH, NO) level, Oxidative stress parameter measurement of tissue total oxidant capacity (TOS), total antioxidant status (TAS) was done for determination of tissue oxidative stress index (OSI) .

Results: MDA, LDH, AST, ALT, NO, TOS, OSI measurements were increased in the ischemia-reperfusion groups ($p<0.05$). Serum levels of GSH and TAS measurements were decreased in the ischemia-reperfusion groups ($p<0.05$). İschemia reperfusion+IL18BP groups moderately reduced serum levels of MDA, LDH, AST, ALT, NO, TAS, OSI ($p<0.05$).The serum levels of GSH were significantly increased in the ischemia reperfusion+ IL-18BP groups ($p<0.05$). TOS levels were decreased in the IL-18BP ischemia-reperfusion groups ($p<0.005$). The histopathological scores showed lower dead and degenerated neurons in the ischemia-reperfusion-2h +IL18BP group than ischemia reperfusion-2h group but the rates of apoptosis were not statistical significant ($p>0.005$).

Conclusion: The results of the current study demonstrate that IL-18BP plays both antioxidant and protective roles on encephalopathy induced by liver ischemia reperfusion I/R injury.

Keywords: Interleukin-18 binding protein, hepatic ischemia reperfusion injury, neuroprotective effect, oxidative stress

P-116

The effects of ciprofloxacin and quercetin to the growth of fetal brain

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Objective: The aim of this study was to determine whether the use of ciprofloxacin during pregnancy causes oxidative stress on brain tissues and morphological development of the fetus, and whether quercetin, a flavonoid, in addition to ciprofloxacin prevents this damage or not.

Methods: Twenty-eight young, female, 250 g, Wistar albino rats provided by the Experimental Animals Production and Research Center, Inonu University (İNÜTF-DEHÜM). Wistar rats were fertilated at the beginning of the experiment process. Pregnant rats were divided into four groups: controls, ciprofloxacin, quercetin and ciprofloxacin plus quercetin groups. Twice 20 mg/kg/day from day 7 to day 17 of gestation ciprofloxacin were administered to Ciprofloxacin group. In quercetin group 20 mg/kg/day quercetin was administered while in Ciprofloxacin plus quercetin group twice 20 mg/kg/day Ciprofloxacin and 20 mg/kg/day quercetin were administered. Fetuses were taken by C-section on the 20th day of pregnancy.

Results: In the ciprofloxacin group, some defects in macroscopic body parts were observed. It observed that the brain and also total weight of fetuses were significantly lower in the ciprofloxacin group than the control group ($p=0.001$). Whereas the quercetin treated group increased also the total weights and brain weights significantly ($p=0.001$). Histological evaluation: In the ciprofloxacin group, congestion and hemorrhage areas were detected under pia mater. Neurons in cerebral cortex were disorganized. Neuron density decreased markedly compared to the control group. In the ciprofloxacin group, neuron number in cortex cerebri was decreased compare to control and quercetin groups ($p=0.001$). In the ciprofloxacin + quercetin group, significant increase in neuron number was observed.

Conclusion: Biochemistry discoveries on fetal rat brain: Superoxide dismutase (SOD) enzyme activity (p=0.017) and malondialdehyde (MDA) levels (p=0.001) were found to be significantly higher in the group which applied ciprofloxacin, on the contrary, the activities of glutathione (GSH), ended up with a decrease in catalase (CAT) and glutathione peroxidase (GSH- Px) levels in the ciprofloxacin group (p=0.015, p=0.004, p=0.022, respectively).

Keywords: ciprofloxacin, quercetin, flavanoid, fetus

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Comparison of differences caused by sectioning methods on the estimation of hippocampal volumes in rats

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Objective: The accurate and precise measurement of brain volumes has special importance in evaluation of the neuroanatomical studies conducted on experimental animals. Especially in studies investigating the number of cells in a specific region of the brain, volumetric changes might cause alterations in the density of cells. Therefore, in this study, we aimed to investigate the effect of section thickness on estimation of the hippocampal volumes in normal rats by using two different sectioning methods.

Methods: A total of ten female adult Spraque-Dawley rats, having similar body weights, were used and animals were divided into two groups. Following proper anesthesia, animals were subjected to intracardiac perfusion with phosphate-buffered saline followed by 4% paraformaldehyde. After postfixation for two more days, brain tissues were embedded in paraffin blocks and cut at a thickness of 3 µm by using microtome in the first group; whereas brain tissues of second group were sectioned at a thickness of 60 µm by using vibratome. Then, sections were stained by cresyl-violet technique and total volume of the dorsal hippocampus was measured by Cavalieri volume estimation method.

Results: In all morphometric analyses, right dorsal hippocampal region was investigated by using coordinates (between Bregma points of -2.28 and -3.84) indicated in the rat brain atlas. In the first group, the estimation of mean volumes was 6.11×10^6 µm^3 and 4.09×10^6 µm^3 in the pyramidal cell layer and dentate gyrus, respectively. In the second group, these values were 152.37×10^6 µm^3 and 87.11×10^6 µm^3, respectively. Microtome sectioning of paraffin embedded tissue caused approximately 25% of reduction in the volume estimation of interested region compared to vibratome sectioning.

Conclusions: The results of this study showed that estimation of dorsal hippocampal volume changes significantly according to the embedding method of the tissue and section thickness. Embedding tissues into paraffin might cause more shrinkage and deformation problems compared to vibratome sectioning. However, thin sections have more advantages, especially for immunohistochemical staining, due to their better permeability. Therefore, investigators need to be aware of advantages and disadvantages of different sectioning methods and consider contribution of unpredictable tissue deformation and tissue shrinkage while comparing their quantitative results.

Keywords: dorsal hippocampus, paraformaldehyde, vibratome, microtome, cresyl violet staining.

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Comparison of calretinin containing neurons in nucleus pedunculopontinus of Wistar and 6-OHDA induced Parkinson model rats

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Objective: Parvalbumin, calbindin, and calretinin are calcium binding proteins. It is known that these proteins are expressed in neurons containing GABA and glutamate. In addition to this, it has been shown that calretinin has a endogenous neuroprotective effect in pathogenesis of several neurological disorders; and that dopaminergic neurons containing calretinin are more resistant in oxidative neuron damage created with 6-OHDA Parkinson model. Nucleus pedunculopontinus (PPN), a brain stem nucleus located in caudal tegmentum with indefinite borders, acts in the creation and controlling of locomotor movements. In addition to its relationship with basal cores and its role in locomotor system, PPN has recently gained importance as it is a zone where deep brain stimulation used in symptomatic treatment of akinesia seen in Parkinson disease. The study aims comparing the number of neurons marked with calretinin in PPN of the healthy rats against the rats which Parkinson model is created by damaging the dopaminergic neurons through 6-OHDA injection.

Methods: The study contains control (n=4) and Parkinson (n=4) groups. Wistar rats, which the Parkinson model will be created, received 6-OHDA injection in their unilateral medial forebrain bundle zone under anesthesia. The disease group has been created with the rats giving positive result as a result of apomorphine rotation test on 21st day following the injection. All rats were fixed with transcardiac perfusion, and their brains were removed. Sagittal cross-sections of 40 µm were taken with microtome from the brains removed. Dopamine loss of the cross-sections in the Parkinson group was controlled through tyrosine hydroxylase staining. Double immunohistochemistry procedure was applied on the cross-sections with PPN of the rats verified to have the model, as cholinergic staining through choline acetyltransferase (ChAT) antibodies and calretinin staining through calretinin antibodies. Aim of cholinergic staining is to determine the cross-sections containing PPN limited with cholinergic neurons. Calretinin positive neurons inside PPN were counted in fluorescence microscope. Data is analyzed in Graph-pad software.

Results: Average 85.25±17.04 neurons containing calretinin were counted in the rats with Parkinson model, while

132.5±34.37 neurons containing calretinin were counted in the healthy rats. Although the number of neurons containing calretinin decreases in the Parkinson group compared to the healthy group, this decrease is not statistically significant.

Conclusion: Findings show that the calretinin expression of neurons are affected from the decrease in dopamine. It is compliant with the studies in the literature showing the decrease in the amount of calretinin in neurodegenerative diseases. In the light of these results, it's being planned to increase the number of rats in both groups, and to perform statistical analyses.

Keywords: calretinin, parkinson, PPN, 6-OHDA

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Chronic cellulosic of thinner inhalation effects on lipid peroxidation at the rat olfactorius bulb

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Objective: To investigate Chronic Cellulosic of Thinner Inhalation Effects on Lipid Peroxidation at the Rat Olfactorius bulb

Methods: In our study, approximately 400–450 g weight species Rattus norvegicus 20 young male Wistar rats were used. The rats were divided into 2 groups. Groups were divided as the control group and the group thinner. Took place 1 hour and 10 rats in each group 2 times a day to be thinner with rats for 6 weeks was allowed to effect inhalation. the most widely used cellulose thinner was used in industrial operation. The concentrations of the solvent in the thinner composition was measured with Drager gas detector. At the end of the experiment subjects were dissected bulb olfactorius analysis of lipid peroxidation.

Results: End of the experiment received bulb olfactorius analysis of tissue lipid peroxidation, respectively: Control Group: 0.450 µmol/mg, Thinner inhaled Group: 0.860 µmol/mg were detected.

Conclusion: The data obtained from the analysis results showed that caused damage in the tissue.

Keywords: thinner, olfactorius bulb, inhalation, lipid peroxidation

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Volumetric changes on dentate gyrus of streptozotocin-induced diabetic rats

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Objectives: Dentate gyrus which is located in formatio hippocampalis is an anatomic structure adjacent to hippocampus. Its most prominent cell groups are granular cell layer. It resembles in looks hippocampus with its three-layer structure. Although its known as the most exitotoxic resistant part of formatio hippocampalis. Diabetes Mellitus is a chronic disease effecting multiple organs and central nervous system through neuronal damage. The aim of this study is to determine volume changes in the dentate gyrus granular cell layer on streptozotocin induced diabetic rats.

Methods: In the present study, 18 adult Wistar rats has been used. The rats were divided randomly such that n=6 into three groups; Control (C), Sham (S) and Diabetic (D) groups. D group was administered 60 mg streptozotocin intraperitoneally. In group D, blood glucose levels of rats were found above 300 mg/dl at the 3rd and 10th days after streptozotocin injection. All most groups had decapitated and their brains were removed and sampled in slices randomly and systematically. Volumetric estimate of dentate gyrus granular cell layer was performed accordingly to a stereologic method called Cavelieri Method.

Results: Left dentate gyrus granular cell layer mean volumes estimated in C group 0.84 mm^3, S group 0.91 mm^3, D group 0.75 mm^3. Right dentate gyrus granular cell layer mean volumes estimated in C group 0.88 mm^3, S group 0.89 mm^3, D group 0.67 mm^3. According to these it was found D group volume value smaller than C and S groups volumes in both right and left. But statistically significant reduction was determined only D group volume value among S group the volume value for the right side (Mann-Whitney U test, $p<0.05$).

Conclusion: Although streptozotocin induced diabetic rat dentate gyrus was determined volume reduction, statistically the only significant differences were found between volumes in the rat dentate gyrus right group D and S.

Keywords: diabetes mellitus, hippocampus, stereology

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Leptin expression in diabetic rat brain

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Objective: Investigation of leptin expression in diabetic rat brain by immunohistochemistry.

Methods: 14 female Sprague Dawley rats were used in our study. Diabetes model was formed with 55 mg/kg streptozotocin (STZ, i.p.) (0.1mol/l citric acid buffer pH 4.5) and blood/glucose level was measured after 3 days of STZ injection, rats with a higher blood/glucose level than 300 mg/dl were considered to be diabetic. The brain samples were taken at the end of the experiment to be fixed with 10% formaldehyde for the process of immunohistochemistry.

Results: When the leptin expression analyzed between the groups, the expression of leptin was observed only in the

choroid plexus in brain. We observed that the leptin immun reaction in diabetic rats was decreased and the immunreaction was observed only in choroid plexus too.

Conclusion: Leptin hormone, besides the regulation of appetite and energy metabolism, is associated with many hormones and plays very important role in maintaining body homeostasis. It is highly expressed in adipose tissue. Once leptin is synthesized, the major source of leptin transport to the brain is through the choroid plexus. Our study suggests that the leptin hormone gave positive immun reaction in the choroid plexus and in the case of diabetes, it was observed that the expression was reduced. The decrease in the leptin expresion at diabetes may cause distortion in many physiological pathways.

Keywords: diabetes, brain, leptin, choroid plexus

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Epigenetics in neuroscience research: DNA methylation dynamics

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Objective: In the last 20 years, particularly after the completion of the Human Genome Project, neuroscience research began to illuminate the genetic base of several normal and pathologic molecular events, from the development to the aging of the brain. Emerging with the dynamic interaction between the genome and environment, the internal mechanistic that governing the gene-environment communications has been coming to light mostly with the epigenetic research. The significance of epigenetics in neuroscience, especially with the emphasis of DNA methylation mechanisms, will be exemplified with our previous and ongoing studies.

Methods: In our past and present neuroepigenetic studies: by using rodents (C57BL6 mouse and Sprague Dawley rat), we employed some animal models (Fetal Alcohol Syndrome, Early Cranial Irradiation, Using the Physiological Effect of Pregnancy and Lactation and Nicotine Deprivation); testing cognitive ability (Morris Water Maze, Open Field and T Maze); and cellular and molecular analyses (on either fixed or fresh brains) by immune-labeling (light and confocal microscopic), expression with Western-Blot, global methylation with ELISA and Fluorescence Activated Cell Analysis and Sorting.

Results: In our first neuroepigenetic study, we detected that DNA methylation dynamics had a distinct spatio-temporal behavior like a program during the normal development of cerebral cortex and hippocampus. After that we also observed that fetal alcohol exposure dramatically altered this program while leading developmental delays at these brain regions. In our next study, we showed that early cranial irradiation retarded the adult hippocampal neurogenesis (also tested at behavioral level) and in parallel lead to major DNA methylation/demethylation changes at the same type of cells. In our present project, we have been investigating the DNA methylation behavior of olfactory neurogenesis by using the pregnancy and lactation as a model. Further findings will be given during the presentation.

Conclusion: Based on our experience with the above mentioned studies, from the development to the aging of the brain, DNA methylation dynamics act like a specific manner not only depending on the tissue or age but also to the cell type, and highly vulnerable to the environmental insult.

Keywords: neuroscience, epigenetics, DNA methylation

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Do proteinopathic changes observed in neurodegeneration associate with anatomical maps?

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Objective: Having a wide range of phenotypic characteristics, neurodegenerative diseases is one of the most important health problems in aging population. The most common examples of them are Alzheimer's Disease (AD), Parkinson's Disease (PD) and Amyotrophic Lateral Sclerosis (ALS). Recent studies suggest that structural changes in proteins, such as Tau, β-amyloid, α-synuclein, TDP-43, act as a common mechanism in the pathogenesis of these diseases. Since it has been thought that proteinopathic damage causing neurodegeneration spreads through neuronal connections in pathological specimens of patients, current study was investigated the relationship between the anatomical connections of neurons located in these regions and the propagation map of neurodegenerative diseases, based on the published literature.

Methods: In PubMed, studies between the years of 2006 and 2016 were screened by using "β, Thai, TDP-43, α-synuclein, Alzheimer's, Parkinson's, ALS and post-mortem" keywords. Although we attained approximately 1000 studies, the ones focusing mostly on protein extraction, imaging and density, rather than anatomical structures, and investigating less than 50 cases were not included into our study. At the end, only 25 research studies met the specified criteria, in which the diseases were staged in correlation with clinical signs.

Results: Tau aggregation observed in AD, starts in the locus coeruleus and dispensed to the entorhinal and transentorhinal region. Then, it spreads over large areas of the neocortex and formatio hippocampi. β-amyloid depositions are first seen in the neocortex, and then progressively move into caudal direc-

tion to allocortex, basal ganglia and diencephalon. α-synuclein proteinopathy in PD moves from brain stem to the telencephalon. In early stages, accumulations were detected on dorsal vagal nucleus located in bulbus and olfactory bulb, but then spread to pons, mesencephalon and neocortex. TDP-43 pathology commonly seen in ALS, are found in agranular motor cortex, motor nucleus of V, VII and X-XII cranial nerves and α-motor neurons of the spinal cord. In later stages, TDP-43 pathology spreads into prefrontal neocortex, reticular formation, precerebellar and pontine nuclei. Involvement of the prefrontal and postcentral neocortical areas occur well before the involvement of hippocampus and anteromedial parts of temporal lobe.

Conclusion: Proteinopathic damage follows a specific route during the progression of disease from its initial to later stages. Neuronal connections in these regions display similarities to this route, whereas some information suggests the presence of a specific molecular network. In this regard, the data will be obtained from brain banks has a critical importance for staging and developing specific pathological maps of neurodegenerative diseases.

Keywords: proteinopathy, neurodegenerative diseases, pathological mapping, brain

P-124

The distribution of PCNA and Bax proteins and L-cysteine's effect in acrylamide-induced testis damage

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Objective: The goal of the study is to investigate the changes of Bax and PCNA proteins in acrylamide-induced testis damage and effect of L-cysteine.

Methods: In the study, 28 rats of adult Sprague Dawley rats were assigned into 4 group 7 in each. The groups are control (only saline solution), L-cysteine (150 mg/kg i.p.), acrylamide (40 mg/kg i.p.) and L-cysteine + acrylamide. After 10 day-injection period, testes were excised and immunohistochmistry was applied for PCNA and bax following classic tissue processing.

Results: PCNA positivity was detected less in acrylamide group when compared with control group in seminiferous tubules. Besides, PCNA positivity was observed more less especially in the seminiferous tubules having multinucleated giant cells. In L-cysteine + acrylamide group, proportion of PCNA positive cells were similar to control group. As for the bax, all the groups have similar positivity.

Conclusion: According to results, acrylamide either inhibits or decreases the proliferation of cells, especially primary spermatocytes, in seminiferous tubules, This may be an evidence of how multinucleated giant cells form in the stage of primary spermatocyte. Besides, L-cysteine protects testis against the damaging effect of acrylamide. As for the bax, this protein may not play important role in acrylamide toxicity. However, additional studies are needed to elucidate this point.

Keywords: acrylamide, L-cysteine, immunohistochemistry, PCNA, Bax

P-125

Evaluation of botox injection applications around the eyes

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Objective: Mimic muscles are not fully independent muscles. They have myofibrils extended to neighboring muscles even though having origo and insersio of bone and superficial fascia. This feature is seen clearly on the upper facial area. For this reason, it is more valuable to evaluate the muscles of the upper facial region under the name of "orbitofrontal complex", not independently.

Methods: It has been shown in dissection that some myofibrils between orbicularis oculi and corrugator supercilii muscle, corrugator supercilii and occipitofrontal venter frontal muscle and also between procerus and venter frontal muscle are in progress. It explains why most people have asymmetric facial expressions or new asymmetrical appeareances after botox applications. It also expresses why desired natural appearance cannot be obtained as a result of the Botox injection into single muscle. For example, when people who is disturbed by the horizontal lines on the forehead wants to apply botox to venter frontalis and If we do not care that this muscle is not the suspension of orbicularis oculi and corrugator supercilii muscles, there will be the loss of tension in the upper eyelid. This creates a feeling of heaviness in the upper eyelid. The upper portion of orbicularis oculi muscle which is avoided region to protect supraorbital and supratrochlear nerve are would be spared from the suspensory effect of occipitofrontal muscle.

