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Invited Lectures and Conferences

(C-01 — C-14)

C-01

Free vascularized bone transfer

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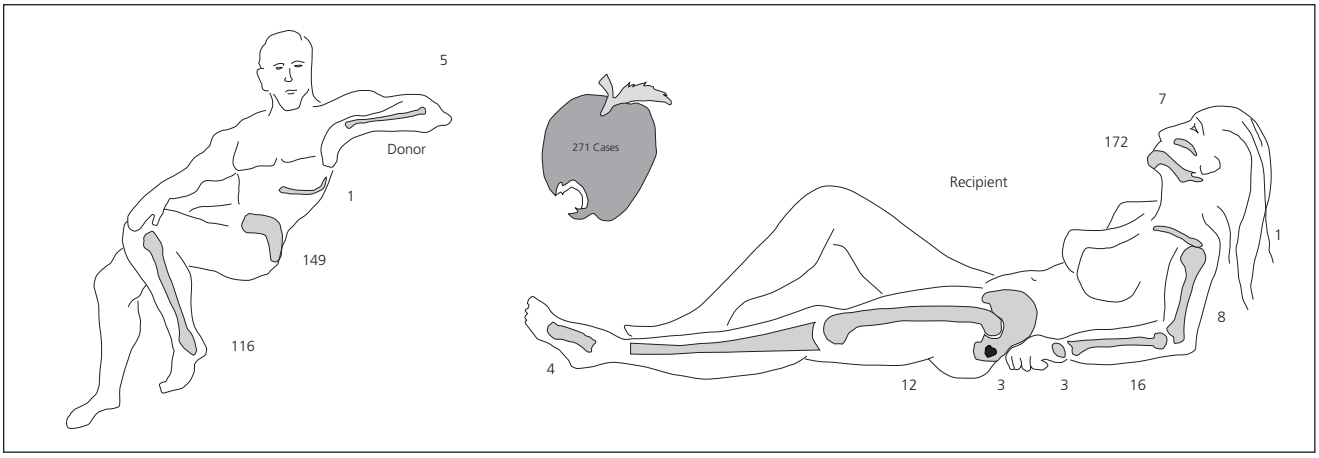
Since 1974, after preliminary anatomical studies in fresh human cadavers, a total of 271 free vascularized bone transplants have been performed by us using the fibula, iliac crest, radius and rib with 95% success rate (Figure) The recipient sites have been to most of the body skeleton, most commonly for congenital pseudarthrosis, traumatic defects or those following cancer ablation. In the majority of cases a skin paddle is included in the transplant design. The fibula is transplanted usually on the peroneal vessels with up to 25 cms being used in the adult. The anterior tibial vessels are an alternative pedicle for transplanting the shaft of the bone and are preferred for transfer of the upper growth plate.

The iliac crest was transferred originally on the superficial circumflex iliac vessels. However, after further fresh cadaver studies including India ink injection of the bone, the transplant was redesigned on the deep circumflex iliac stem.

The anatomical studies of the donor bones in the fresh cadavers will be presented with their clinical application illustrated in patients with soft tissue and bone defects in different regions of the body.



C-02

Overview of urogynecology from the perspective of clinico-anatomy

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According to Integral theory, the pelvic floor anatomy is not simply limited to bone, muscle, fascia and ligaments. On the contrary; it is a complex synergic system. In this presentation, it is aimed to review the elements and their functions of pelvic floor as being a synergic system.

Pelvic floor; is separated into 3 zones namely anterior, middle and posterior. There are key structures in each zone and these provide the normal pelvic function.

Anterior zone

1. External urethral ligament
2. Suburethral hammock
3. Pubourethral ligament

Middle zone

4. Arcus tendineous fascia pelvis
5. Pubocervical fascia
6. Critical elasticity zone

Posterior zone

7. Uterosacral ligament
8. Rectovaginal fascia
9. Perineal body

Two analogy is being used to explain the Integral theory:

1. 'Bridge analogy' for structure.

2. 'Trombolin analogy' for function

The diagnostic algorithm depending on Integral theory guide to surgeon about the anatomical causes of dysfunction. Because the damaged ligaments lead to dysfunction (urinary and faecal incontinence) damaged ligaments and fascia lead to prolapse. Hence, the restoration of anatomy will restore function.

Moreover, major symptoms may exist with minor prolapse (butterfly effect).

Key words: Anatomy of pelvic floor, incontinence, cystocele, rectocele, enterocele.

C-03

The anterior subtalar joint in feet with different types of calcaneus. Clinical implications

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The anterior talar facet of the calcaneus may be missing and when present it may or may not be fused with the middle talar facet, resulting in 3 major types of configurations: the three facet configuration (3F) with separate anterior, middle and anterior facets, the fused configuration (FUS) where the anterior and middle facets are fused to form a shoe shape facet and a missing anterior facet configuration (MAF) without anterior facet.