Results: Corrugator supercilii muscle is deep muscle in the medial while superficial in the lateral. Although its medial border is very clear, it is fused to adjacent muscle in the lateral. Botox that will be applied to medial must be made deeper. However, orbicularis oculi pars orbitalis is superficial. This muscle is leaning to margo's with the fat pads in the aditus orbitalis. Because of the reason of being very close to Orbit, the leakage of injection into the eyelids and causing pitosis is seen commonly. For the people whose the eye lateral half is too wrinkled during laugh, on the deep wrinkles happened in the orbicularis oculi muscle sub- section of the lateral, the leakage of the injection made in this area to the zygomaticus muscle is a potential complication. The assymmetrical laugh appearence is the disturbing result.

Conclusion: the carefull selection of botox injection points, the injection quantity and the determination of safe zones are very important issues for a natural expression.

Keywords: face, botox, orbitofrontal complex

P-126

The relation of bioelectrical impedance measures of patients with benign prostatic hyperplasia with their prostate specific antigen levels

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Objective: We aim to analyze the relation of bioelectric impedance measures of patients with benign prostatic hyperplasia (BPH) with their prostate-specific antigen (PSA) levels, and to analyze the differences of such measures from measurements taken from healthy individuals.

Methods: This study was conducted at the Urology Clinic of Adnan Menderes University Research Hospital between 05/01/2015 and 04/20/2016. The treatment sample consists of 31 patients that were 45–75 years old, diagnosed with BPH, not operated for this pathology, and without a chronic disease. The control sample consists of 27 people the same age group, without BPH diagnosis, and without a chronic disease. PSA levels were measured in the blood of people in our samples. Anthropometric measurements were performed with BIA-101. Data were analyzed through "PASW Statistics 18 Brief Guide" program using "Independent Sample T-Test" and "Mann-Whitney U test".

Results: Descriptive statistics for the size variable in the control sample are 1.72±0.05 while in the treatment sample are 1.70±0.08. The median and 25th–75th percentile measures for weight and PSA variables are 80 (74–94) and 0.74 (0.43–2) for the control sample, whereas are 74 (57–84) and 4.51 (2.31–8.20) for the treatment sample. FFM, BCM, MM, ICW, FFMI PSA, Excang Na/K, BMI and BCMI variables were significantly different between the healthy (control) group and the BPH patient (treatment) group. FFM (p=0.022), BCM (p=0.029), MM (p= 0.029), ICW (p=0.016), FFMI (p=0.025), BMI (p=0.033), BCM) (p=0.015) measures are higher in healthy individuals compared to the patients. On the contrary, PSA and Excang Na/K values are higher for the group of patients with a diagnosis of BPH compared to the healthy individuals.

Conclusion: Bioelectrical impedance analysis (BIA) is an easy, reliable and inexpensive method to detect the effects of diseases to body composition such as BPH that are observed frequently among the population.

Keywords: BIA, anthropometry, BPH, BMI

P-127

The evaluation of the effects of kinesio-taping treatment methods in addition to routine physiotherapy methods on upper extremity function, quality of life and emotional state in patients with chronic rotator cuff syndrome

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Objective: The shoulder joint is important for the functional capacity of the upper extremity. A large part of the functionality in this joint is formed by the rotator cuff muscles and rotator cuff injuries are the leading cause of pain and disability in the shoulder. In this study; it is aimed to assess the impact of kinesio-taping treatment in addition to routine physio therapy methods on upper extremity function, quality of life and emotional state in patients with chronic rotator cuff syndrome.

Methods: Our study was performed on 92 patients with rotator cuff syndrome. Patients were divided into two groups. The routine physiotherapy techniques were applied (TENS, US, hot pack) five days a week for three weeks to the first group; kinesio-taping treatment twice a week for three weeks was applied in addition to routine physiotherapy techniques to the second group. Each patient was assessed by the DASH scale, SF-36 scale and Beck Depression Inventory before and after treatment. Treatment efficacy was compared between both group sand in the same group as well.

Results: In both groups, DASH Scale and the Beck Depression inventory scores were decreased in a statistically significant way after treatment. The SF-36 scale was increased in a statistically significant way.

Conclusion: There was a statistically significant difference in upper extremity function, quality of life and emotional status in both groups. An immense improvement was observed in kinesio-taping group.

Keywords: kinesio-taping, rotator cuff syndrome, quality of life, emotional status

P-128

The median arcuate ligament syndrome

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Objective: The median arcuate ligament (MAL) is a fibrous arch that crosses aortic hiatus at the T12-L1 level and unites the diaphragmatic cruses. This structure normally passes superior to the celiac artery. High origin celiac artery or low placed MAL could cause compression of celiac artery and ischemia. MAL syndrome is defined as chronical, recurrent abdominal pain that caused by compression of celiac artery. This situation is also known as celiac artery compression syndrome, celiac trunk compression syndrome, celiac axis syndrome or Dunbar syndrome. Symptoms are usually characterized by postprandial abdominal pain, weight loss, nausea and vomiting. These symptoms believed to be secondary to intermittent gut ischemia. Diagnosis is usually based on the clinical symptoms, imaging findings, and exclusion of other possible causes. We report a case with typical clinical and imaging findings that shows characteristic features of the MAL syndrome.

Methods: A 55-year-old woman presented with a history of; postprandial exacerbating abdominal, pain abdominal distension and vomiting, is diagnosed MAL syndrome.

Results: Physical examination showed abdominal distension, minimal tenderness and cholecystectomy scar. CT and CT angiography investigations showed that celiac artery narrowed because of the MAL compression. Catheter angiography (DSA) is planned for the patient and this investigation is showed that celiac artery is compressed by MAL 7mm after its origin, narrowed 70–80% and deplased to the inferior. After that patient went surgery. During the surgery MAL is removed and celiac artery is released. On the 1.,3. and 6. months controls reduction of abdominal pain and distension is showed. Especially postprandial vomiting hasn't been showed after first month.

Conclusion: MAL syndrome is an uncommon but it should be kept in mind in the presence of unexplained gastrointestinal symptoms.

Keywords: median arcuate ligament, compression of celiac artery, Dunbar syndrome, angiography

P-129

The effects of moderate exercise with treadmill on balance in adults

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Objective: Increase in the occurrence of sedentary life with concurrent decrease in physical activity, result in a gradual reduction in cardiovascular and locomotor capacities. This, in turn, causes a deficiency in neuromuscular control mechanisms that are involved in restoring and maintaining balance. We aimed to examine how static balance was affected with regard to perceived degree of difficulty and physiological parameters when sedentary individuals are subjected to physical activity at the level of submaximal exercise and whether sex was a factor in this relation.

Method: Twenty female and 14 male volunteers participated in the study. Subjects underwent cardiac examination prior to the exercise program and all were deemed fit to exercise moderately. Static balance by pedobarograph and blood lactate measurements were carried out before the exercise. Subjects then started exercising using modified Bruce treadmill protocol until they fulfilled the criteria for submaximal exercise. At every stage, modified Borg scale was given to the subjects to determine the perceived degree of difficulty. Static balance and blood lactate measurements were repeated right after the exercise, 5 and 10 minutes after the exercise. Data was fed into SPSS v15.0 statistical package for analysis.

Results: There were no statistically significant differences between static balance parameters. However, when sex was factored in, there were significant differences in AREApost0 and AREApost10 (p=0.021) and APexc at 0 and 10 minutes (p=0.018) in females. There were no significant differences in males.

Conclusion: Results indicate that moderate aerobic exercise performed by sedentary adults aged between 18 and 45 significantly affected metabolic parameters. There are not only significant sex differences but also individual variability in both respiratory parameters and accumulation of metabolic products such as lactic acid. The physiological capacities of females were lower than those of males at the same perceived degree of difficulty. On the other hand, the balance parameters were restored more rapidly in females. We suggest that perceived degree of difficulty should be taken as a criterion for fatigue in daily living activities and business life and that it should be taken into account to prevent accidents during activities that especially require attention and balance.

Keywords: static balance, postural control, moderate exercise, Borg scale

P-130

Celiac artery compression syndrome: a case study

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Objective: The clinical condition named celiac artery compression syndrome also called median arcuate ligament syndrome or Dunbar syndrome was described by Dunbar in 1965. It is one of the rarely encountered reasons of abdominal pain. It is seen in 0.002% of population. Median arcuate ligament presses the proximal part of celiac trunk and causes chronic abdominal pain by inducing ischemia. The incidence rate has been reported as 10–24% of asymptomatic individuals in the western population.

Methods: A 60-year-old male patient was admitted to our hospital with abdominal pain, simultaneously in follow up for abdominal aortic aneurysm and a history of appendectomy operation in his anamnesis. There was no nausea and vomiting. In the thoracic and abdominal CT angiography analysis appearances in correspondence with an over 50% stenosis and immediately after stenosis a poststenotic dilatation in the lumen of celiac trunk at its origin and at the level of diaphragmatic undulations were observed. Celiac artery compression syndrome is diagnosed by clinical and radiological investigations. Intestinal ischemia can be considered as acute and chronic. Embolism, thrombosis, dissection of aortic aneurysms, are acute and atherosclerosis, fibromuscular dysplasia and compressor masses are the chronic causes. The symptoms of the celiac artery compression syndrome include an abdominal pain which characteristically starts 15–30 minutes after eating and can extend up to 1–4 hours. Presence of many collateral circulations between the celiac trunk, superior mesenteric artery and inferior mesenteric artery causes individual isolated arterial stenoses to be usually asymptomatic.

Results: Two main theories have been proposed about the formation of clinical signs and symptoms. Mesenteric ischemia due to the compression of celiac trunk is the first theory. The second theory has been proposed as a neurogenic stimulation due to celiac ganglion and celiac plexus compression. Cutting or interruption of median arcuate ligament and fibrotic celiac ganglion in the treatment causes decompression.

Conclusion: As a result, in the evaluation of patients who are presenting abdominal pain, compression of the celiac trunk and intestinal ischemia should be considered. It is diagnosed as well as post-treatment follow-up is done through diagnostic procedures such as computed tomography and angiography.

Keywords: celiac artery, median arcuate ligament, Dunbar syndrome

P-131

Comparison of navicular drop test values between the calcaneal spur diagnosed patients and healthy individuals

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Objective: To determine whether there is a significant correlation between measurements of "navicular drop test" (ND) patients who have calcaneal spur diseases and individuals who don't have complaints about foot region.

Methods: It has been conducted with 50 volunteer patients at the age of 35–60 who have calcaneal spur diseases with 50 volunteer individuals at the age of 35–60 years who don't make complaints in foot region in Beyhekim Hospital Physical Therapy clinic. It hasn't been included participants who have lower extremity inequality and participants who undergo lower extremity surgery. It has been applied ND patients individuals and healthy individuals. It has been recorded patients and healthy individuals' age, height, weight, dominant extremity, rigt and left tuberositas navicularis height and navicular drop measurements. It has been evaluated between their relationships.

Results: While healthy individuals' (33 female, 17 male) average age is 45.31; patients individuals' (37 females, 13 males) average age was 45.98. It has been calculated as 26.8 (4% underweight, 38% normally, 18% overweight, 22% obese) to healthy individuals' body mass index and as 29.3 (18% normal and 48% overweight, 34% obese) to patients individuals. Average tuberositas navicularis height was measured as 46.08–45.67 mm in healthy individuals. It has been measured as 46.08–45.67 mm (right-left) to healthy individuals' average tuberositas navicularis height. While 5 of these people (10%) are using right side as dominant extremity, 45 of these people (90%) were using left side. It has been established as 48.06–48.53 mm (right-left) to patients individuals' average tuberositas navicularis height. While only 2 of these people (4%) are using left side as dominant extremity, 9(18%) of these people who have calcanael spur diseases was left extremity. 15(30%) of these people was bilateral and 26 (52%) of these people was right extremity. While healthy individuals average ND measurements are 5.04–4.28 (right-left) (100% ND<10 mm), patients individuals' was 10.08–8.48 (50% ND≤10 mm, 50% ND>10 mm– 70% ND≤10 mm, 30% ND>10 mm) (right-left).

Conclusion: According to our study, body mass index has an important place between the calcaneal spur's risk factors. Tuberositas navicularis's increase in the amount of substitutiton as a result of loading to extremity raises the risk of calcaneal spur. It is agreed that applying preventional treatment test to those, who are in need, after the ND in physical examination decreases the risk of disease.

Keywords: calcaneal spur, epin calcanei, plantar fasiit, navicular drop

P-132

Anatomic structures seen in direct laryngoscopy and tracheal intubation

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Objective: Direct laryngoscopy is a process using direct laryngoscopy to be seen placed in the larynx or trachea, the endotracheal tube inspection. Glottis in the upper airway to be seen enough with the laryngoscope has 3 axis to be aligned; these is mouth-axis, the axis of pharyngeal and tracheal axes. The head is extended at the atlanto occipital joints. This brings three axis into the corrent position. It is called sniffing the fresh air position. At laryngoscopy, the operatör first views the radix linguae, and then vallecula epiglotticae, plica vocalis, aryepiglottic fold, cartilago cuneiforme (tuberculum cuneiforme), cartilago corniculata (tuberculum corniculate), plica aryepiglottica, ve recesssus piriformis come into view. Between the cords is the triangular (apex forwards) opening of the rima glottidis, through which can be seen the upper two or three rings of the trachea. The most popular grading system in current use is that described by Cormack and Lehane. If all of the glottidis is visible it is grade 1, if partial view of glottis it is grade 2, if only epiglottitis seen is grade 3, when neither glottitis nor epilottis seen it is grade 4. This classification is used for ratings and reviews. There is also the ideamakers in terms of the ease of direct laryngoscopy or intubation.

Conclusion: Anatomical structures that will see the operator knows how to make the attempt, the process will allow you to do quickly and reliably, it is important to reduce the risk of complications is minimal.

Keywords: entubation, laryngoscopy, larynx, rima glottidis

P-133

Neuroanatomical mechanisms of sneezing

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Sneezing is a complex protective respiratory reflex, and is sometimes a sign of various medical conditions. It is the expulsion of air from the lungs through the nose and mouth, most commonly caused by the irritation of the nasal mucosa. Sneezing can be triggered through sudden exposure to bright light, a particularly full stomach and physical stimulants of the trigeminal nerve, as a

result of central nervous system pathologies such as epilepsy, posterior inferior cerebellar artery syndrome or as a symptom of psychogenic pathologies. It is a rarely explored symptom in neurological practice. Sneezing has two phases: nasal (sensitive) and respiratory (efferent). The nasal phase is mediated by trigeminal afferents feeding back to the presumed medullary sneeze center. The respiratory phase commences when a critical number of inspiratory and expiratory neurons are recruited by the sneeze center. Recruitment of these neurons increases activity in the vagus, phrenic, and intercostal nerves to the appropriate musculature. The anatomical existence of a sneezing center has not been fully confirmed in humans. The cases reported in the literature present abnormal sneezing usually with the defects in medulla oblongata. The results of the studies demonstrated that the sneeze center in humans is located proximal to the interpolaris and caudalis parts of the trigeminal spinal tract and nucleus.

Keywords: sneeze, n. trigeminus, sneeze center, anatomy

P-134

Eagle's syndrome

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Objectıve: Eagle's syndrome (ES) is defined as a disease which is caused by elongated stylohyoid process (ESP) or calcified stylohyoid ligament and characterized with kraniofacial or cervical pain. The pain in oropharynx that caused by ES spreads to ear, cheek, chin, eyes and neck. The pain is obtuse and persistent. In addition, the pain can be seen during neck rotation. The symptoms are usually unilaterally in ESP. ESP happens in approximately 4% of the overall population as Eagle stated, despite a minor ratio of (4%–10%) the cases are symptomatic. It is diagnosed by anamnesis, physical examination findings, radiological methods. Towne graphy, maxillofacial and three-dimensional computed tomography (3D-CT) can be used for imaging. We aimed to present a case with ES.

Methods: ESP has been detected with a cranial CT imaging in a 67-year-old male patient who consulted to the hospital with neck pain complaints.

Results: According to studies, more than 25 mm size of styloid process is defined as ESP. In our case, we have been measured right process as 45 mm and left process as 40 mm and patient has been identified as ES.

Conclusıon: ES should be considered for the patients who consult to different polyclinics with the complaints about dysphagia, sensation of foreign matter in the pharynx, pain spreading to ear, chin but can not get over these complaints. The diagnosis should be supported by the use of radiological imaging methods.

Keywords: Eagle's syndrome, elongated stylohyoid process, Towne graphy

P-135

Double enamel pearl whit buds: a case report

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Enamel pearl; it is also called as enamel nodule, enamel drop and enameloma. It varies in size and usually rangers between 1 and 3 mm in diameter. If enamel pearls found in the bifurcation or trifurcation of molars, they are usually seen in the upper molar. Enamel pearls show no clinical symptoms, they are detected in the extracted tooth for any reason. After radiological examination of A 25-year-old female patient whit pericoronitis diagnosis, whit extraction of left upper third molar (teeth 28) an enameloma, which is on the mesial aspect, under the enamel-cement border, erupting from same root as a two bud, has pearl color and oval was found. Large one and small one of buds were in the size of 2.5×3 mm and 1.5×1.75 mm, respectively. In the light of radiologic and histologic datas, this rare case was discussed.

Keywords: enamel pearl, molar, tooth.

P-136

Assesment of the Q angle in patients with medial meniscus lesions

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Objective: The knee joint is the most complex and the biggest joint of human body. It needs to have normal biomechanic features for normal function which is necessary for either static or dynamic stability. Q angle is a biomechanic measurement that represents the pulling angle of Quadriceps muscle. Medial meniscus lesions are one of the most common lesions of the knee joint. Atrophy of the Quadriceps muscle is one of the symptoms, can be seen in medial meniscus lesions. In this present study, it was aimed to assess the Q angle in patients with medial meniscus lesion.

Methods: We started our study after the ethical committee approval. Twenty-four adult male patients, ages between 20–50 years old, with medial meniscus lesion who were applied to Phyisical Therapy and Rehabilitation Outpatient Clinic of Turgut Ozal Medical Center and 28 volunteered healthy adult male controls in the same age group were included to our study. All measurements were done as subjects placed in supine position and full knee extension by standardized plastic goniometer. Knees with lesion and same knees of controls, bilateral knees of control group, healthy knees of patient group and same knees of controls were compared.

Results: The average Q angle value in knees with lesion was 15° while it was 9.6° for right and 9.5° for left knees of healthy

controls. A statistically significant difference was noted between the knees with lesion in patient group and same side knees of controls, and between both knees of patient group.

Conclusion: The Q angle values were significantly increased in patients with medial meniscus lesion when compared with healthy knees. However, the further studies, measuring leg dominance and muscle strength are required.

Keywords: Q angle, menisci, knee joint, quadriceps muscle

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Analysis of the association between hertel, interpupillary distance, lateral canthus, head circumference and bulbus oculi morphometry

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Objective: Intraocular and extra ocular morphometric measurements are frequently used in diagnosis, treatment and in the application of some surgical practices. The objective of this study was to determine the association between inner morphometry of bulbus oculi and morphometric measurements taken from face and head such as head circumference, hertel, interpupillary distance (IPD) and lateral canthus.

Methods: In this study, the data of 33 people between the ages 20 and 52 who came to Diyarbakır Gazi Yaşargil Training and Research Hospital Ophthalmology Polyclinic for routine controls were used. All the measurements with OPKO-OTI-Scan 3000. In biometric measurements, before the measurements were taken, the subject was taken to sitting position and the eye was locally anesthetized with proparacaine HCl (alcain) drop and the eye measurements were made. Again in sitting position, the subjects' head circumferences were measured with tape measure, while the distance between pupilla and lateral canthus was measured by using hertel device. Head circumference was measured with tape measure from the front right over arcus superciliaris while the subjects were still in sitting position. The distance between pupilla and lateral canthus was measured while the subjects were in sitting position, head and legs fixed to the front, eyes looking opposite. The sharp edge of hertel device was placed right in the middle of lateral canthus and the measurement between vertex cornea was measured. Healthy individuals who did not have eyelid operations that can affect lateral canthus and operations that can affect intraocular measurements, who did not have trauma or diabetes history were included in the study. Correlation analysis was conducted on the data. IBM SPSS Statistics 22.0 for Windows package program was used for the analyses.

Results: The results of the study showed that the participants' hertel length was 103.75±4.43 mm, IPM was 62.80±3.11 mm, the distance from the left pupilla to the lateral canthus was 18.75±1.14 mm and the head circumference was 55.72±1.85 mm. Correlation analysis did not show any significant correlation between hertel and right and left total axial lengths, camera anterior, lens, corpus vitreum and lateral canthus ($p>0.05$). A positive moderate correlation was found between Hertel and head circumference and IPM. In addition, correlation analysis did not show a statistically significant association between aging and hertel, lateral canthus, head circumference and IPM ($p>0.05$).

Conclusion: We believe that the results of our study can serve clinical purposes and diagnostic guides and physicians should consider these values in surgical interventions.

Keywords: bulbus oculi, head circumference, hertel, interpupillary distance, lateral canthus.

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Friedman tongue position and temporomandibular joint movements

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Objective: The tongue position has been qualified to be a considerable predictor of difficult intubation (DI) and obstructive sleep apnea syndrome (OSAS). Friedman tongue position (FTP) may play a significant role in the oropharyngeal assessment of patients with OSAS and DI, but there are no previous data on FTP distribution by Temporomandibular joint movements. The aim of study was to determine the relationship between FTP and Temporomandibular joint (TMJ) movements.

Methods: Prospective cross-sectional study of 52 volunteers who were studying at Trakya university took part in this research. We used FTP to identify the tongue position. The TMJ movements were measured with zebris© CMS20P-2 device. The scores corresponding with the position of tongue in the oral cavity were compared with the TMJ measurements.

Results: We found negatively significant correlation between FTP and mouth opening (OP) (r_s=-0.755; $p<0.001$), maximal opening (MO) (r_s=-0.600; $p<0.001$), maximal opening velocity (MOV) (r_s=-0.476; $p<0.001$), maximal closing velocity (MCV) (r_s=-0.493; $p<0.001$). According to these solutions as OP, MO, MOV and MCV increase; FTP decreases. There were no significant correlations between FTP and opening right, opening left, retrusion right, retrusion left, laterotrusion right and laterotrusion left ($p>0.05$).

Conclusion: The oropharyngeal view is crucial in the diagnosis and treatment of neurological and respiratory diseases. The most determinative test for oropharingeal view is FTP. We deduce that the findings of this research will be a guide for further studies.

Keywords: Friedman tongue position, tongue, temporomandibular, anthropometry

P-139

Mucosa muscularis of the esophagus: an analysis of cadaver sections

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Objective: Differing information about the muscularis mucosa layer of the esophagus can be found in reference books. We aimed to reevaluate the organization of the muscularis mucosa layer based on the examination of sections of esophagi obtained from cadavers.

Methods: Ten cadaver specimens were used in our study. Tissue sections were obtained from the level of the cricoid cartilage and of esophageal regions in close proximity with the gastroesophageal junction. These slices underwent routine histological tissue procedures and were embedded into paraffin blocks. They were stained with Hematoxylin-Eosin and Masson's Trichrome and examined under a light microscope.

Results: We observed that the muscularis mucosa layer exists on esophagus sections obtained from the cricoid level. When muscularis mucosa layers of proximal and distal esophageal regions were compared, it was noted that the layer of the distal region was thicker than the proximal one.

Conclusion: There are muscularis mucosa layers in regions located at both the cricoid cartilage level and near the gastroesophageal junction regions; the layer in the proximal section is thinner.

Keyword: esophagus, muscularis mucosa, cadaver

P-140

Anatomy of the coracoclavicular ligament: a cadaveric study

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Objective: The coracoclavicular ligaments vary different in morphology. The aim of this study was to examine the coracoclavicular ligament using cadavers.

Methods: The subjects were 29 cadaver shoulders. We investigated in morphology of the trapezoid and conoid ligaments and their relationship.

Results: The ligaments were classified into five types to their number; Type 1 one thick ligament, Type 2 two ligaments, Type 3 three ligaments, Type 4 four ligaments, Type 5 others.

Conclusion: The morphology may be important in arthroscopy and open surgery on this area.

Keywords: coracoclavicular ligaments, trapezoid ligament, conoid ligament, acromioclavicular joint, anatomy

P-141

Anatomy of the ulnar head of the pronator teres muscle in relation to median nerve compression at the proximal forearm

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Objective: The Pronator Syndrome is a rare compression neuropathy of the median nerve. Ulnar head of the pronator teres muscle may cause compression at proximal forearm. We aimed to investigate the morphology and morphometry of the ulnar head of pronator teres at this region.

Methods: We dissected 112 forearms of fresh cadavers. We evaluated the morphology and morphometry of the ulnar head of pronator teres muscle.

Results: The average ulnar head width was 16.31±8.2 mm. The median nerve passed anterior to the ulnar head at a distance of 50.36±10.7 mm from the interepicondylar line. We classified the morphology of the ulnar head into 5 types. In Type 1 the ulnar head was fibromuscular in 60 forearms (53.6%). In Type 2, it was muscular in 23 forearms (20.5%). In Type 3, it was just a fibrotic band in 18 forearms (16.1%). In Type 4, it was absent in 9 forearms (8%). In Type 5, the ulnar head had two arches in 2 forearms (1.8%). In 80 forearms (71.5%: Types 1, 3, and 5), the ulnar head was either fibromuscular or a fibrotic band.

Conclusion: Although the pronator syndrome is a rare compression syndrome, the ulnar head of pronator teres is reported as the major cause of entrapment in majority of the cases. The location of the compression of the median nerve in relation to the ulnar head of pronator teres muscle and the morphology of the ulnar head is important for open or minimally invasive surgical treatment.

Keywords: entrapment neuropathy, median nerve, pronator syndrome, pronator teres muscle

P-142

Is urethra feminina only a urinary system organ? or is it an urogenital system organ like in men?

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Urethra feminina has not been taught among the feminine genital organs in anatomy and physiology course books from the begining until today. It is indicated that urethra feminina has just one duty of excreting the urine from the body. However, it is also mentioned that there is a gland around the urethra feminina with the name Gll. paraurethrales; but the duty of this gland is not mentioned. When the functional anatomy of Gll. paraurethrales is investigated in the medical literature, the term "female ejeculation" appears; and moreover, information on the function of this gland is given. It is stated that it works like the salivary gland that is opening to cavum oris. The salivary glands secrete saliva during the speech and food intake until these actions are completed. However, there must be neural stimuli for this secretion. There must be a neural stimuli as well in order to produce secretions of the lgandula paraurethralis into the urethra feminia and then coming out from urethra externa. In order for the Gll. paraurethrales secreting into urethra feminina, and then coming out of the orificium urethra externa, there must be neural stimuli as well. With the literature scan, it has been observed that the neural stimuli of the Gll. paraurethrales occur via the "G point" at first. It is a small area like the clitoris in women that is sensitive to sexual stimuli and positioned on the anterior wall facing the urethra feminina of the vagina, in the internal side of ostium vagina 4–6 cm (nearly two finger joints) far from it. In order to female ejaculation to happen, at first the Gll. paraurethrales, which is stimulated by massaging the G Point, must send its secretion out from the orificium urethra externa via urethra feminina. It has been reported that due to the function of organa genitalia feminina, the orgasm status reaches its peak level several times with "female ejaculation". In conclusion, in the light of the literature findings, the classification of urethra feminina must be reorganized as an organ that is both urinary and genital, just like it is the case in urethra masculina.

Keywords: urethra feminina, gll. paraurethrales, female ejaculation

P-143

The functional anatomy of glandula paraurethralis

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The purpose of this study is attracting attention to glandula paraurethralis in the light of the literature findings. In order to understand and learn anatomy, it must be revealed the cause and effect relationships of the clinical anatomy with the functional anatomy. Functionally, glandula paraurethralis produces the female ejaculation, which is the maximum level of women orgasm and which has been confused until present day with urine -which is not-. The peak point of the orgasm occurs with ejaculation in women, just like in men. However, for the function of glandula paraurethralis to function, the G Point must be functionalized like the clitoris. Just like babies who are learning walking, after neural stimuli are sent to glandula paraurethralis with G Point massage applied maximum three times, the female ejaculation occurs without another massage.

Keywords: glandula paraurethralis, female ejaculation

P-144

Anatomical and histological research for the morphometric structure of sural nerve in human fetuses

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Objective: In this study, we aimed to investigate the morphometric structure that involved in the formation of sural nerve and sural nerve in terms of their anatomical and histological morphometric forms.

Methods: The study was applied to 23 fetuses (16 males, and 7 females) obtained from Ataturk Training and Research Hospital, İzmir Katip Çelebi University, who have been aged between 18–32 weeks with no external pathology and anomaly. In the study, first, the structures that make up sural nerve and sural nerve were revealed to be visible by the back facial skin dissection of the lower limb accompanied by a surgical dissection microscope. Then morphometric measurements of these structures and samples were taken for histological examination.

Results: The means and standard deviations of the morphometric measurements were determined. However, no statistically significant differences were found between the right-left and gender in terms of the morphometric measurements ($p>0.05$). It was determined that sural nerve has been categorized into 4 types as A, B, C, D according to the unification of the nerve branches that have formed itself. Also variational characteristics belonged to the sural nerve and its branches were determined.

Conclusion: We think the observations we gathered in this study would be useful for the neurologists, orthopedic surgeons, and concerned clinicians dealing with this area for their interventional procedures.

Keywords: Sural nerve, fetus, morphometry, anatomy, histology

P-145

Renal artery in the autopsy cases and analyzing its divisions with fluoroscopy

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Objective: It is known that postmortem angiographic studies give good results in the identification of anatomical variations. Output level from aorta, number variations, segmental dispersions of renal arteries are important in terms of kidney transplantation and surgery. Due to the importance of this subject, the dispersions of renal arteries and its branches are researched.

Methods: This study is made by the permission of Ministry of Justice Head of the Forensic Medicine Institution. 26 adults who are 19–86 age range from funeral are included to this study. 52 kidneys are used from cases which are performed conventional autopsy within 24 hours after death. It's ligated to aorta from just below of abdominals truncus coeliacus after opening anterior abdominal wall taken out of the small and large bowel. It's ligated to aorta just above arteria mesenterica inferior in the way of cannula to remain in abdominals through cannula the in the right arteria iliac communis. While radio opaque material is injected from cannula lumen with suitable pressure manually angiography images are obtained by taking fluoroscopy at intervals. Origin levels and segmental dispersions of renal arteries are analyzed according to vertebra from the images.

Results: It's seen that kidneys are fed by one renal artery in 82.7% rate, two renal arteries in 15.3%, and three renal arteries in 1.9%. Origins of one renal artery are divided into 8 categories as L1-superior 1/3, L1-medium 1/3, L1-inferior 1/3, between L1-L2, L2-superior 1/3, L2-medium 1/3, L2-inferior 1/3, between L2-L3. In the cases, it's seen that renal artery is out from aorta in the rates of L1-superior 11.6%, L1-medium 14%, L1-inferior 20.9%, between L1-L2, 27.9%, L2-superior 14%, L2-medium 4.6%, L2-inferior 4.6% between L2-L3 2.3%. Renal arteries are divided into two categories as ramus anterior and ramus posterior in the 48.1%. It's determined that ones showing segmental branching before coming to Hilus renale 13.4%, ones branching direct segmental branches when they come to hilus renale 21.1%, ones which are left from aorta as multiple artery become bloodshot to kidneys 17.3%.

Conclusion: Output levels, output numbers, segmental dispersion inside kidney of renal artery are pretty differed. It's required that to be known well of number variations and segmental dispersion of artery renal and to be aware of variations that may be encountered for success of surgical method during medical attention like partial and total nephrectomy, renal transplantation, aorta abdominals aneurysm, angiographic procedures.

Keywords: renal artery, renal artery segmental dispersion, kidney, kidney transplantation, vessel variation.

P-146

Accessory ossicles of the ankle

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Objective: Accessory ossicles of the foot and ankle are normal variants of the bone development that usually remain asymptomatic. However, they may be involved in various disorders and become a source of pain such as in fractures or dislocations, degenerative changes, osteonecrosis, osteoarthritis, osteochondral lesions, avascular necrosis and irritation or impingement of adjacent soft tissues. Hence, during the assessment of the situations above, knowledge about these little-known accessory ossicles could be very important to reach the correct diagnosis. For this reason we have performed as a quality of review study.

Methods: Antalya Educational and Research Hospital, Department of Orthopaedics and Traumatology patients with radiographic images of ankle were evaluated between 2011–2016 years. Detailed information was presented according to case-report, article and reviews which were located in the literature about accessory ossicles of the ankle.

Results: In this study we focused on accessory ossicles are os trigonum, os subfibulare, os subtibiale, os supratalare, os talotibiale, os talus accessorius, talus secundarius of the ankle. It was presented considerated points of radiographic images and different clinical tables for the fracture of the bones and accessory ossicles can be correctly defined in this region.

Conclusion: The clinical importance of these bones should be well known to reduce unnecessary orthopedic consultations and misdiagnosis. This study describes the clinical importance of the accessory ossicles and possible pathological conditions. Understanding the possible disorders of the accessory ossicles of the foot and ankle can provide a more accurate diagnostic process.

Keywords: ankle, os trigonum, os subfibulare, os subtibiale, os supratalare

P-147

An investigation of the anatomical variations of truncus coeliacus

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Objective: Truncus coeliacus is one of the most important branches of aorta abdominalis. It is the blood supply of the liver, stomach, pancreas, spleen and upper part of the duodenum. Truncus coeliacus variations and anatomy should be known for general and transplantation surgery and protection from various surgical complications and vascular injury during interventional radiology operations.

Methods: The study was done in Dokuz Eylül University Faculty of Medicine Anatomy Department Cadaver Laboratory, and carried out between 1989–1994. The study was performed on 44 male cadavers which were dissected for education and research.

Results: In 37 cases (84%) truncus coeliacus is the first branch of abdominal aorta and is a short and thick common root. Truncus hepatolienalis was found in 6 cases (13.6%). In these cases, a. gastrica sinistra was leaving directly from abdominal aorta. Truncus hepatomesentericus was found in one case.

Conclusion: Truncus coeliacus was investigated for anatomical and clinical significance in 44 male cadavers. Truncus coeliacus 84% originated from aorta abdominalis in the form of stump. Truncus coeliacus ratio which were showing variation was determined.

Keywords: truncus coeliacus, a. gastrica sinistra, a. lienalis, a. hepatica propria

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Fossa intercondylaris index values and the distal femur morphometric analysis

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Objective: Fossa intercondylaris (FI) size and shape are affected the ligamentum cruciatum anterius (LCA) function and pathology. FI stenosis is known to be the most important factor for LCA damage. FI index values are crucial in determining the geometry of distal femur because of they are independent from the distal femur. The World Health Organization estimates that the number of patients with osteoarthritis will increase 20% in 2050. Morphometric analysis of the bones involved in the knee joint, gender-dependent differences are important for development total knee prosthesis.

Methods: Our study was performed on 160 men (80 right, 80 left) and 160 women (80 right, 80 left) femur in the ADU Faculty of Medicine Anatomy Laboratory. Bones were photographed from a fixed distance. Measurements were performed on images with the ImageJ 1.45 program. Condylar width (CW), condylus lateralis and medialis length (CLL, CLM), FI cranial, central and caudal width (FWCr, FWCe, FWCa) and length (FH), lateral and medial trochlear inclination angle (LTA, MTA), trochlear depth (TD), condylar area (CA), FI area (FA) were measured. FI cranial (CrFWI), central (CeFWI), caudal (CaFWI) width, FI shape (FSI), height (FHI) and area (FAI) index values were calculated. Statistical analysis was performed using SPSS 23.0 software. ANOVA test was used compare four independent groups, LSD multiple comparison tests was used to compare subgroups. Morphometric values were expressed in mm.

Results: CLL, CLM, CW, FH, CeFWI, CaFWI, TD, CA and FA values showed significant differences except the men left and right measurements (p=0.001). CLL was found significantly higher in women left group (58.23±5.9) than women right group (53.57±6.43) although CLM is significantly higher in women right group (57.71±5.97) than left group (56.19±6.24). Respectively CW, FH, TD, CA and FA average for women 72.06±9.68, 24.51±3.22, 4.32±1.28, 2951.91±725.22, 441.76± 106.58 for men; 83.57±9.14, 28.02±3.76, 5.26±1.35, 3910.74± 848.96, 596.08±135.83. CrFWI women (0.14±0.02) and men left groups (0.13±0.02), CeFWI women (0.26±0.03) and men (0.26±0.08) right groups, FHI women right (0.43±0.04) and men left (0.41±0.03) groups, FAI women left (0.13±0.02), CaFWI women right (0.31±0.05) were found significantly different among other groups. LTA and MTA values showed no significant difference between the groups (p>0.005). The FSI was found significantly different only women left group (0.68±0.11).

Conclusion: Our findings indicate that there are significant differences between male and female in Turkey populations. We believe that our findings will guide the design of the knee prosthesis.

Keywords: distal femur, fossa intercondylaris

P-149

Incisura scapulae shape and area analysis

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Objective: Incisura scapulae (IS), located in the lateral portion of the scapula's margo superior, partly adjacent to the base of the coracoid process and closed by ligamentum transversum scapulae superius. IS is a passage through the nervus suprascapularis (NS) passes, sometimes in the form of foramen because of the ossification of ligament, in which case the NS compression occurs. IS shape is prior predisposition factor for NS compression which may lead to m. supraspinatus and m. infraspinatus atrophy and collum scapula fracture, morphological variations are very important. Especially in people who working lifting the upper limbs over the head it is known that IS is narrow and widespread occurrence of NS compression. We aimed to identify the IS shape and area.

Methods: Our study was performed on the 76 (28 right, 48 left) scapula in Adnan Menderes University Faculty of Medicine Department of Anatomy. Scapula's concave face was brought down and were placed on a fixed plane. The region where the IS, was photographed from a fixed distance and measurements were performed on images with the ImageJ 1.45 program. Upper, middle and lower transverse diameter and depth of IS, the area under the upper transverse diameter were measured as the IS area. The shape of the IS was classified in 5 groups; discrete shaped, V shaped, U shaped, open-end drop shaped and foramen shaped. Morphometric values were expressed in mm, area value in mm^2.