The total articular surface in a FUS configuration is superior to the one in a 3F configuration and is least in the MAF configuration. In a 3F configuration the long axis of the anterior facet forms an angle with the long axis of the middle facet. This two-axis system is supposed to give a better stability to the anterior subtalar joint. In a study under publication Madhavi et al. found significantly more osteorthritic degeneration in feet with FUS configuration than in 3F feet. Pseudofacets on the lateral edge of the sulcus calcanei also seem three times more frequent in FUS configurations. These observations are in line with the hypothesis of better stability of the 3F configuration.

In feet with a 3F calcaneus a synovial plica is intruding into the TCN joint and a vertical ligament is situated behind it. Like all plicae this one could be crushed and like all ligaments the vertical ligament behind it could be stressed or even ruptured and be a cause of subtalar instability and sinus tarsi syndrome.

Key words: Subtalar joints, talocalcaneonvicular joint, calcaneus, variants, synovial plica.

C-04

Endogent: centre for anatomy and invasive techniques

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The invention of new endoscopical techniques for surgery and interventional radiology demand improved training at postgraduate level. The Endogent centre support these requirements by establishing hands - on practical training courses by using new procedures for cadaver embalming. Cadavers fixed by conventional procedures are of limited use for surgical courses due to the profound

changes of colour, strength and fragility of organs and tissues. The new embalming technique (adapted from Thiel, 1992) is based on the use of 4-chloro-3-methylenphenol for fixation, and ethyleneglycol for preservation of tissue plasticity, while the concentration of formalin is kept to the strict minimum (0.8%). The procedure results in well preserved organ and tissues concerning colour, consistency, flexibility and plasticity. The articular joints remain freely movable, the peritoneal cavity can be inflated for laparascopic procedures and the lungs can be ventilated. Up to now this cadaver model was used in our institute for laparoscopic bariatric surgery, colon and thorax surgery, and arthroscopy. Preliminary findings seem to indicate that the corpses also serve as a suitable phantom for assessing thorax radiological equipment. Expert clinicians work as tutors and give instructions before the participants start with hands-on surgery. Industrial companies sponsor the facility by providing surgical instruments and funding. We intend to expose also our undergraduate medical students to demonstrations of surgical approaches on Thiel embalmed corpses, in order to reveal the need for detailed anatomical knowledge in the clinic at an early stage in the medical curriculum.

Key words: Embalming, cadaver workshop, endoscopy, undergraduate anatomy training , postgraduate training .

C-05

Anatomical pathways that make perceptual processing depend upon instructions for action

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In many contemporary studies and textbooks perceptual processing is treated as a pure sensory phenomenon, one that can be understood on the basis of pathways passing information from the sensory periphery to the cerebral cortex, for processing within the cortex and subsequent passage to motor centers or memory stores. However, many physiologists, psychologists and philosophers have recognized perceptual processing as closely dependent upon action (e.g. the sensorimotor contingencies of O'Regan and Noë, 2001), although the anatomical nature of the functional links is generally left unresolved.

A survey of pathways that pass messages through the thalamus to the cerebral cortex (visual, tactile etc.) shows that these are not pure sensory pathways. They are generally branching axons that convey messages through one branch to lower, motor centers and to the thalamus through the other. That is, since the two branches will be transmitting the same message, the thalamic relay receives information not only about sensory events, but also, concurrently, information about instructions that are on the way to motor centers. This dual information, about sensory events and motor instructions, is an implicit part of the message that the thalamus passes to cortex. The axonal branching patterns reveal an anatomical basis of sensorimotor contingencies, which cortical mechanisms are not likely to ignore even when experimental studies do not reveal them.

Reference: ORegan JK and Noë(2001) A sensorimotor approach to vision and visual consciousness. Behav. & Brain Sciences 24, 939-973)

Key words: Thalamus, cerebral cortex, sensory mechanisms, sensorimotor events, cortical outputs.

C-06

Let's know formaldehyde: even if we can not escape from it!

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Formaldehyde (HCHO) is an irritative gas that having a pungent smell, colourless and very soluble in water.

Everyone may be exposed to formaldehyde because it is found in the polluted atmosphere of cities, domestic air, and cigarette smoke. Formaldehyde is also widely used in industrial and medical settings and employees may be highly exposed to it in these settings. Especially, anatomists and medical students can be exposed to formaldehyde vapour during dissection sessions.

Formaldehyde is accepted as toxic over certain doses and the chances of exposed to harmful effects are increased under the room temperature because of its volatility.