Results: In our study 76 scapula's had IS. (3.94%, 2 left, 1 right) IS was found to be foramen shaped and (3.94%, 2 right, 1 left) was in the form of discrete shaped in three scapula. Measuraments could not be performed on foramen shaped IS. In discrete shaped IS upper transverse diameter 10.6±0.65, middle transverse diameter 9.38±0.43, lower transverse diameter 8.14±0.28, depth 2.07±0.66, IS area 19.38±4.76, 49, in 49 V shaped IS (64.47%, 14 right, 35 left) upper transverse diameter 17.96±9.12, middle transverse diameter 11.47±3.66, lower transverse diameter 5.56±1.93, depth 9.85±3.31 and the area was found as 115.63±70.32. In U shaped IS upper transverse diameter 11.08±3.36, middle transverse diameter 9.22±2.12, lower transverse diameter 6.74±2.63, depth 10.14±3.07, area 90.13±39.18, in open-end drop shaped IS upper transverse diameter 8.39±2.19, middle transverse diameter 8.53±1.56, lower transverse diameter 4.08±0.72, depth 8.14±2.11 and the area was found as 67.31±30.93.

Conclusion: In our study we found that IS area is the lowest in open-end drop shaped type IS. During surgical treatment of NS compression consider the distances which are identified on

scapula and IS, most important to avoid neurovascular damage. We believe that our findings will contribute to the science of radiology and surgery at these points.

Keywords: incisura scapulae, foramen scapulae, nervus suprascapularis compression

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Morphometric analysis of atlas and clinical importance

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Objective: Atlas is different from the other cervical vertebrae, participates atlanto-occipital joint that connects the skull to the body. The third part of arteria vertebralis (AV) appears from foramen transversarium of the atlas, turns backwards and medially behind the lateral mass of the atlas, and lies in the sulcus arteria vertebralis (SAV) on posterior arch of the atlas. It is reported that this part of the artery is vulnerable to damage by external factors such as bone and connective structure. Retroarticular canal occurs mostly ossification of the lateral edge of the posterior atlanto-occipital membrane. In this case AV remains under pressure and causes clinical symptoms. In this study it is aimed that a reliable guide for the surgical procedures through morphometric analysis data of atlas vertebrae.

Methods: Our study was performed on 78 Atlas in Adnan Menderes University and Ege University Faculty of Medicine Department of Anatomy. Width of atlas (AW), Outer distance of vertebral artery foramen (FTE), Inner distance of vertebral artery foramen, distance from the midline to the medial most edge of the groove on the outer cortex of posterior arch (SAEM), distance from the midline to the medial most edge of the vertebral artery groove on the inner cortex of the posterior arch (SAIM), thickness of the vertebral artery groove at the middle part (SAT), depth of the lateral and medial entrance of the SAV (SALD, SAMD), the length and width of the upper articular facet ((SArL, SArW), the length and width of the lower articular facet (IArL, IArW), maximum A-P diameter of the vertebral canal (VCAP), maximum transverse diameter of the vertebral canal (VCT) were measured in millimeters using a caliper. Descriptive statistical analysis was performed using SPSS 23.0 software.

Results: In this study total 78 atlas vertebra, 2 of them (2.59%, left) incomplete retroarticular canal, 5 of them, 5 adet (6.49%, 2 right, 3 left) retroarticular canal and one of them double-sided retroarticular canal (1.29%) was found. Morphometric analysis carried out on the 70 atlas AW 72.49±5.63, FTE 57.61±3.87, FTI 46.47±3.99. other morphometric parameters were found respectively; SAEM in right 22.04±3.59 and in left 21.97±3.55, SAIM in right 14±2.2 and in left 14.02±2.06, SAT on the right 3.65±1.02 and in left 3.67±0.98, SALD in right and in left 11.72±2.49 and in left 11.8±2.8, SAMD in right 7.25±1.27 and in left 7.35±1.32, SArL in right 21.59±2.15 and in left 21.64± 2.17, SarW in right 9.44±1.64 and in left 9.5±1.63, IArL in right 16.76±1.51 and in left 16.83±1.55, IArW in right 14.03±1.63 and in left 14.13±1.89.

Conclusion: The knowledge of the safe zone for surgical manipulations and avoiding in iatrogenic complications AV, local population morphometric data is mandatory for the surgeons who operate in this area. According to our measurements recommend a safe zone 10 mm from the midline in the posterior approach for the atlas vertebra.

Keywords: atlas, morphometry, vertebral groove

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Morphometric analysis of axis vertebrae

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Objective: Axis has different features from other cervical vertebrae and participates atlanto-axial joint. During rotation of the head odontoid serves as the pivot. Odontoid process fracture which can cause serious damage to the neighbors' vital structure in the case of hyperextension and hyperflexion of the head. It is known as 'whip injury' clinically. Various surgical techniques such as inter-laminar clamp, inter-spinous wiring, plate and transarticular and transpedicular screw fixation have been currently employed to correct the instability of the atlanto-axial complex caused by numerous traumatic and non-traumatic conditions. Body of axis and odontoid are the targets of a various decompression and fixation process. Studies describing the morphological and morphometric characteristics of the bone structure in this region are important for the protection of vital structures and selection of appropriate surgical materials.

Methods: Our study was performed on 68 axis in Adnan Menderes University and Ege University Faculty of Medicine Department of Anatomy. Axis photos were taken from a fixed distance and right and left pedicle length (PDL, PDLo) and width (PDW, PDWo), the angle which the median line of the pedicle (PMA, PMAo), foramen transversarium area from inferior surface (FTA, FTAo), corpus axis and dens axis length from posterior (APL), corpus axis (APCL) and dens axis (APOL) length from posterior, dens axis width in the middle region (APOW) from posterior, corpus axis and dens axis length from anterior (AAL), corpus axis (AACL) and dens axis (AAOL) length from anterior, dens axis width in the middle region (AAOW) from anterior, dens axis angle which the sagittal plane (OSA) were measured with ImageJ 1.45 program on images. Descriptive statistical analysis was performed using SPSS 23.0 software. Morphometric values were expressed in mm.

Results: PDL and PDLo were found to be 19.36±2.23 and 19.24±2.37 when PDW and PDWo were found to be 5.98±1.09 and 6.5±1.25. The angle which the median line of

the pedicle was found to be in right (PMA) and FTA respectively 28.53±4.93, 81.94±29.63 in left (PMAo, FTAo) 27.95±4.6, 81.18±29.39. APL and AAL, APCL, APOL are respectively 31.02±3.15, 37.58±5.16, 14.99±2.32, 16.31±2.35, and the AACL, AAOL, APOW, AAOW are respectively 21.08±3.39, 17.29±1.8, 10.26±1.68, 10.3±1.48. OSA was found to be 10.75±3.25.

Conclusion: The results will be an important guide to avoid complications associated with surgery in cases traumatic and congenital anomalies.

Keywords: pedicle axis, morphometric analysis, C2 vertebra

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The morphometric analysis of the scapula and classification of acromion shape

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Objective: Rotator cuff pathologies and humeral head fractures are often associated with acromion type. According to the Farley et al (1994) classification it is stated that a strong relationship between the rotator cuff pathology with hooked type acromion. It is also noted that the close relationship between the function of nervus suprascapularis with rotator cuff pathology. We aimed to identify morphometric measurements of the scapula with different acromion types.

Methods: Our study was performed on the 76 scapula (28 right, 48 left) Adnan Menderes University Faculty of Medicine Department of Anatomy. Scapula photos were taken from a fixed distance and morphological length (ML) and width (MW), cavitas glenoidalis length (CGL) and width (CGW), spina scapulae length (SPL), acromion length (AL), acromion-processus coracoideus distance (ACP), acromion-cavitas glenoidalis distance (ACC) were measured with Imagej 1.45 image analysis program. 76 scapula were classified according to the acromion outer edge compared to the acromion length line into four types; flat type, curved type, hooked type and the reversed curved type. Morphometric values were expressed in mm.

Results: A total of 76 scapula 20 (26.31%) in the flat type, 29 (38.15%) in the curved type, 16 (21.05%) in the hooked type and 11 (14.47%) in the adverse type. Scapulae with flat type acromion (7 right, 13 left) ML 149.1±17.2, MW 122.19±7.24, CGL 31.52±5.87, CGW 21.27±4.16, SPL 146.98±13.06, ACP 31.14±7.54, ACC 20.05±4.87, AL 39.31±6.18, with curved type acromion (12 right, 17 left) ML 145.28±14.07, MW 110.66± 9.1, CGL 33.89±4.21, CGW 22.81±2.53, SPL 142.71±16.2, ACP 28.38±5.2, ACC 18.96±3.44 and the AL was found 41.56±3.56. Scapulae with hooked type acromion (5 right, left sol) ML 141.74±10.6, MW 106.58±10.61, CGL 33.14±2.95, CGW 22.45±3.6, SPL 142.52±13.54, ACP 25.68±4.84, ACC 16.7±2.86, AL 39.53±4.17, with adverse type acromion (6 right, 5 left) ML 135.35±16.71, MW 104.65±7.48, CGL 33.19±4.82, CGW 21.11±2.83, SPL 135.41±12.58, ACP 27.34±6.53, ACC 18.52±4.88 and the AL was found 36.91±6.49.

Conclusion: In our study we found ACP and ACP values are lower in hooked type acromions than other groups, are associated with rotator cuff pathology especially tendonitis of m. supraspinatus. Studies to be made with more number of samples will contribute to the elucidation on predisposing factors of rotator cuff pathology for surgical science.

Keywords: scapula morphometry, acromion types

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Os centrale carpi

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Objective: The os centrale carpi is a relatively rare accessory carpal bone. It is only reported as case reports in the literature. Os carpi centrale's presence may be confused with carpal bone fractures. Therefore, the knowledge of this rare bone and prevention of misdiagnosis is important. We report a case with typical clinical and imaging findings that shows characteristic features of the os centrale carpi.

Methods: 41-year-old male patient present with a history of falling of bike. On the physical examination wrist motions were painful and there was sensitiveness on the scaphoid bone with palpation.

Results: A displaced bone fragment is presented dorsally to the scaphoid bone on the wrist X-ray film. With scaphoid bone fracture pre-diagnosis CT examination is planned for the patient. CT examination showed a bone with smooth, regular cortical margins that placed near to the scaphoid and capitate bones.

Conclusion: Os centrale carpi is an accessory bone with distinct cortical margins and regular bone density. Os centrale carpi may be confused with new, old scaphoid fractures or bipartite scaphoid bone. Knowledge of this anatomical variation by emergency physicians could reduce misdiagnosis.

Keywords: carpal bones, os carpi centrale, scaphoid bone fracture

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Sesamoid bones of the hand

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Objective: The incidence of sesamoid bones in hands seems to vary in different racial groups. Physicians pay insufficient attention to sesamoid bones and generally considered clinically insignificant anatomic variations they can become symptomatic.

Pathological conditions of the sesamoid bones are clinically pay no attention. Existing literature shows that disorders of the sesamoid bones are uncommon. However, after 1990's spectrum of the pathologies and scientific papers about sesamoid bones of the hand significantly increased.

Methods: Pub Med was searched to identify articles that were published primarily about sesamoid bones of the hand between 1949–2016 February have been systematically reviewed. After the search, 91 articles were analyzed for this study.

Results: The most common diagnosis was trauma, tendon disorders, tumors, avascular necrosis and degenerative diseases, respectively. Majority of the studies 62 (70%) were published after 1990 and spectrum of the pathologies were significantly increased.

Conclusion: In this study was researched the incidence, functional anatomy, pathological conditions and the clinical importance of the sesamoid bones of the hand with a systematic review in the literature. Knowledge of the detailed anatomy of the sesamoid bones and disorders with adequate radiological examinations will improve early and accurate diagnose of these conditions.

Keywords: sesamoid bones, tendon disorders, avascular necrosis, sesamoid tumors

P-155

Anatomical variations and morphometrical analysis of axis for performing surgery

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Objective: The second cervical vertebra (C2, axis) does not have a body. The most common axis injury is a fracture through its peglike process called the dens or odontoid process. A variety of non-operative and operative treatment options have been proposed for odontoid fractures based on fracture type, degree of dens displacement, extent of angulation and patient's age. Various techniques for operative treatment has been described to support atlantoaxial stabilization.

Methods: The aim of present study was to determine the anatomical variations of axis, and to get morphometrical analysis for screw fixation to reduce the complications. The study was performed on 64 axis bones.

Results: The measurements obtained from the studywere discussed. Variants of axis were limited only corona dentalis in 1.5%. Some of these anatomical variants may be a cause of certain clinical symptoms which have previously described in the literature.

Conclusion: The variations and measurements of axis have significance for surgery during screw fixation. For this reason, imaging methods and examinations before surgery will help to surgeons to describe the detailed anatomy of the region.

Keywords: anatomical variations, axis, odontoid process, screw fixation

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Evaluation of the first cervical vertebra anatomy for screw fixation

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Objective: Fractures of the first cervical vertebra (atlas, C1) account for approximately 2–3% of all acute cervical spine fractures. Acute atlas fractures comprise a large variety of fracture types. The treatment options of atlas fractures are based on the atlas fracture type. The treatment of the instability could vary from the use of a simple strap to the upper posterior stabilization surgery. C1-C2 transarticular screw fixation, C1 lateral mass screwing and C1 pedicle screwing are the surgical techniques used for stabilization.

Methods: The aim of this study was to perform morphometrical analysis of the atlas vertebrae and demonstration of atlas variations in order to be helpful for these surgical approaches and reduce the complications.

Results: The measurements obtained from 58 atlas bones and the variations observed during the study were discussed. The variations of atlas were investigated as spina bifida in 1.7%, accessory foramen on right side in 8.6%, accessory foramen on left side in 1.7%, canal for vertebral artery in 1.7%, bipartiate superior articular facet in 5.1%. Some of these anatomical variants may be a cause of certain clinical symptoms which have previously described in the literature.

Conclusion: The primary outcome of the present study was that the measurements on the vertebrae are different for every individual. For this reason, imaging methods and examinations before surgery should be used to describe the anatomy of the region and to use proper sized screws for operative approach.

Keywords: anatomical variations, atlas, screw fixation

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The calculation of canalis sacralis and the volume of caudal epidural cavity by using stereological method

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Objective: Sacrum on the back of the pelvic skeleton is formed by the merge of five vertebrae. The canal which is in the middle of the Sacrum is named as Canalis Sacralis. Canalis Sacralis contains some important formations such as caudal epidural cavity, dural sac, neuraxis seeding, coccygeal nerve, venous plexus. Caudal epidural cavity widely preferred in many surgical operations while applying anesthesia and analgesia in such treatments as lumbar spinal disorders and protection of chronic low back pain. In order to prevent the penetration of dural sac during surgical operations on caudal epidural cavity, it is crucial to know os sacrum and the anatomy of this area and it is important to protect the structure of this canal. In this study, our purpose is to cal-

culate sacrum, canalis sacralis, caudal epidural cavity, the point where the dural sac closes and its volume by using stereological method with magnetic resonance (MRI) radiographs.

Methods: 15 healthy women each of whom was on average 40.8±9.16 have been included in the study. An sagittal MR with mainly T2 whose section thickness was 1.5 cm was applied to the participants. Upon these radiographs, sacrum, canalis sacralis, caudal epidural cavity, and the volume of the dural sac with location of the point where the dural sac closes have been calculated by using the stereological methods cavalieri and planimetri. While the point grid has been used in the calculations in the cavalieri method, the ImageJ programme has been used in the planimetry method to do so.

Results: The volume of the sacrum was measured 142.76±29.01 cm^3 on average with the cavalieri method, but on the other hand, it was 146.61±29.67 cm^3 with the planimetry method. The volume of the canalis sacralis was determined 10.93±2.97 cm^3 on average with the cavalieri method, however it was 11.61±3.06 cm^3 on average. Moreover, the volume of the caudal epidural cavity was designated 5.86±1.42 cm^3 on average with the cavalieri method, whereas it was 6.18±1.43 cm^3 with the planimetry method. Apart from that, the volume of the dural sac was calculated 5.06±2.03 on average cm^3 with the cavalieri method, while it was 5.42±2.11 cm^3 with the planimetry method. It was also observed that the point where the dural sac closes was at the S2 vertebra level in all the individuals.

Conclusion: We are in the opinion that knowing the volume of the canalis sacralis and epidural cavity can protect the structures there in case of surgical operations and anaesthesia (especially in the protection of dural sac), by minimizing the risks of complications, furthermore, this can shed light to other studies which will be conducted on this topic as well.

Keywords: stereology, cavalieri, planimetry, sacrum, sacral canal

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Why does Achilles tendon rupture?

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Objective: Achilles tendon is the strongest, thickest and largest tendon in body. It has a very important role in the biomechanics of the lower extremity. Achilles tendon rupture is a multifactorial process. In this study, we collectively discuss the hypotheses that are asserted to lead to tendon rupture. Collagen constitutes approximately 70% of the tendon mass. In a healthy tendon, 95 percent of the collagen is made of type 1 collagen. Tendons can stretch and lengthen due to type 1 collagen. The newly synthesized collagen after tendon damage is type 3 collagen and it is not as flexible as type 1 collagen. Achilles tendon rupture occurs when tendon, which stretches by ankle dorsiflexion and knee extension simultaneously, is exposed to rapid eccentric overload. It may result from suddenly forcing foot plantar flexion to dorsiflexion, as in the case of a high jump. Rupture occurs imbalance between motion and stability. Also direct trauma to the streched tendon results a rupture. Sedantery lifestyle of "white-collar workers" of modern life has been proposed as the main reason for poor circulation to the tendon. The majority of patients with tendon rupture admitted to clinics are the desk officer males who play sport occasionaly, mostly in third or fourth decade of life. Most ruptures of the Achilles tendon are caused by sports activities. A repair process begins in athletes after trauma. If the tendon excessively and constantly continues to strain, degenerative changes lead to abnormal healing. Type-3 collagen becomes dominant in tendon after injury. Increased tendon thickness is considered to be a risk factor for Achilles tendon disorders. The abnormal thickness in tendon constitutes abnormal collagen structure. Smoking disrupts the vascularization of tissues because of nicotine, which is a powerful vasoconstrictor. Achilles tendon, which already has a relatively weaker vascularization, is affected by this situation more.

Conclusion: It is shown that a relatively hypovascular area exists approximately 2–6 cm above the insertion into the calcaneus. Ruptures happen in this hypovascular area. Type-1 collagen decreases in tendon with age. In addition, the Achilles tendon thickness will increase with age. Excessiveness of lifetime means more traumatic and degenerative processes that lead to hypertrophy. Cholesterol levels in the blood, which increase with age, may also explain the tendon thickening. Fluoroquinolone antibiotics and corticosteroids also lead to the Achilles tendon rupture. Tendon rupture is caused by systemic diseases. High serum cholesterol levels, which form xanthomas on the Achilles tendon, are associated with tendon ruptures. Steroids, which are used in systemic diseases, can be a predisposing factor. Tendons lose 10% of the energy they store during action in the form of heat. If vascularization of tendon is not good, emergent heat cannot be distributed and temperature increase leads to degenerative changes in tendon center. Furthermore, pes cavus, pes planus, varus-valgus deformities, length difference between the two legs, old injuries, changing training programs, improper shoe selection, and improper ground may cause tendon rupture.

Keywords: Achilles tendon, rupture, collagen

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Incidence of absence of the peroneus tertius muscle in fetal cadavers

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Objective: Peroneus tertius (PT) is a muscle of the anterior compartment of the leg. The PT muscle originates from the anterior surface of the fibula and the interosseous membrane and inserts into the medial side of the dorsal region of the fifth metatarsal bone. The presence of PT is important for dorsiflexion and extension of the foot and it helps walking. The absence of the PT may misinterpret in any transplant and tendon graft surgeries for orthopedics and plastic surgeons. The PT is peculiar to humans, varies in size, and may be absent in some people.

The aim of this study was to determine the morphometric development and incidence of absence of PT in a large series and evaluate for clinical importance.

Methods: 100 human fetuses (54 males and 46 females) with no external pathology or anomaly and aged between 19–40 weeks were used in this study. Fetuses were divided into three groups between gestational weeks; 2nd trimester (13–25 weeks), 3rd trimester (26–37 weeks), and full term (38–40 weeks) of gestation. The study was performed by dissection method in the bilateral fetus leg. After the skin and deep fascia were removed the muscles could be easily seen on the anterior compartment of the leg and evaluated. Length, width and length of tendon of PT muscle were measured in cases with PT muscle.

Results: There was no PT muscle in 40 legs of 200 extremities (20%). Mean values and standard deviations of all parameters according to trimesters were calculated in 160 cases with PT muscle. It's found that all parameters were increased with age during the fetal period. No significant differences were observed between sexes for any of the parameters ($p>0.05$). There was significant correlation between gestational age and all parameters ($p<0.05$).

Conclusion: The insertion of the PT might play an important role in the causation of torsional stresses as observed in stress fractures. Orthopedics and plastic surgeons might use the PT muscle for correcting any laxity in the ankle joint. Thus, the presence or absence of PT and morphological measurement of PT muscle are important for clinically. The present study has revealed the morphological measurements and incidence of the PT muscle during the fetal period. We hope that present results can be considered as providing some useful findings for future studies.

Keywords: Fetus, peroneus (fibularis) tertius muscle, morphology, deep fibular nerve

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A unique muscle bridge between sternohyoid and sternothyroid

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Objective: It is proposed to evaluate the muscle bridge between sternohyoid and sternothyroid was met during routine cadaver dissection.

Methods: During routine cadaveric dissection carried out in the laboratory of Gaziantep University Faculty of Medicine Department of Anatomy; a unique muscle bridge on the left anterior cervical region of male cadaver was detected, morphometric measurements performed and photographed.

Results: The detected unique muscle bridge on the left anterior cervical region of male cadaver was between sternohyoid and sternothyroid. It was determined that ipsilateral sternohyoid started from lower back surface of sternal extremity of the clavicula and from costoclavicular ligament, but it had no fibers which started from sternum. It was seen that the width of midpoint of sternohyoid on the same side was less than sternohyoid on the opposite side. It was detected that three nerve branches separating from ansa cervicalis on the lateral of that muscle bridge, the top and the lowest nerve branches went to sternothyroid by passing behind the muscle bridge, and the median branch innerved that muscle bridge.

Conclusion: The reason that the left sternohyoid is narrower than the right one may be that the fibers separating from the left sternohyoid build up a bridge which separates from the muscle and joins sternothyroid. During the surgical interventions such as tracheostomy, thyroidectomy and trachea resections, it can reduce the iatrogenic injuries to know the presence of that muscle bridge.

Keywords: infrahyoid, sternohyoid, sternothyroid, muscle bridge, muscle variation

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A comparison of anatomical measurements of the infraorbital foramen of skulls of the modern and late Byzantine periods and the golden ratio

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Objective: The aim of this study was to examine the morphometric characteristics of the infraorbital foramen of skulls of people living in modern society and in the late Byzantine period, to ascertain the symmetry or asymmetry of the two halves of the skulls by measuring the linear distance between various landmarks, to evaluate at the conformity between the infraorbital foramen and the golden ratio by calculating the ratios between these linear distances, and to set out the differences or similarities between the skulls of these different periods.

Methods: It was found in the study that the morphometric characteristics of the infraorbital foramen in skulls of the modern period were 47.05% circular, 41.17% oval and 11.76% atypical (semilunar and triangular) on the right, and 70.58% circular and 29.41% oval on the left, while those of the Byzantine period were 46.06% circular and 53.3% oval on the right, and 50% circular and 50% oval on the left.

Results: It was found that the measurements across the infraorbital foramen of the Byzantine skulls averaged 2.93±1.05 mm and 3.15 ±1.03 mm on the right side and 2.62±0.97mm and 3.16±0.68 mm on the left vertically and horizontally respectively, and those of the modern period measured 2.32±0.50 mm and 3.00±0.92 mm on the right and 2.48±0.45 mm and 2.76±0.65 mm on the left vertically and horizontally respectively. The ratio between the distances from the outer orbital wall of the IOF to the sagittal plane and the piriform aperture were 1.46±0.25 mm and 1.40±0.21 mm for left and right respectively for the Byzantine skulls, and 1.24±0.24 mm and

1.29±0.42 mm for the modern skulls. A significant difference was found between the ratio obtained and the golden ratio for each of the periods (modern and Byzantine) ($p<0.005$).

Conclusion: A comparison of anatomical characteristics of the infraorbital foramen of people living at different historical periods is important for anthropologists and knowing morphological types and amassing knowledge on the proportional calculation of location is important for dentistry, maxillofacial surgery and algology.

Keywords: infraorbital foramen, golden ratio, Byzantine period, asymmetry, maxilla

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Morphological characteristics and individual differences of palatal rugae

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Objective: Palatal rugae are asymmetrical and irregular mucosal folds extending laterally from the palatal raphe in the anterior third of the palate. It helps speaking, suction and it improves contact of taste receptors on tongue's dorsal surface. As well as that palatal rugae show social and ethnic differences, they have got individual differences. The aim of this study is to determine number, symmetry, shape and individual characteristic of palatal rugae in Turkish population.

Methods: Our study was performed on subjects ages 16–57 (23.01±7.12), ranging from a total of 230 (108 females and 122 males). Dimensions of the upper jaw were taken by alginant impression material from each individual. Then molds were obtained by pouring hard casts. The shapes, lengths and directions of rugae were measured on these casts. The palatine photos were taken by using a mobile phone-Samsung brand with 12 MP cameras and an orthodontic mirror. The casts and photographs were selected at random belonging to 100 subjects. Selected at random 10 photographs were matched among 100 casts. The ratios of correct matches were determined.

Results: In our study, total number of palatal rugae was found as 9.49±1.87 in females and 9.42±1.92 in males. The most detected rugae pattern was wavy on both females and males. The most rarely seen rugae pattern was converge in the males and circular in the females. In terms of lengths of rugae, the most detected rugae pattern was primary one. In terms of direction of rugae pattern, positive-sided one was the most dominant in both genders. The ratio of matching the casts belonging to palatine with the photos was determined as 63.5%. The number of rugae aged under 18 and above 41 was found to be statistically significant ($p=0.003$), but the number of curved and positive-sided rugae in older ages was not found to be statistically significant.

Conclusion: Compared with data from earlier studies, the shapes, length and direction of palatal rugae were seen specific in every individual and it was seen to have discriminating characteristics among different populations. The possible differences in palatal rugae in different population require further studies involving larger samples.

Keywords: palatal rugae, forensic identification, rugae patterns

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The medial and lateral epicondyle as a reliable landmark for intraoperative joint line determination in revision knee arthroplasty

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Objective: The purpose of this study was to develop an accurate, reliable and easily applicable method for determining the anatomical location of the joint line during revision knee arthroplasty.

Methods: The transepicondylar width (TEW), the perpendicular distance between the medial and lateral epicondyles and the distal articular surfaces (DMAD, DLAD) and the distance between the medial and lateral epicondyles and the posterior articular surfaces (PMAD, PLAD) were measured in 40 knees from 20 formalin-fixed adult cadavers (11 males and 9 females; mean age at death 56.9 years, sd 9.4; 34 to 69). The ratios of the DMAD, PMAD, DLAD and PLAD to TEW were calculated.

Results: The mean TEW, DMAD, PMAD, DLAD and PLAD were 82.76 mm (standard deviation (sd) 7.74), 28.95 mm (sd 3.3), 28.57 mm (sd 3), 23.97 mm (sd 3.27) and 24.42 mm (sd 3.14), respectively. The ratios between the TEW and the articular distances (DMAD/TEW, DLAD/TEW, PMAD/TEW and PLAD/TEW) were calculated and their means were 0.35 (sd 0.02), 0.34 (sd 0.02), 0.28 (sd 0.03) and 0.29 (sd 0.03), respectively.

Conclusion: This method provides a simple, reproducible and reliable technique enabling accurate anatomical joint line restoration during revision total knee arthroplasty.

Keywords: knee, joint line, revision arthroplasty

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A variation emerged during routine cadaver dissection: total vena saphena magna duplication

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Objective: Vena saphena magna that has the feature of being the longest vein in the body, starts from medial side of arcus venosus dorsalis pedis, passes through the front of malleolus medialis and drains to vena femoralis by ascending at the medial side of leg.

The variations of that vein, which has an important role at venosus circulation, are coincided frequently. At this study, a variation of vena saphena magna at lower extremity was identified and discussed the clinical significance of it.

Methods: During routine cadaver dissection of a cadaver belonging to an adult male, the duplication of vena saphena magna at lower extremity was identified. It was seen that two veins started from lateral side of the arcus venosus dorsalis pedis, passed through front of malleolus medialis, merged after ascending 15 cm and crossed tibia after ascending 3 cm at lateral side. It was identified that vena saphena magna, which started from medial side of arcus venosus dorsalis pedis and traced at standard anatomical pathway, traced in parallel to the vein, which was mentioned, upwards of 1/3 proximal part of tibia. A communicant vein 0.5 cm in length was identified at lower border level of patella between two veins that traced in parallel to each other. It was observed that the two veins traced together to the level of 0.5 cm below of merging point of vena saphena magna and vena femoralis, drained to vena femoralis as a single trunk by coalescing. No other vascular variation was detected during the dissection of the mentioned cadaver.

Conclusion: The duplication is one of the vena saphena magna variations and the incidence was reported as 1–35%. The duplications were given name as anterior or posterior according to localization of the accessory vein. The incidence of total vena saphena magna duplication that was identified in current case was reported as 2% and it was evaluated that it was compatible with the name of "anterior accessory vein" due to its trace. In surgery, the main source of autologous vascular graft is vena saphena magna. Especially it is widely used as a shunt material in peripheral arterial disease or coronary bypass surgery. Due to its anatomically superficial localization, the dissection and excision of vena saphena magna is relatively easier than the other superficial veins. Moreover, the rates of intravascular thrombosis and infection are lower compared to the synthetic vascular grafts. So, it is important to know the variations of vena saphena magna, which is a potential vascular graft in clinical practice.

Keywords: vena saphena magna, variation, duplication, autologous vascular graft

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Variations of the hyoid bone

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Objective: Variations and anomalies of the hyoid bone can cause teeth, swallowing and breathing problems. Metastatic involvement of hyoid bone may be confused with variations in radiological examinations. Hyoid bone is an important barrier to prevent the spread of deep neck infections. Hyoid bone is one of the most reliable reference point that can be used during the surgeries to this area. Morphology of the hyoid bone, could be used for gender and age determination. The hyoid bone anomalies can be seen in the patients with sleep apnea. We examined the CT images of the hyoid bone retrospectively to determine hyoid bone variations.

Methods: 79 males and females who taken neck CT images between 2015–2016 were included to our study. The age range was 18–70 years. Patients with neck trauma or motion artifact were excluded from the study.

Results: Variations of the hyoid bone were found in 11 patients. Most frequent variation was in lesser horn (10 patients). These variations were divided into 3 groups (single or double sided absence of lesser horn in 6 patients, single-sided long lesser horn in 3 patients, articulation of lesser horn with hyoid body in 1 patient). Moreover, a deformation of hyoid body was also detected in 1 patient.

Conclusion: We think that hyoid bone is important in diagnosis and treatment procedures of the neck area.

Keywords: hyoid bone, variation, cornu minus

P-166

Sex-related morphologic differences in the hyoid bone

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Objective: The hyoid bone has important roles during the swallowing and respiration. During treatment of cancers, respiration and deglutition disorders of this area, knowledge of hyoid bone morphometry could be important. Besides, hyoid bone could be used for gender determination. It is considered that hyoid bone is more useful to gender determination than the other bones. Therefore, we aimed to study possible anatomical differences between male and females on the hyoid bone images which obtained from the CTs.

Methods: Our study included 50 males and females who had neck CT between 2015–2016. The age range was 19–29 years. On the images the length and width of hyoid body, the length of greater horn, the length and width of greater horn from the inferior surface, the length and width of greater horn from the superior surface and the distance between right and left greater horns are measured. Statistical analyses were performed using the SPSS. The data of male and females were compared by using Student's t-test.

Results: Average values of the results are indicated below; Length of hyoid body (BL) 18.93±2.76 mm in females, 23.04±1.96 mm in males, Width of hyoid body (BH) 8.02±1.58 mm in females, 9.21±1.70 mm in males, Length of greater horn (CL) 26.55±3.75 mm in females, 31.44±3.65 mm in males, Width of greater horn from the inferior surface (CWI) 3.53±0.57 mm in females, 4.93±1.98 mm in males, Width of greater horn from the superior surface (CWS) 2.78±0.35 mm in females, 2.78±0.53 mm in males, Length of greater horn from the inferior surface (CHI) 5.45±1.04 mm in females, 7.51±1.06 mm in males, Length of greater horn from the supe-

rior surface (CHS) 2.94±0.49 mm in females, 3.03±0.42 mm in males, the distance between right and left greater horns (WCS) 40.78±4.65 mm in females, 45.4±6.01 mm in males. CL, CWI, CHI, BL, BH, WCS were found higher in males ($p<0.05$). But for CWS and CHS showed statistically significant difference between males and females ($p>0.05$).

Conclusion: Knowledge of hyoid bone morphometry could play an important role during age and sex determination. Several researchers suggested that hyoid bone is more useful to gender determination than the other bones. We think that our measurements could be helpful for sex determination.

Keywords: hyoid bone, sex determination, morphometry

P-167

Morphology and morphometry of infraorbital foramen

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Objective: The infraorbital foramen is an important structure that infraorbital artery, vein and nerve are passed through it. Maxillary nerve is called as infraorbital nerve in the infraorbital canal after than it exits the infraorbital foramen and provides sensorial innervation to the lower eye lid, upper lip, nasal cavity. Infraorbital nerve block is a type of important local anesthetic block. The infraorbital foramen is an important point for anesthesia and also it can be used as a pressure point to test the sensitivity. The sensivity of infraorbital nerve important during the extraoral examinations. We aimed to determine the location, position and size of infraorbital foramen in our study.

Methods: We studied 40 human dried skulls with undefined age and gender which obtained from Akdeniz University Faculty of Medicine Department of Anatomy. We measured the distance between foramen infraorbitale and orbital edge, apertura piriformis, alveolar edge of the maxilla. Besides vertical and horizontal diameters of infraorbital foramen were measured with a digital caliper. Data were analyzed with Student-t test by using SPSS.

Results: The distance between the orbital rim and infraorbital foramen was measured; 7.31±1.21 mm on the right, 7.53±1.34 mm on the left. The distance between the apertura piriformis and infraorbital foramen was measured; 15.81±2.38 mm on the right, 15.51±2.42 mm on the left. The distance between the alveolar edge of the maxilla and infraorbital foramen was measured; 29.05±3.72 mm on the right, 28.87±4.26 mm on the left. The vertical diameter of infraorbital foramen was measured; 3.43±0.92 mm on the right, 3.22±0.78 mm on the left. The horizontal diameter of infraorbital foramen was measured; 3.57±0.79 mm on the right, 3.48±0.73 mm on the left. Statistically significant difference hasn't been found between the right and left sides according to measurements ($p>0.05$).

Conclusion: Finding the location of the infraorbital foramen is very important during local anesthetic blockages besides the location is also used during the palpation. We think the data that we obtained could be helpful to find the location of the infraorbital foramen more easily for physicians who work around this area.

Keywords: infraorbital foramen, infraorbital nerve, morphometry

P-168

Variations of brachial plexus: a case report

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Objective: Knowledge and identification of the variations of brachial plexus (plexus brachialis), which is an important component of the peripheral nervous system, has clinical significance in terms of correct diagnose and treatment of the clinical picture observed through neurologists, comprehension of the nature of structures encountered in radiological images by radiologists, knowledge as to where the injection will be made on the region where catheterization and regional anesthesia will be applied through anesthetists and correct preparation of the treatment plan by surgeons in occurrence of pathologies. This study is aimed to discuss the importance of knowledge as to the variations of brachial plexus as well as the importance of knowledge as to these variations in clinical practice.

Methods: Variations in formation and placement of brachial plexus on the left side was observed in a formalin-fixed 74-year-old female cadaver during routine student dissections carried out in Anatomy Department of İstanbul Yeni Yüzyıl University's Faculty of Medicine in this study.

Results: Truncus medius (middle trunk) of brachial plexus should consist of the anterior branch of C7 spinal nerve while truncus inferior (inferior trunk) thereof should consist of the anterior branches of C8 and T1 spinal nerves. In our study anterior branches of C7, C8 and T1 spinal nerves merged and formed a single trunk on the left side of the cadaver on which we worked and accordingly a joint truncus was formed instead of a separate truncus medius and truncus inferior. Fasciculus medialis (medial fasciculus) of brachial plexus is located in lateral arteria axillaris (axillary artery) on the same side. A variation is not observed in truncus and fasciculus formation and placement on the right side of the cadaver.

Conclusion: Anatomic variations in formation, status and distribution of brachial plexus are quite well defined in the literature. Truncus medius and truncus inferior emerged from a joint trunk in the study conducted by Singla et al (2013) as in our study. In the same way, fasciculus medialis is located in lateral arteria axillaris in the study conducted through Satyanarayana et al (2009) in parallel with our study. Variations both in formation of truncus and placement of fasciculus were defined in this study and studies including these two variations together could not be found in the literature.

Keywords: plexus brachialis, truncus, fasciculus, arteria axillaris

P-169

Variations related to upper extremity nerve entrapment: a case report

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Objective: Many anatomic structures may cause upper extremity nerve entrapment. Although carpal tunnel syndrome is frequent, other entrapment neuropathies are rare conditions. We aimed to report a case who has multiple anatomic structures that may cause nerve entrapment at the upper extremity.

Methods: We dissected both arms of a 63-year-old male donor-cadaver.

Results: On both forearms the superficial branch of the radial nerve pierced the brachioradialis tendon 98 mm and 120 mm from the radial styloid on right and left arms, respectively. In the right thenar region, an accessory head of abductor digiti minimi muscle originated from the palmaris longus tendon and passed within the Guyon's tunnel with ulnar artery and nerve. Ulnar head of pronator teres muscle was a fibrotic band on both forearms. This band had a width of 9.7 mm on the right and 9.8 mm on the left sides. Both median nerves passed between ulnar and humeral heads with a distance of 52.2 mm and 53.3 mm from the interepicondylar line on right and left sides, respectively.

Conclusion: Observing multiple anatomic structures that may cause nerve entrapment in a single individual as in our case is very rare. It is important to know the variative anatomy in order to diagnose, differentiate, and surgically manage entrapment neuropathies.