Formaldehyde exerts an acutely irritating and allergic effect, primarily on the eyes, the upper and lower airways, and the skin. It has been shown that formaldehyde is mutagenic and carcinogenic in experimental studies. In addition, literatures have implicated formaldehyde in having a deleterious effect on germinal cells and inducing primary and secondary infertility in both sexes.

We have carried out many studies on the effects of formaldehyde given by the systemic and respiratory organs in rats. In the light of these studies, the harmful effects of formaldehyde were experimentally shown, and

the effectiveness of some antioxidants such as melatonin and omega was observed in the treatment of the harmful effects of formaldehyde.

In spite of harmful effects of formaldehyde, we use often it in medical areas, especially dissection halls in Turkey. Consequently, we, all anatomists, must know this toxic agent effects on organism and environment and taken precautions.

Key words: Formaldehyde, toxic agent, experimental studies, melatonin, omega.

C-07

The donation system of bodies for use in medical education in Sweden

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In 1964 the World Health Organization (WHO) arranged a workshop in Uppsala, Sweden, to study new ways and methods of improving the teaching of anatomy. An important matter of discussion was a donation system of bodies for use in anatomical dissection. The report from the workshop, from which I acted as reporter, was prepared by the Regional Office for Europe, in Copenhagen, and distributed to the governments of member states in the region and to the participants in the working group. It included information on donation systems from countries where these had been used and was placed at the disposal of other interested countries. In Sweden this meant the introduction of an accepted system for receiving bodies for anatomical dissection and the abolition in 1973 of an old order to different public institutions to supply bodies for dissection. That was out of date in a modern society and did not function properly. Since the introduction of the donation system in Sweden, every single specimen for anatomical dissection derives exclusively from donations by free will of people who have decided in their lifetime to donate themselves, to the benefit of medical education. The Christian religion, which is still dominating in Sweden, although the country has become successively more secularized, creates no hindrance for donations. Special forms are used and one copy is kept by the donator, another by the anatomy department. Details regarding restrictions in time for keeping the bodies and other practical matters will be discussed at the lecture.

Key words: medical education, donation, human body, Sweden.

C-08

An@Tomedia™: a new approach to medical education developments in anatomy

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An@tomedia™, an innovative CD-ROM program, has been developed to provide a fully comprehensive anatomy resource for undergraduates in either traditional or problem-based courses (bridging the gap from reduced contact time) as well as for postgraduates (particularly basic surgical trainees). An@tomedia™ is also a valuable resource for practitioners that may be used in continuing medical education, self-education and teaching presentations. It is a most helpful consultation tool (e.g. for informed patient consent on surgical procedures or radiological investigations) as well as an effective educational vehicle for risk management (and a concrete demonstration that genuine attempts have been made to reduce risk).

An@tomedia™ is arranged in 9 modules: 'General Anatomy', 'Back', 'Thorax', 'Abdomen', 'Pelvis', 'Upper Limb', 'Lower Limb', 'Neck' and 'Head'. Each module contains 4 perspectives: Dissection (which also includes practical procedures & post-mortem), Systems (which also includes conceptual & clinical anatomy), Regions (which also includes surface & functional anatomy) and Imaging (which also includes sectional & endoscopic anatomy). All types of anatomy books/atlases are incorporated within one self-learning resource that enables the user to choose the rate, order and degree of detail. Each screen contains interactive images (including movies) complemented by text. Structures in each image may be labelled and/or highlighted with colour overlays to focus on what is critically important.

An@tomedia™ was awarded "Best CD Project" (and "Best Paper" for its evaluation) by ASCILITE (Australasian Society for Computers In Learning In Tertiary Education) in 1999 and "Best General Multimedia" by ATOM (Australian Teachers of Media) in 2003.

Key words: Anatomy, medical education, multimedia, CD rom, innovative teaching.

C-09

Visual material preparation in anatomical presentations

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The talk will attempt to give an insight into the best possible ways to prepare visual material in Anatomical presentations. The usage of text, photos, illustrations and how visuals can best be utilised to render a talk interesting will be discussed.

Key words: Visual material, anatomy presentations, computer graphics, illustrations, photos.