Keywords: Entrapment neuropathy, upper extremity, median nerve, ulnar nerve, radial nerve

P-170

Course and diameter of the subclavian artery sharp angular difference: case report

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Objective: The first part of the left subclavian artery arises from the arch of the aorta, behind the left common carotid, and at the level of the fourth thoracic vertebra; it ascends in the superior mediastinal cavity to the root of the neck and then arches lateralward to the medial border of the scalenus anterior. The second portion of the subclavian artery lies behind the scalenus anterior. It is very short, and does form the highest part of the arch described by the vessel. The third portion of the subclavian artery runs downward and lateralward from the lateral margin of the Scalenus anterior to the outer border of the first rib, where it becomes the axillary artery.

Methods: During the rutine dissection of the 75 years of a male cadaver in Gulhane Military Medical Academy, left subclavian artery was observed in normal anatomic location but coursing with unusual angle position.

Results: After arising from the aortic arch, left subclavian artery gives first branch, which is the vertebral artery, then turns down with a keen angle (approximately 98 degrees). It was measured in diameter in different locations. These measurements; initially after the origination location, then after it has given the vertebral artery, then past the scalen muscle are; 18 mm., 13 mm. and 11 mm., respectively. In addition to these findings, diameters of the aortic arch were measured at certain locations. Diameters at the midpoint of the aortic arch and after it has given the subclavian artery are, 37 mm. and 32 mm., respectively. Also, brachiocephalic trunk and vertebral artery diameters were measured 22 mm. and 12 mm, respectively.

Conclusion: Course of the subclavian artery in the neck, is seen as an arch between sternoclaviculary joint and mid poind of the clavicula. The pulsation of the subclavian artery can palpate behind the clavicula, between mid poind and medial third part of the clavicula. The course of the subclavian artery is clinically significant, since it is compressed at the first rib to stop the upper extremity hemorrhages. As a result; different course, angle and location of the subclavian artery may result in difficulty in stopping upper extremity hemorrhages.

Keywords: subclavian artery, diameter, variation

P-171

The flexor carpi radialis muscle fibers originating from the bicipital aponeurosis: case report

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Objective: During routine cadaver dissections in 2015–16 academic year, we encountered that some of the fibers of the left flexor carpi radialis (FCR) muscle was originating from the aponeurosis bicipitalis (AB) in the fossa cubitalis of a 69-year-old male cadaver. Most of the FCR muscle fibers were originating from the epicondylus medialis and there was no other muscle fibers originating from the AB.

Conclusion: Aponeurosis bicipitalis is a biomechanically important structure during the supination when the elbow is in flexed position. Supination problems were observed after m. biceps brachii (BB) tendon repairs without AB repair. The embryology and biomechanics of the case was discussed, and similar cases in the literature were compared.

Keywords: bicipital aponeurosis, flexor carpi radialis muscle

P-172

Three right renal arteries variations originated from abdominal aorta and right common iliac artery: a case report

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Objective: It was proved by the clinical studies and cadaver dissections that the renal artery can have origin, number, and branching anomalies and variations. Being familiar with the nature and variations of the renal arteries is vital for kidney transplantation and surgery. We aimed in the study to establish the presence of three right renal arteries, two from the abdominal aorta and one from common iliac artery providing the arterial bleeding of the patient's right kidney, and to present this in accordance with the literature by stressing the clinical importance of this fact.

Methods: Following the examination of the CT angiography images of the 54 years old female patient having applied to the Namık Kemal University, Medical Faculty Hospital, three renal arteries were determined in right renal side, two coming from the abdominal aorta, one from common iliac artery.

Results: Right and left renal artery lumbar fissure from the aorta with a right angle at the level of intervertebral disc between 1 and 2 vertebrae. The anatomy of the renal arteries has many variations because of its complex embryological development. It is reported in different sources that the renal artery variation is around 25% to 40%.

Conclusion: Knowing the anatomical variations of renal artery is crucial in surgical treatment of the conditions such as congenital or acquired vein lesions and abdominal aortic aneurysm, and common surgical interventions on kidneys such as partial and total nephrectomy and transplantation.

Keywords: variations, right renal artery, abdominal aorta, right common iliac artery

P-173

Bilateral variation of musculus sternocleidomastoideus: case report

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Objective: Musculus sternocleidomastoideus is an oblique muscle that exists on the side of neck. The muscle, that begins as two heads from sternum and clavicula at proximal, attaches to the processus mastoideus at distal. The portion starts from sternum is called pars sternalis and the other one starts from clavicula is called pars clavicularis. When it contracts at uniside it makes the head rotate by taking the head to the same side. When it contracts at both sides it bends the head forward. The innervation of the muscle is provided by anterior branches of C2-3 spinal nerves and nervus accessorius. In contradistinction to attachment places written in classical anatomy books, musculus sternocleidomastoideus has many variations. It seems at literature that the muscle has more variations belonging proximal attachment and less belonging distal attachment. At our presentation, one variation on the left side, more than one and different variations on the right side were identified at the same case.

Methods: During the routine dissection at Uludağ University, Medicine School, Department of Anatomy laboratory, a group of muscle fibers was founded in a separate fascia at the lateral side of musculus sternocleidomastoideus at neck region of 65 years-old male cadaver. When the right and left sides of the neck were examined separately, a muscle was founded called musculus cleido-occipitalis in the literature, which starts from clavicula and attaches to lateral side of the processus mastoideus on occipital bone by merging musculus trapezius fibers. Furthermore, it was seen that a group of muscle fibers, which isolated from musculus sternocleidomastoideus nearby distal attachment place, ends lateral side of processus mastoideus on occipital bone and it has connection with musculus cleido-occipitalis at middle section.

Conclusion: Musculus sternocleidomastoideus is used as flap for cavitas oris defects, Frey syndrome that occurs after parotid gland surgery and lower lip looses. The midpoint of posterior edge is an important landmark due to that it is a distribution point of sensory nerves of plexus cervicalis. Also, it is a landmark for invasive procedures like vena jugularis interna catheterization. Definition of variations on proximal and distal attachment levels of the muscle and knowledge of those kinds of variations will be important in terms of head and neck surgery, invasive procedures and radiological evaluations.

Keywords: musculus sternocleidomastoideus, variation, musculus cleido-occipitalis

P-174

Classification of the suprascapular notch

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Objective: Suprascapular notch (SSN) is located on the superior border of the scapula in neighborhood of the corocoid process, which belongs to the upper extremity. Superior transverse scapular ligament converts suprascapular notch into a foramen. Suprascapular nerve, which is originated from brachial plexus (C5-C6), runs through the SSN. Because of this, SSN is also known as an entrapment location for the suprascapular nerve neuropathy. The aim of our study is to investigate the SSN variations based on its morphological types.

Methods: This study was carried out on twenty-one scapulae belonging to the Late Byzantine period and thirty-four contemporary scapulae, which are preserved in the osteological collection of the Department of Anatomy of Medical Faculty of Uludag University. Three different measurements were performed on SSN. Deformed bones were excluded from the study. Parameters were measured digitally using Scion Image software. For statistical evaluation, chi-squared test was performed by using SPSS 20.0 software.

Results: Three different SSN types have been identified for the present and Byzantine periods. This three types are divided into three subtypes: Type IA (MD>STD; MTD>STD), Type IB (MD>MTD=STD), Type IC (MD>STD>MTD), Type II (MD=STD=MTD), Type IIIA (MD<STD<MTD), Type IIIB (MD>STD=MTD), IIIC (MD>STD; STD>MTD), Tip Type (foramen suprascapularis), Type V (absence of the

incisura suprascapularis). These types' percents were; Type IA 3.7%, Type IB 0%, Type IC 9%, Type II 3.7%, Type IIIA 0%, Type IIIB 0%, Type IIIC 81%, Type IV 0%, Type V 3.7% for in the contemporary period scapulae. Also for in the Byzantine period, types' percents were; Type IA 0%, Type IB 5.5%, Type IC 11%, Type II 0%, Type IIIA 0%, Type IIIB 0%, Type IIIC 77%, Type IV 5.5%, Type V 0%. Chi-squared test was performed using SPSS 20.0 software in order to evaluation. As a result, there was no significant difference between types for between present time and Byzantine period (p=0.703).

Conclusion: SSN has a clinical importance and previous studies indicate that it shows different variations for individuals. The aim of this study is contribute to knowledge of the SSN morphometry and its morphological types. Although, there are many studies in the literature, there is no standard method for the classifications. This study was performed to considering the study of Polguj et al. and two distinct periods' results and percentages were presented.

Keywords: scapula, incisura suprascapularis, classification, Byzantine period

P-175

Morphology of the ligaments related with arcus longitudinalis medialis pedis

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Objective: The foot, the distal segment of the body that touches ground has a specialized structure consisting bones, muscles, joints and ligaments. Arcus longitudinalis medialis pedis is the most biggest and important one of the foot arches that were formed as the result of the sequence of bones like arch bridge. The muscles contribute as active factor and the ligaments contribute as passive factor to the durability of this arch. Pes planus (flatfoot) occurs as the result of failure to provide the continuity of the arcus longitudinalis medialis pedis due to the damage of those structures. The aim of this study was to present the correlative relationship with the arcus longitudinalis pedis and the ligaments that are necessary for providing the biomechanical feature of foot and develop the regression formulas that calculate the estimated value for reconstruction of the ligaments at surgical area.

Methods: The data were taken from the master degree thesis called "Morphology of the Ligaments of Medial Side of Ankle and Planta Pedis" that was prepared at Uludag University, Department of Anatomy and it was planned to present as poster of that thesis. Totally 26 feet belonging to 13 adult male cadavers were investigated for this study. Foot length, maximum width of foot, minimum width of foot, width of sustentaculum tali, height of arcus longitudinalis pedis; width of proximal and distal fastening surface, width of middle section, length of borders and length of midline of the lig. collaterale mediale (lig. deltoideum), lig. calcaneonaviculare (spring ligament), lig. plantare longum and lig. calcaneocuboideum plantare were measured by using caliper. The formulas calculating estimated value of the distance between proximal and distal fastening surface were developed. Statistical analysis of the data were evaluated by using SPSS (Ver 22.0).

Results: The mean value of the foot length was measured 23.42± 1.77 cm. While the mean value of minimum width of foot was being found 35.49±3.84 mm, the mean value of maximum width of foot was found 81.59±7.59 mm. While the height of arcus longitudinalis medialis pedis was being measured 49.56±6.36 mm, the width of sustentaculum tali was measured 25.42±2.74 mm. When the measurements taken from feet were compared as right and left side, any significant differences weren't seen. At the result of correlation analysis; it was observed that arcus longitudinalis medialis pedis correlated with minimum width of foot, maximum width of foot, foot length, length of midline of the pars superomediale of the lig. calcaneonaviculare (spring ligament), and the length of posterior border of pars plantare. 28 formulas were developed like; "Length of pars tibionaviculare =0.727+ (0.179× length of pars tibiotalaris anterior) + (0.855xlateral border length of pars tibionaviculare)" for calculating the estimated value of the features belonging to the ligaments.

Conclusion: We believe that the outcomes we presented will be important for reconstruction of the ligaments related with arcus longitudinalis medialis pedis.

Keywords: arcus longitudinalis medialis pedis, lig. calcaneonaviculare, lig. plantare longum, lig. calcaneocuboideum plantare, lig. deltoideum

P-176

The relation of the innervation of the ear with spinal trigeminal nucleus

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Objective: The spinal trigeminal nucleus is one of the sensorial nuclei of the trigeminal nerve lies in the medulla that receives information about deep/crude touch, pain, and temperature from the ipsilateral face. It extends caudally as far as upper cervical spinal cord (C1, C2 and C3) and is continuous with the dorsal horn. In particular, the C2 spinal nerve not only ramifies in the grey matter of the C2 spinal cord segment but also sends ascending collaterals to the C1 segment, and descending collaterals to the C3 segment.

Conclusion: In addition to the trigeminal nerve (CN V), the spinal trigeminal nucleus is also associated with the facial (CN VII), glossopharyngeal (CN IX), and vagus nerves (CN X) those convey pain information from their areas to the spinal trigeminal nucleus. Thus the spinal trigeminal nucleus receives input from cranial nerves V, VII, IX, and X. The cranial nerves V, VII, IX and X also innervates the ear. The pain fibers of the cranial nerves mentioned above ends only in the caudal part of the spinal trigeminal nucleus. In terms of clinical anatomy, the relation between the innervation of auricula and spinal trigeminal nucleus has been discussed.

Keywords: auricula, n. trigeminus, n. facialis, n. glossopharyngeus, n. vagus

P-177

Extra split tendons of extensor carpi radialis longus and brevis muscles: a case report

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Objective: The tendons of extensor carpi radialis longus and brevis muscles are quite instrumental in tendon transfer, such as in correction of finger clawing and restoration of thumb opposition, ulnar palsy, scapholunate stabilization.

Methods: We observed extra split tendons of extensor carpi radialis longus and brevis on a 70-year-old, formalin fixed male cadaver.

Results: In our case, the tendons of extensor carpi radialis longus and extensor carpi radialis brevis muscles had unusual morphologies. The extensor carpi radialis longus was observed to have a split tendon. The split part of the tendon originated from the musculotendinous junction of the muscle and ended just before the muscle insertion, where it fused to form the indivual muscle tendon. In addition, extensor carpi radialis brevis was observed to have a split tendon, which terminated in close proximity to insertion point of extensor carpi radialis longus musle.

Conclusion: The present study will inform surgeons about various variations of extensor carpi radialis longus and brevis do exist.

Keywords: extensor carpi radialis longus, extensor carpi radialis brevis, split tendon, variation

P-178

Morphometric comparison of different acetabulum types

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Objective: The objective of this study is to show how different morphometric features of acetabulum on 42 dry human femur bones and also to show how different the parameters measured from different acetabulum types are.

Methods: Morphometric measurements of acetabulum on 42 dry human femur bones the genders of which were unknown and which did not match each other as right and left were taken at İnönü University Faculty of Medicine Anatomy Department Bone Laboratory. The measurements taken were Acetabulum type, Acetabular Depth, Acetabular Circumference (AC); Acetabulum Area (AA), Acetabular Fossa Height (AFH), Inc. Acetabular width (IAW), Fossa Acetabular Area (FAA). Metric measurements were made with Astor Digital Caliper while area measurements were made with Digimizer 4.5.1 Medcalc software Picture analysis program. In the light of the measurements taken, Kruskall Wallis H test and correlation analysis were conducted on the data.

Results: 4 different acetabulum types were found in the study: angular, straight, irregular, arched. The highest diameter (56.11±2.57 mm), Depth (33.42±2.79 mm), AFH (33.21±6.81 mm) and FAA (890.66±331.76 mm^2) were found in angular type acetabulum. The highest circumference (205.75±46.28 mm), AA (3403.65±1482.42 mm^2) and IAW (27.97±8.98 mm) were found in straight type acetabulum. No statistically significant difference was found between different acetabulum types as a result of the Kruskall Wallis H test conducted on the data ($p>0.05$). Correlation analyses showed positive correlations between diameter, depth and IAW; depth and AC and AA; AC and Depth, AA, AFH, IAW and FAA; AA and AFH, IAW and FAA; AFH and FAA and IAW and FAA.

Conclusion: We believe that this information will be useful during hip arthroplasty and hip fracture treatment and congenital hip dislocation diagnosis. We also believe that the study will be useful for forensic science and the making of prosthesis.

Keywords: acetabulum, morphometry, hip bone

P-179

Single coronary artery anomaly: case report

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Objective: Single coronary artery anomaly was identified for the first time in 1903. It is a very rare outlet abnormality of coronary arteries, which is usually associated with other cardiovascular abnormalities such as tetratoloji of Fallot, transposition of great arteries and bicuspid aortic valve. As reported in the literature, single coronary artery anomaly can be observed approximately about 0.0024–0.044%. Intermediate branch is a common variation and by acting as same as diagonal branches or left marginal branch, it feeds inferolateral wall.

Methods: In the previously performed Multislice Computed Tomography images of a 45-year-old male patient, a single coronary artery that originates about 1 cm far from the left sinus of Valsalva and branches to the right and left coronary arteries was observed.

Results: Right coronary artery by passing between ascending aorta and pulmonary trunk, demonstrated a continuity of its normal anatomic course, during its course. However, the left coronary artery was branched to its three terminal branches; anterior interventricular, circumflex and intermediate. In the performed examination, both anterior interventricular and circumflex branches were found to be in the normal courses and sizes. Anomalies of coronary arteries may lead to clinical conditions such as angina, myocardial infarction, sudden cardiac death.

Conclusion: Despite how rare are seen these anomalies, they should be considerably noted in clinical differential diagnosis, particularly in young patients presenting with cardiac symptoms. Knowledge about anatomy and abnormalities of coronary arteries is very important for cardiologists and cardiovascular surgeons to achieve accurate diagnosis, to select the appropriate treatment and avoid surgical complications.

Keywords: single coronary artery anomaly, arteria coronaria, intermediate branch

P-180

The prevalence of the palmaris longus muscle tendon in university students

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Objective: The palmaris longus muscle is the most variable, quantitatively and structurally muscle of the human body. The longus tendon used as an otogen renovation tissue in reconstructive surgery. Therefore, our aim was to invastigate the incidence of palmaris muscle in high school students.

Methods: We randomly selected 365 healthy males from vocational high school students, high school of health and medical students in Kahramanmaraş Sütçü İmam University to investigate the presence/absence of palmaris muscle. Students ages differ between 18–24 years (mean age 20.2) consisting of 105 male and, 271 females. We noted the gender, age, weight, height and dominant side of hand parameters of the students. We used Schaeffer's test which is accepted as a standard and defines the presence or absence of the palmaris longus tendon via inspection and palpation.

Results: Our results showed that the absence of palmaris longus tendon was found in 41 (10.9%) male and 85 (22.6%) female subjects, also totally in 126 (33.5%) participant. The tendon was bilaterally absent in 79 (21%) cases and unilaterally absent in 47 (12.5%) cases. Unilaterally absent of palmaris longus tendon was found in 15 (3.9%) male and 32 (8.5%) female subjects. Bilaterally absent of palmaris longus tendon was found in 26 (6.9%) male and 53 (14.1%) female subjects. The tendon was absent in the right hand in 105 (27.9%) cases, and in the left hand in 102 (27%) cases. There was no significant difference in its absence with regard to the dominant body side or gender ($p>0.05$).

Conclusion: We found similar results of the absence of the tendon as described in the literature. The findings of the study may have important implications for the reconstructive surgery in which the tendon are used as an otogen renovation tissue.

Keywords: anatomy, palmaris longus, agenesis, incidance, schaeffer test

P-181

Evaluation of the variations and morphometric features of suprascapular notch

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Objective: Suprascapular notch is an important anatomic formation that is situated in the lateral part of the superior border of the scapula, just medial to the coracoid process. Since suprascapular notch is closely associated with suprascapular nerve, it is the area by which that nerve is injured and compressed most frequently. In this study, it has been aimed to evaluate the anatomic variations and morphometric features of suprascapular notch.

Methods: Suprascapular notches were evaluated in morphological and morphometric aspect on 73 scapulae of adults (33 left, 40 right) in the laboratory of the Department of Anatomy, Faculty of Medicine, Gaziantep University. Age, gender and racial properties of bones were not known. The photos of costal faces of bones were taken with a digital camera by using a ruler from the same distance. By using ImageJ 1.50b software program on those images; transverse length obtained by combining upper ends of suprascapular notch (a), length from the midpoint of "a" to the deepest point of the notch (b), middle transverse length drawn from the midpoint of "b" in parallel with "a" (c) and area of the region limited by the margins of suprascapular notch and "a" were measured. Suprascapular notch was divided into six groups, by taking into account the quantitative relationship of suprascapular notch, upper transverse diameter, depth and middle transverse diameter with each other. Suprascapular notches, whose morphometric features is a>c>b, was classified as Type 1; whose morphometric features is a>b>c, was classified as Type 2; whose morphometric features is b>c>a, was classified as Type 3; whose morphometric features is b>a>c, was classified as Type 4; whose morphometric features is c>b>a, was classified as Type 5 and whose morphometric features is c>a>b, was classified as Type 6. Variations that have occurred as a result of the fact that superior transverse scapular ligament ossifies partially or completely, have been evaluated separately.

Results: It was seen that 3 of 73 scapula were suprascapular foramen and 2 of 73 scapula were partial ossification in the upper gap of suprascapular notch. It was detected that 55 of the other 68 suprascapular notches evaluated were Type 1 (75.3%); 5 of them were Type 2 (6.8%); 2 of them were Type 3 (2.7%); 4 of them were Type 4 (5.5%); 1 of them were Type 5 (1.4%) and 1 of them were Type 6 (1.4%). The area of the region limited by the margins of suprascapular notch and "a" was measured as average 5.68±3.37 mm^2, "a" was measured as 11.54± 4.12 mm, "b" was measured as 6.89±2.44 mm and "c" was measured as 9.09±2.83 mm.

Conclusion: In compression and injuries of suprascapular nerve, the morphometric features of suprascapular notches, the presence of partial ossification or suprascapular foramen are clinically important factors. Therefore, the variations of suprascapular notches should be considered in clinical and surgical practices.

Keywords: suprascapular notch, variation, morphometry

P-182

A case report of subclavius posticus muscle

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Objective: Subclavius posticus muscle is an aberrant muscle in the root of neck between scapula and first rib cartilage. Presence of that accessory muscle in the neck may cause of thoracic outlet syndrome. We aimed to demonstrate the variation of the subclavius posticus muscle according to 60 years old male cadaver in this paper.

Methods: We observed during the routine cadaver dissections in our department laboratory that a unilateral existence of the subclavius posticus muscle. The clavicule was removed from sternal and acromial articulation for better view of area and anatomical structures.

Results: The subclavius posticus muscle was observed on the left side of the cadaver. The proximal end of the muscle was attached to the costal cartilage of the first rib. The distal end was inserted to the upper side of scapula where the inferior belly of omohyoid muscle ends. The muscle passed superficial to subclavian vessels and the brachial plexus.

Conclusion: We believe that the variation we defined in this study be beneficial for the radiological and neurological studies as well as surgical operations related to that area.

Keywords: subclavius posticus muscle, thoracic outlet syndrome, neck anatomy

P-183

Anterior fetal cruciate ligament

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Objective: The knee joint is the most exposed area to trauma in the body. These traumas ocur especially during the traffic accedents and sporting activities. Football, basketball, skiing and athletism exist at the beginning of sporting activities damaging to the knee joint. Particularly, after these sporting activites, ligaments of responsible for stability of knee joint can be damaged. The anterior cruciate ligament (ACL) is a ligament which often injured during the orthopedic surgery, Arthroscopic stuides revealed that the fetal anatomical stucture of ACl is very different from adult recently. For this purpose, we designed this sudy for giving more information about anatomy of ACL.

Methods: This study was conducted on 20 fetuses (12 males and 8 female) ranging between 14 and 17 weeks of gestational age which was determined using CRL measurement, belonging to Meram Faculty of Medicine, University of Necmettin Erbakan Univesity. During the study, all knees were dissected. Microdissection instruments, 0.01 mm precision digital caliper (Stainless hardened), microsurgery microscope (Kaps Sam 62) and a camera (Canon D1000) were used in this study. We measured the width of proximal, middle and distal part of the ACL, the length of lateral, middle and medial edge of ACL and the width of proximal, middle and distal part of the intercondylar notch. All measurements were performed while knee flexion position. The obtained data were evaluated by using SPSS 21.0 (Statistical Package for Social Sciences). Data were analyzed by both descriptive (mean value, standard deviation, maximum and minimum values, percentages) and quantitative statistical methods. Results were evaluated statistically in 95% confidence interval and differences were accepted significant if $p<0.01$.

Results: In 2nd trimesters, mean values were calculated 3.07±1.57 mm, 2.64±1.56 mm, 2.76±1.47 mm for width of proximal, middle and distal part of the right ACL, 3.28±1.57 mm and 2.93±1.28 mm, 3.04±1.39 mm for the left side, respectively. Notwithstanding, the width of proximal, middle and distal part of the intercondylar notch were found to be 3.14±1.16, 3.70±1.2, 4.22±1.36 on the right side and 3.43±1.32, 3.92±1.24, 4.58±1.49 on the left side, rsepectively. There was no statistically significant value among the parameters when it was compared rigt and left ACL of male and female fetuses. Furthermore, it was determined that correlation between various parameters.

Conclusion: We believe that obtained datas will be helpful to be knowledgeable about devolopment and close relationship between knee joint of ACL.

Keywords: ACL, fetal, morpology

P-184

Microanatomical examination of ligamentum cruciatum posterior for human fetuses

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Objective: Ligamentum cruciatum posterior (LCP) which is one of the primer ligaments composing central complex of the knee plays a significant role in the stabilization of the knee. Shape of the LCP and measurements of its femoral adherence position may demonstrate wide variations.The purpose of this study is that LCP is evaluated according to the gestational age morphometrically, anatomic variations are determined with respect to the gender, and their incidence is indicated.

Methods: Our study has been carried out with regard to totally 20 abort fetuses in their second trimester, when their gestational ages vary between 13th and 25th weeks. In the study, measurementswere taken after their dissections had been conducted in a manner to observe apparently LCP at both sides of the knee belonging to all the fetuses. Mean values have been determined for all the parameters.

Results: A statistical significant difference could not be ascertained among the genders and the sides as a result of comparison of parameters in regard to the LCP ($p<0.05$). While any statistical significant difference has not been obtained for all the measurements with regard to the measurements of LCP and PMB (posteromedial band) between right and left sides, it has been determined that a statistical significant difference exists for the measurements of proximal width for ALB (anterolateral band) ($p<0.05$). A strong correlation has been

discovered for all the parameters of LCP except the measurements of midpoint width with regard to LCP and PMB ($r<0.01$).

Conclusion: It is of substantial importance that normal values of parameters with respect to the fetus in fetal development are obtained according to the gestational age, every society determines its respective normal values for their patient population, and fetal growth curve is derived. Knee joint disorders constitute a major part of the cases that occur frequently in daily life and that require surgical intervention. While isolated injury of LCP has not been witnessed very frequently, LCP restoration is of primer importance with regard to the complex ligament injuries where LCP is also involved. By means of surgical intervention, posterolateral instability develops when LCP is not restrored. Whereas LCP injuries have had a wide coverage in literature over the recent 20 years, number of studies relevant to the children and adolescents remains very few. In particular, studies that deal with LCP anatomy in fetal period are quite limited. Furthermore, existing studies have not mentioned about the fact that LCP in fetal period is comprised of two tracts as it is in adult LCP. A proper comprehension of knee anatomy is essential so as to increase the success of ligament reconstructions undertaken and to minimize the iatrogenic risks. It has been concluded that data retrieved through our study would be beneficial to the other studies in this field, and the apprehension of LCP anatomy would be helpful to the surgeons in their surgical interventions in order to enhance patients' comfort and boost the success rate of surgeries.

Keywords: ligamentum cruciatum posterior, knee biomechanics, knee area, fetus.

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The connection and course variations in deep femoral and inferior gluteal veins

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Objective: We present a case with deep femoral vein with atypical perforating branches, their connection with the deep femoral and inferior gluteal veins and their morphologic features. We also evaluate the regional muscle, nerve and the relationship with the placement of vascular structures in the gluteal region.

Methods: During a routine dissection of the left gluteal region and back side of the thigh in 10% formalin-fixed, 64-year-old male cadaver, a connection and course variation in the deep femoral and inferior gluteal veins was discovered. We observed that the inferior gluteal vein was running through the infrapiriform foramen and is attached to the fibers of the gluteus maximus muscle. A thick branch separated from the inferior gluteal vein accompanied by the tibial nerve (outside the epineurium) was reaching to the thigh at the deep side of the biceps femoris muscle. It connected with the third perforating branch of the deep femoral vein like a node. At this point, the measurements of perforating veins diameter and its relationship with the adductor hiatus were evaluated.

Results: During the posterior dissection of the thigh, the perforating branches of the deep femoral vein were observed to be closer to the surface than normal and very close to tibial and common peroneal nerves. The third perforating branch of the deep femoral vein (3PFV) appeared like the letter "Z". A branch separated from the inferior gluteal vein connects with the second bend point and the diameter of the port was determined to be 2 mm. This connection point suspends the "Z" shape of the 3PFV. The 3PFV is located 72 mm proximal to the adductor hiatus. After the piercing the adductor magnus muscle, 3PFV reached the front of the thigh. At this point we observed that the 3PFV lies with the third perforating branch of the deep femoral artery (3PFA). Before the perforation of the adductor muscle fibers, the diameters of the 3PFV and 3PFA were measured as 4.8 mm and 3.8 mm, respectively. The "Z" shaped 3PFA ended in the semitendinosus and semimembranosus muscles. Additionally, the second perforating branch of deep femoral vein appeared like the letter "M".

Conclusion: The perforating branches of the deep femoral and inferior gluteal veins were found in an atypical anatomic localization, which is much more superficial and at the same level as the tibial and the common peroneal nerves. Formation of this wide vascular structure should be taken into consideration during the sciatic nerve blockade.

Keywords: inferior gluteal vein, deep femoral vein, tibial nerve, common peroneal nerve, gluteal region

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Accessory piriformis muscle and variations of sacral plexus: a case report

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Objective: We present a case with piriformis and variant (accessory) piriformis muscles (PM and APM) and their accompanying nerves of the sacral plexus in the left gluteal region of a cadaver.

Methods: A case displaying unilateral variant muscle during a routine lower extremity dissection in 10% formalin-fixed, 64-year-old male cadaver. Dissection was performed to demonstrate the PM and APM and accompanying nerves in the left gluteal region.

Results: The PM fibers were originated from 1–3. sacral foramens and running laterally through the greater sciatic foramen and inserted to the apex of the greater trochanter (GT) of the femur. We also encountered the fibers which belonged to the gluteus medius and minimus muscles reaching to the PM. In other words, the upper fibers of the PM were merged with the gluteus medius and minimus muscles The variant muscle (accessory piriformis muscle, APM) was lying parallel and distal to the main PM. The part of the APM was observed to be originating from the pelvic surface around fifth sacral segment and a small part of origin of the sacrotuberal ligament as separately from the PM. It was inserted into the medial side of the GT of the femur

with its own tendon. Based on the anatomical definitions of the variant muscle mentioned above, we suggest that this formation of the muscle can be described as an accessory piriformis muscle (APM), rather than a slip or a bundle of the PM. Additionally, the SN diverged into the common fibular (CFN) and tibial (TN) divisions deep to the PM. We also observed two inferior gluteal nerves (IGN). The TN, one of the IGN and pudendal nerve were found to be emerging from the lower border of the APM, while the CFN, posterior femoral cutaneous nerve (PFCN) and the other IGN were located between the PM and the APM. The CFN and TN were coursing separately throughout the posterior thigh. On the right side PM, course of SN and the other nerves were observed as usual.

Conclusion: The most of the previous authors have reported the entrapment of the sciatic nerve or its divisions caused by the duplicated PMs. Similarly, the entrapment by the PM and APM could be considered as a potential cause of PS. In the light of all these findings, the possible existence of combined variations of the PM and related nerves, especially the nerves from the dorsal part of the sacral plexus, might be crucial for certain surgical approaches in the gluteal region and must be acknowledged by the surgeons.

Keywords: piriformis muscle, accessory piriformis muscle, sciatic nerve, regio glutealis

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Surgical anatomy of ventral C1-2 complex: a cadaveric study

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Objective: Transoral odontoidectomy (TO) is an important surgical procedure performed to decompress ventral spinal cord. A careful TO requires knowledge regarding surgical anatomy of the ventral C1-2 complex. The aim of this study is to evaluate the relation of ventral C1-2 complex with neurovascular structures and evaluate anatomical data of ventral C1-2 complex.

Methods: This study was performed on six 10% formalin fixed cadaveric head and neck specimens. Relevant anatomical parameters, including distances between the midline and each internal carotid arteries (ICA), each vertebral arteries (VA), and each hypoglossal nerves (HN), distance between C1 anterior tubercle and the superior dentes incisivus (SDI), height of the C1 anterior arcus, width and height of articular surface of dens axis, were measured by using electronic calipers.

Results: The distance between ICA and midline were 24.73 mm, 24.51 mm at the level of the atlas, and 26.32 mm and 25.92 mm at the level of axis, in right and left sides, respectively. The distance between VA and midline were 26.38 mm and 26.69 mm at the level of the atlas, and 15.44 mm and 15.31 mm at the level of axis, in right and left sides, respectively. The distance between HN and midline were 33.78 mm and 32.76 mm at the level of the atlas, and 33.51 mm and 33.65 mm at the level of axis, in right and left sides, respectively. The distance between the nares and the nasopharynx was 96.16 mm. The height of C1 anterior arch was 13.89 mm. The distance between the anterior tubercle of the atlas and SDI was 84.14 mm. The width and height of articular surface of axis were found to be 8.68 mm 11,64mm, respectively.

Conclusion: A safe to requires knowledge about ventral C1-C2 relationships, particularly regarding distances to neighboring neurovascular structures.

Keywords: atlas, axis, C1-2 complex, craniovertebral junction

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Lumbosacral transitional vertebrae: lumbarization – an anatomical study

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Objective: Lumbo-sacral transitional vertebrae (LSTV) are common congenital anomalies. The incidence of this anomaly was observed from 3% to 30%. The aim of this study was to investigate the incidence and types of the lumbarization in dry human sacra.

Methods: One-hundred ten dried human sacra with unknown ages and gender belonging to the Anatomy Department Laboratory were examined macroscopically. At the S1-S2 level, the distance between vertebral bodies anteriorly and posteriorly; spinous process, transverse process, inferior articular process, and lamina of the vertebral arch were evaluated. The distance between vertebrae bodies were determined by dividing into 3 zones from right to left.

Results: We observed the LSTV on 24 sacra (21.82%). While performing the anterior aspect to the association between vertebral bodies of sacrum at S1-S2 level, we determined that it was completely unfused in 8 (33.33%) sacra whereas completely fused in 1 sacrum (4.17%). We observed gaps between vertebral bodies of sacrum at S1-S2 level, and these gaps have been located in 1 (4.17%) sacrum at first zone, in 11 (45.83%) sacra at second zone, in 1 (4,17%) sacrum at first and second zone and in 2 (8.34%) at first, second and third zone. While performing also the posterior aspect to the association between vertebral bodies of sacrum at S1-S2 level, we determined that it was completely unfused in 5 (20.83%) sacra whereas completely fused in 16 (66.66%) sacra. There were gaps between vertebral bodies of sacrum at S1-S2 level, and these gaps have been located in 1 (4.17%) sacrum at first zone, in 1 (4.17%) sacrum at second zone and in 1 (4.17%) sacrum at third zone. The transverse process and the articular process of sacral vertebrae at S1-2 level were completely fused bilaterally, in all 110 of sacral specimens. Lamina of the vertebral arches were uni-

laterally (left side) and bilaterally (left and right side) unfused in 1 (4.17%) and 1 (4.17%) sacra, respectively. We also figured and classified association between the spinous process of sacral vertebrae as follows: formed in 13 (54.17%) sacra, fenestrated in 2 (8.33%) sacra and foramina in 2 (8.33%) sacra.

Conclusion: Lumbarization is an important transitional anomaly, complicating lumbosacral biomechanics. During spinal surgery, undiagnosed LSTV may lead to serious complications. During delivery LSTV may prevent the mobilization of the pelvis. The high incidence of this anomaly requires a careful radiological investigation of the lumbosacral spine.

Keywords: lumbarization, sacrum, S1-S2 level.

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A variation of flexor carpi ulnaris muscle: case report

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Objective: Flexor carpi ulnaris (FCU) muscle is one of the muscles of the superficial flexor group and located at most medially in the forearm. FCU had two heads as humeral and ulnar which are connected by a tendinous arch. The humeral head arises from the medial epicondyle, and the ulnar head has an extensive origin and arises from the medial margin of the olecranon and proximally of posterior border of the ulna. In distal part of forearm, it extends with a thick tendon, and attached to the pisiform, hamate and fifth metacarpale. MFCU, is an important anatomical landmark to identify ulnar nerve (UN), ulnar artery (UA) and ulnar veins. It can be easily palpated when the manus flexed and adducted. Knowledge about the variations and features of the FCU muscle has great importance in relation to clinical diagnosis and surgical procedures.

Methods: During a routine dissection of 10% formalin fixed adult male cadaver in laboratory of Anatomy Department, variation of FCU muscle was observed in the left upper extremity unilaterally. Photos were taken and evaluated morphologically.

Results: FCU muscle, was originated with one common tendon, separated into two bellies at the distal half of forearm and extended with two tendons. Two tendons were connected anteriorly to the flexor retinaculum. The common tendon inserted to pisiform, hamate bones and proximally of the fifth metacarpale bone. UN an UA was located laterally to the common tendon.

Conclusion: In many sports, especially like tennis and golf, FCU muscle may be injured by overuse or abrupt interference or it can lead to nerve compression and so clinical and surgical treatments may be needed. FCU, has also importance due to its usage in muscle flap surgeries. In this regard, the variations of FCU muscle should be also taken in consideration in terms of true assessment of radiological images of forearm, safe clinical approach and surgical procedures.

Keywords: flexor carpi ulnaris muscle, variation, forearm, accessory muscle

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Morphologic and morphometric considerations of sacral hiatus and sacral corns for caudal epidural anesthesis and epiduroscopic spinal surgery

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Objective: Mophometric recognition of sacral hiatus (SH) anatomy is important in many clinical procedures, particularly in caudal epidural blocks and epiduroscopy, to avoid dural injury, failure of epiduroscopy and epidural block procedures. The aim of this study is to evaluate morphometrically sacral hiatus and sacral corns.

Methods: This study was performed with 100 human adult dry sacral bones in laboratory of Anatomy Department of Dokuz Eylül University. Parameters were measured twice by two blinded researchers. Parameters, including sacral index, length, width, and AP diameter of SH, distance between SH apex and S2 foramina, and distance between the upper border of S1 and sacral apex, were measured with digital caliper (0.01mm sensitivity) or goniometer (1degree sensitivity).

Results: Sacral index was 107.04±8.77. Mean length, width, and AP diameter of SH were found to be 31.98±10.08 mm, 17.53±3.62 mm, and 5.76±16.50 mm, respectively. Distance between SH apex and S2 foramina, and distance between the upper border of S1 and sacral apex were measured as 37.89±9.55 mm, 68.80±13.07 mm, respectively. The apex of SH existed at the level of S4 vertebrae in 75% of the cases. The basis of SH existed at the level of coccygis in 30% of the cases. 42% of SH were "U" shaped and %32 "V" shaped. There were no SH in 3% and no bilateral sacral corn in 7% of cases.

Conclusion: SH has many morphologic and morphometric variations. Minimal invasive procedures grown up for recent years. For successful diagnostic and therapeutic procedures on lumbosacral spine the knowledge of SH morphology and morphometric features are important.

Keywords: sacrum, sacral hiatus, sacral corns

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Defect of sacral posterior wall: an anatomical study of sacral spina bifida

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Objective: Sacral spina bifida is an important anomaly. This situation may be associated with neurourological consequences. The objective of the present study is to investigate incidence,

types, morphological and morphometrical features of spina bifida on dry human sacral bones.

Methods: One-hundred ten dried human sacra with unknown ages and gender were examined macroscopically. Many parameters regarding rate of sacral spina bifida, its types, and its morphometry were measured using digital caliper.

Results: There were 22 sacra with partial or complete spina bifida (20%). 6 cases of spina bifida (27.27%) had sacralization. The mean height of the sacra was 113±11.22 mm as posterior. The length of the median sacral crest was 61.08±20.25 mm. The distances between corns of the sacral hiatus (SH) was found to be 16.47±2.90 mm. The height of SH was 24.50± 11.29 mm. The spina bifida was classed as window in 4 (18.2%), lineer in 3 (13.6%), bridge in 1 (4.5%), 'V' shaped in 5 (22.7%), '^' shaped in 5 (22.7%), complete in 1 (4.5%), hole in 2 (9.1%), '8' shaped in 1 (4.5%) cases. The level of the apex of the SH was assesed in 20 sacra and found to be at S3 vertebrae in 8 (40%) cases, at S4 vertebrae in 10 (50%) cases, at S5 vertebrae in 2 (10%) cases.

Conclusion: This study confirmed presence of many types of sacral spina bifida. Presence of such a situation should be taken into consideration during preoperative evaluation of cases with lumbosacral disorders.

Keywords: sacrum, posterior wall fusion defect, spina bifida

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The utilization of cadaver in education of anatomy in Turkey and in world and fixation methods

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Objective: Anatomy is a discipline where the cadaver is much needed and is the most important piece of medical education. But we have some problems about it. In this study that touch on different techniques to solve these problems, some methods are presented.

Methods: 22 articles are chosen by scanning with Google scholar and Pubmed among the articles about "cadaver, the fixation of cadaver, the utilization of cadavers". Also is obtained information about the issue directly from the institutions in the world.

Results: The first problem is the "number of cadaver". For an ideal anatomy education, number of students per a cadaver should be "6–10". A research reveals that this number is "261" in Turkey, 2013. It is due to the scarcity of donation number. This number is stated '4.6 in a million' in 2012, '5.4 in a million' in 2014. The same data are '35.9' in Spain and '26.6' in USA. Another significant point is the problem of 'utilization' and 'the real-like tissue and organs'. In some studies, it is stated that the students have great problems with the real-like tissues in cadavers.

Conclusion: It is clear that we have lack of cadavers. The first aim is to increase the number of cadaver which depends on the increase of the number of donors. In order to increase the number of donor special institutions beyond the anatomy departments must be founded, and the public must be encouraged. The studies which will lead people to donation must be supported by media and with the conviction of famous people the attention of public must be attracted to this topic. It is estimated that some changes can be useful regarding the protection and the utilization of cadavers. We use formaldehyde-based solutions to protect our cadavers. However, these solutions can cause serious damages in the tissues and organs. So as to stay away from these difficulties, 'Cantabrian (Cambridge)' solutions which is Ethanol- based is preferred in England, some European countries use the method 'Ethanol-Glycerin', 'saturated salt solution' or the special fixative solution developed by Walter Theil. As anatomy community, for cadavers that we have the most appropriate method and the storage conditions must be determined and must be announced. The cadavers in Anatomy departments in the country must be determined by TAKAD and the injustice in cadaver number among faculties must be eliminated. Otherwise this situation will get worse.

Keywords: cadaver, determination, donor, fixative.

P-193

A case of an unusual atlas without costal elements in its transverse processes bilaterally

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Objective: During routine osteology demonstration for medical students in our anatomy laboratory, we noticed a variational atlas vertebra whose anterior parts of transverse foramens were absent bilaterally. The atlas is the most variable vertebra in man. However, bilateral absence of the transverse foramens of the atlas is very rare embryological variation. Especially surgeons who perform operations on the neck should be aware of possible complications that happen due to the non-existence of the bony protection of the vertebral artery. The vertebral arteries lose their bony protection against traumas and may be easily injured if atlas has this variation.

Methods: The vertebrobasilar ischemia which may lead to some bad conditions like migraine, vertigo, diplopia can be due to injuries of the vertebral artery. The reason of these conditions is the blood supply function of the vertebral artery to the meninges, dura mater, cervical part of the spinal cord and spinal ganglions.

Results: In addition, the vertebral veins and the nervous plexus covering the artery are also vulnerable in traumas of this region so the injuries of these structures may be seen together with the vertebral arterial symptoms.

Conclusion: So this variation needs to be known and noticed previously.

Keywords: atlas variation, vertebra, foramen transversarium, arteria vertebralis

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A variational part of the oblique arytenoid muscle: 'arypharyngeal part'

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Objective: In this study, it was aimed to investigate variation of one of the intrensek muscle of the larinks, the oblique arytenoid muscle.

Methods: Sixteen specimens (32 sides) were examined for this study, including 14 male and 2 female cadavers.

Results: Out of 16 larinks specimens, in six sides (three right, three left) variation of the oblique arytenoid muscle was found. It was observed unilaterally in four specimens and bilaterally in one specimen. It coursed within fibers of the palatoglossal and palatopharyngeal muscles. The variation was thought to be named 'Arypharyngeal part' of the oblique arytenoid muscle.

Conclusion: In this study a variable part of the oblique arytenoid muscle, which has not been mentioned in the literature before, was described and supposed a cause of snore or sleep apnea.

Keywords: oblique arytenoid muscle, palate, variation, larynx

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Variation of bilateral multiheaded sternocleidomastoid muscle

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Objective: Because of its relationship with many neurovascular structures in the neck, the sternocleidomastoid muscle is an important anatomically and clinically. The muscle descends obliquely across the side of the neck and divides it into anterior and posterior triangles. In this case report, it showed that the variation of bilateral multiheaded sternocleidomastoid muscle.

Methods: During routine dissections of the neck for anatomy education in the Department of Anatomy Laboratory in the Faculty of Medicine at the Gazi University, additional clavicular heads of sternocleidomastoid muscle were observed bilaterally. The additional clavicular heads originated from the superior surface of the middle third of the clavicle. Furthermore, on the left side of the neck, muscle fibers originating from sternal head of sternocleidomastoid muscle and blending with clavicular head of sternocleidomastoid muscle were seen.

Results: Both of the minor supraclavicular triangles were narrower than normal.

Conclusion: When workers in the medical area come across unusual clinical cases, the diagnosis and treatment become more difficult. Knowledge of anatomical variations is very important if this difficulty is to be avoided. Knowledge of anatomical variations of sternocleidomastoid muscle is important to prevent complications during surgical and diagnostic procedures.

Keywords: sternocleidomastoid, anatomical variation, additional head

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Anatomic variations of the hand extensor muscle tendons

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Objective: Variations of muscles on the dorsal aspect of the forearm are seen very common. Generally, these variations are often diagnosed incidentally during surgery, but sometimes they can be symptomatic. Extensor carpi radialis brevis related to abduction of the wrist and extensor digitorum related to extension of the wrist and fingers are superficial muscles on the posterior compartment of forearm. In this case report, it showed that the variations of extensor carpi radialis brevis and extensor digitorum muscles which are rare.

Methods: At Gazi University, Department of Anatomy Laboratory in Faculty of Medicine, variations were found in right upper extremity of a male cadaver, during routine dissections of the extensor compartment of the forearm for anatomy education.

Results: In this case, it was observed that extensor carpi radialis brevis muscle had an accessory head which attached to dorsum and proximal phalanx of the index finger. Besides, it was found that extensor digitorum muscle divided into three tendons at distal. When we followed these tendons, it was observed that tendon of index finger was absent and other three tendons went to middle, ring and little fingers.

Conclusion: Accessory muscles located on the extensor compartment of the forearm are seen common. They can be reason of the symptoms of the nerve entrapment. Besides, these unusual muscles may confuse radiologists, surgeons and anatomists. In order to prevent diagnostic errors and avoid surgical complications, these anatomical variations should be well-known.

Keywords: extensor digitorum, extensor carpi radialis brevis, accessory head, anatomic variation

P-197

Case report: accessory and cavitated uterine masses (ACUM) that occurs with severe dysmenorrhea in a young woman

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Objective: Accessory and Cavitated Uterine Mass (ACUM) is a rare, newly recognized Mullerian anomaly. It is an accessory cav-

ity lined by functional endometrium within an otherwise normal uterine cavity, in contrast to the other Mullerian anomalies in which the uterus is malformed. This research aims to describe a case of a uterus-like mass in a 23-year-old girl with severe dysmenorrhea.

Methods: A 23-year-old nulligravida woman applied with a dysmenorrhea.

Results: Examination in the 9 th day of menstrual observed that the dimensions of uterus and endometrium was observed 72×58×33 mm, 8 mm respectively. However same endometrium reflex that the second cavity was observed on the left side of the endometrium cavity. Therefore, the case was evaluated accessory and cavitated uterine mass.

Conclusion: ACUM is a unique and not uncommon pathologic category in the adolescent and young adult population. It is associated with severe and intractable dysmenorrhea and pelvic pain. Studies have shown that laparoscopic excision of these masses is justifiable, safe and feasible.

Keywords: accessory and cavitated uterine mass, ACUM, Mullerian anomaly

P-198

Rehabilitation before reimplantation in degenerative hip arthritis: case report

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Objective: Hip arthroplasty is a widely used method in the treatment of degenerative arthritis patients on developmental hip dysplasia. Arthroplasty is a restructuring operation with an artificial joint, in order to ensure stabilization and range of motion, relieve pain in any joints. The aim of this case report is to reflect the rehabilitation outcomes of patient who had undergone a series of operations.

Methods: In this article, rehabilitation program before reimplantation and the results were presented in 55-years-old female patient with developmental dysplasia of the hip due to degenerative arthritis who had undergone 6 operations same extremity. At the and of the operations her prosthesis completely removal.

Results: According to the isokinetic evaluation at the end of the 30-seance rehabilitation program, it is observed that there are important increases in the muscle power values. When the patient applied to us, she was performing her mobilization with walker; however, after the treatment, she was mobilized with single-tripode.

Conclusion: Different surgical methods used in total hip prosthesis require different rehabilitation approaches. Functional levels of patients increase with timely and proper exercise programs, and their hospitalization time and economic burdens.

Keywords: developmental hip dysplasia, degenerative arthritis, rehabilitation

P-199

Os odontoideum: the report of case

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Objective: Os odontoideum; is an oval and global bone piece which is different from the straight cortical sided hypoblastic odontoid process. Many different congenital anomaly of processus odontoideum have been defined in the literature. These congenital anomalies, which have been defined, are aplasia, hypoplasia, duplication, condylustertius, ossiculum terminale (os avis) and os odontoideum. One of them which is mostly followed is os odontoideum. The treatment, which is possible to be correctly defined, is important to prevent mistakes.

Methods: A female patient who has had a neck pain on the backside of her neck especially on the root of neck, which has been increasing gradually for two years, has been evaluated on our report of case in our faculty. Except from the patient's insistent neck pain, she has not got any differency and her complaint at using her hands, skill and walking. She has not got a pathological reflection and motor defect to evaluate neurologic.

Results: It has been determined that spinal canal has been narrowed by anterior bass on cranio-cervical intersection level on MR displays which have been obtained at the beginning. It has been reached a conclusion on sagittal BT displays that the edge of odontoid bone has been separated previously. On the next literature review, it has been understood that this pathology has been os odontoideum.

Conclusion: The sudden spinal cord, which has occurred after a minor trauma with os odontoideum, has been reported on the damaged cases. This pathology requires to be realized well as it causes various symptoms including sudden deaths and it requires to be recognized from os odontoideum on patients with trauma. Thus, it should decided on surgery after the distinctive features are determined by BT about whether the fracture is new or not with 3-D tomographic shootings, by dynamics direct radiography or dynamics MRG for acute or initial instability but it should be contented with MRG.

Keywords: os odontoideum, processus odontoideum, neuro surgeon

P-200

Case report: bilateral double renal arteries

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Objective: Postmortem angiographic studies are known to give good results in identification of anatomical variations. Output

level from aorta, number of variations and segmental distribution of renal arteries are important for kidney transplantation and surgery. Due to the importance of this issue, distribution of renal artery and branches were investigated.

Methods: This study is made by the permission of Ministry of Justice Head of the Forensic Medicine Institution. In the study, to be conducted during the 35-year-old man for classic autopsy, both kidneys were seen also by double renal artery blood flow. After taking out small and large intestines, front wall of abdomen was opened and were connected to abdominal aorta just below celiac trunk. Right arteries, through cannula from the iliac communis, just above inferior mesenteric artery was ligated so that cannula in abdominal aorta. While radiopaque material is injected manually in cannula lumen with a suitable pressure, angiography images were obtained by pulling the scope intervals. Among the images; origin levels according to vertebral and segmental distribution of renal arteries were examined.

Results: In our case, the right renal arteries I, II, according to collumna vertabralis from the abdominal aorta was seen leaving the L1, L3 sub-lower level. Right renal arteries-I, before coming to the hilum renalis and after being divided into two main branches as front and back, was found to provide segmental branches. Right renal artery-II was seen into the bottom of the kidney by being divided into two segmental branches as the top and bottom. Left renal arteries-I, II from the abdominal aorta to vertebral collumn showed that they differ from L1 and L2-L3 level lower. Left renal artery II, when it comes a hilum renalis; it was seen to give a. segmentalis superior, a. segmentalis anterior superior and a. segmentalis posterior branch. Left renal artery-II was found to fall within lower portion of the kidney by being divided into two segmental branches as front and back before coming hilum renalis.

Conclusion: Output level, output number and intrarenal segmental distribution of a. renalis vary greatly. Therefore, good knowledge of number of variations and segmental distribution of renal arteries and awareness of the variations that may be encountered; are necessary for success of surgery management during medical procedures such as partial and total nephrectomy, renal transplantation, abdominal aortic aneurysm, and angiographic initiatives.

Keywords: renal artery, multiple renal arteries, bilateral variations

P-201

Variations of right and left thyrocervical trunks' branching in the same cadaver

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Objective: The subclavian artery takes an important place in anatomy education, radiological anatomy, variations anatomy and surgical anatomy. If the subclavian artery branches typically, the branches are internal thoracic artery, vertebral artery, thyrocervical trunk and costocervical trunk. Branches of thyrocervical trunk and costocervical trunk (inferior thyroid artery, transverse cervical artery - deep branch/dorsal scapular artery, suprascapular artery etc.) can arise from subclavian artery individually.

Methods: In 2015, in a 38-year-old male cadaver, we detected right and left atypical thyrocervical trunks during the dissection practice at the root of the neck. In whom bilateral inferior thyroid arteries arose from the subclavian artery individually.

Results: The left side, the transverse cervical artery and the suprascapular artery arose from a common trunk with the internal thoracic artery. Another important variation was that the deep branch (i.e. the dorsal scapular artery) arose from the third part of the subclavian artery.

Conclusion: We know that the deep branch is typically one of the branches of the transverse cervical artery. Even though many researchers reported the frequency of the dorsal scapular artery as almost 50%, the inferior thyroid artery arising individually from the subclavian artery considerably low (2%–15%).

Keywords: thyrocervical trunks, variation, transverse cervical artery

P-202

Darwin tubercule and relation with dominant hand

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Objective: Darwin tubercule has seen on some of the people and it localized at posterior helix. it has 3 types. There is no enough informations about its insidence, antropometric features(characteristics) and relations with dominant hand use. The aim of this study is giving informations about Darwin tubercule and its relations with dominant hand use.

Methods: At this study we research Darwin tubercule and find dominant hand with geschwind score at 100 students (70 females, 30 males) from the school of physical therapy and rehabilitation ages between18 to 25.

Results: As a result of the examinations 85 of the students are right hand dominant, 9 of them are both right and left hand dominant and 6 of them are right hand dominant. Only 7 students (5 females, 2 males) have Darwin tubercule, 1 student has 2 tubercule. This 8 tubercule's 1 is Type B and 7 are Type C, there is no Type A tubercule. The lenght of this tubercules are between 3–6 mm and the width are between 2–3 mm. 4 of this tubercules are at the left ear, 2 of them are at the right ear and 1 student has tubercule at both ears. 2 of the 30 male students have tubercule but 5 of the 70 female students have tubercule.

Conclusion: Finally, there is no relation found between the tubercule side and dominant hand side, but at left hand dominant students there is no tubercule in this study. These results may contribute to the literature of anatomy and forensic medicine.

Keywords: Darwin tubercule, dominant hand use, pinna, antropometry

P-203

Evaluation of bilateral plantaris variation with clinical and developmental features: case report

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Objective: Plantaris muscle is found absent in 10–13% of cases and variative in 30.4% of cases.

Methods: During routine dissection in anatomy laboratory of Mersin University, bilateral variations of plantaris muscle were encountered in 86 years old male cadaver.

Results: Plantaris was found deeply and completely covered by lateral head of gastrocnemius in left leg. It traversed downward inferomedially and passed deep to lateral inferior genicular vessels. Then it crossed popliteal vessels and arcus tendineus musculi solei superficially. Plantaris was absent in right leg while the origin of soleus muscle fused with popliteus fibers around the muscle tendon junction of popliteus. Fabellae and strong fibrous fabellofibular ligaments were found in both sides. Plantaris attached to the fabella as fusing with gastrocnemius. To our knowledge, the variative relationships of plantaris with lateral inferior genicular vessels were not mentioned in the literature. The positional variations regarding gastrocnemius and regional vessels may be crucial in surgery of popliteal region. In the right leg, together with absence of plantaris, the upper fibers of soleus attached much more proximal than normal and fused with popliteus.

Conclusion: That was thought as the result of any deflection in development of common mesenchymal tissue of plantaris and soleus. During the absence of plantaris, it is assumed that the more proximally attached soleus can support gastrocnemius function instead of plantaris, via popliteus muscle attaching to femur.

Keywords: plantaris muscle, soleus muscle, fabella, lateral inferior genicular vessels, variation

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An unusual course of aortic arch through an accessory fissure of left upper lobe of the lung

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Objective: In this report, we present an unexpected, extramediastinal course of aortic arch through an accessory fissure of left upper lobe of the lung.

Methods: A 19-year-old healthy man was admitted to Sani Konukoğlu Hospital to get a health certificate. There was widening of the left mediastinum seen on chest χ-ray, and he was referred to radiology department for CT examination to reveal the reason.

Results: Contrast enhanced CT showed that distal part of the aortic arch was entering the lung parenchyma, coursing through an accessory fissure, and then returning to mediastinum at the same level after forming a ring appearance, resembling a mirror image of an azygos lobe. The main branches of arcus were normal, except they were originating from arcus lower than usual, just above the carina level. Proximal descending aorta was normal, the distal part was located more posterior than expected, but the diaphragmatic hiatus was at midline.

Conclusion: Our opinion is that consideration of such variation would be beneficial especially for vascular and thoracic surgeons and interventional radiologists in order to prevent possible complications of surgeries or interventions.

Keywords: accessory fissure, variation, aortic arch, lung