C-10

Anatomical research, "Quo vadis"? Part I

Tubbs RS*, Loukas M**, Apaydın N***

Section of Pediatric Neurosurgery, Children's Hospital, Department of Cell Biology, Birmingham, AL, USA; Department of Anatomical Sciences, St. George's University, Grenada, Department of Education and Development, Harvard Medical School, Boston, MA, USA; Department of Anatomy***, Ankara University School of Medicine, Ankara, Türkiye.*

Globalization is the term referred to regarding increasing global connectivity, integration and independence in economic, social, technological, cultural and political spheres. However, "Anatomic Globalization" still remains a poorly developed potential and usually is only developed domestically. Using the example of anatomical collaboration between St. George's University, Grenada (SGU) and the University of Alabama Birmingham (UAB), we would like to provide the results of such interactions in the hopes of promoting future collaborations between other international universities. The collaboration of anatomical research between SGU and UAB started in 2006 and continues today. To date, 40 peer reviewed articles appear in PubMed from this collaboration and another 42 are in press. This research collaboration expanded to multiple levels including activities such as: multiple exchange visits of the principal investigators with their students for research/education purposes, expansion of scientific networking, involvement in educational teaching, creation of scientific courses, fund raising, creation of a research/educational fellowship for young academicians, etc. Both anatomy groups from SGU and UAB recognize the need for further collaboration with other universities traditionally diverse with the aim of expanding our current anatomical knowledge, exchanging ideas, creating new technologies and providing anatomists the opportunities to train and promote academic leadership. In this presentation, we aim to show a representative number of research projects in which the collaboration between these two groups was essential, and without it, none of these activities would have been possible. International collaboration in the anatomical sciences is an untapped potential that can be beneficial to both the parties involved and the important data that can be added to the literature.

Key words: Anatomic studies, international collaboration, globalization, anatomic globalization, scientific interactions.

C-11

Anatomical research, "Quo vadis"? Part II

Tubbs RS*, Loukas M**, Apaydın N***

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Key words: Anatomic studies, international collaboration, globalization, aanatomic globalization, scientific interactions.

C-12

Anatomy education in USA

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It is a fact that anatomy is an important part of medical education, and its importance has been growing, parallel to the advancements in medicine.

The main components of anatomy education can be listed as; student, cadaver, faculty and curriculum, and deficiencies in any of these can cause inefficiencies.

Because of the high tuition in medical schools in the USA, students consider themselves as costumers who pay to acquire knowledge. This results in students expecting faculty teaching to be of the highest quality.

Medical schools in the USA have no major difficulties in obtaining cadavers because of the well-established body donation programs.

There is no standard anatomy curriculum in the USA. Most of the curricula have been designed to emphasize the teaching of clinical anatomy instead of the traditional learning of details. The curricula, however, vary from school to school. It is stated by The American Association of Anatomists (AAA) that the national average number of hours in gross anatomy courses is 50 hours of lectures, and 106 hours of dissection. Some schools have reduced the amount of dissection, and some have no dissection at all. There are many reasons for these curriculum revisions. One of the most important appears to be the decline in the number of faculty who are qualified to teach anatomy. The national average of anatomy teaching faculty is listed as 5.7 in US medical schools. Even though this may seem satisfactory, it should be considered that the average number of graduate students who are taking gross anatomy in their Ph.D. programs and willing to teach in the future has gone down to 3.6. Lately, the deficiency in the number of qualified teaching faculty has been often discussed in anatomy journals, meetings and conferences in the USA. Various medical schools are trying to develop new programs to attract research faculty and clinicians to contribute to the teaching gross anatomy.

Key words: Anatomy, anatomist, education, cadaver, dissection.

C-13

Scientific evaluation of participation to the Turkish National Anatomy Congress

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Turkish National Anatomy Congress meetings have been organised regularly since 1991. Scheduled every other year until 2003, the Congress is organised annually since then.

Presentations presented in the Turkish National Anatomy congress since their inceptions were evaluated. Participation rates of different universities, material and method content of the research, and qualitative and quantitative changes since 1991 were reported.

Key words: National, congress, anatomy, participation, Turkish.

C-14

Laodikeia ad Lycum

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Laodikeia is located on the western point of the Phrygian Region, which is 6 km north-east of modern Denizli. Province of Denizli is the West Anatolia. Modern villages incorporated within its borders are Eskihisar, Goncali, and Bozburun. Laodikeia was an important ancient city in the Lycos Valley and was founded by the Seleucid King Antiochos II in middle of the 3rd century (261-253) BC,

and named after his wife Laodike. It has is a typical identity of a Hellenistic period city according to research and excavations. To separate the city from others with similar names, ancient sources called it Laodikeia ad Lycum.

Laodikeia had an area of 5 km^2 in dimension and was placed to the northeast of Lykos (Çürüksu), south-east of Kapros (Başlı Çay) and west of the Asopos (Gümüş Çay-Goncalı Deresi) rivers.

Pliny states that earlier names of Laodikeia were Diospolis and Rhoas. These were sacred cities before the Hellenistic Period. Last year we completed a field survey of all of the city. During this research we found some pottery sherds and flints to the south of the city, which were dated early Bronze Age. In the west part of city we found Classical pottery sherds. On the other hand we found early fourth century coins in the North Necropol excavations. All these archaeological materials showed ancient settlements were occurring before the Hellenistic Period.

Laodikeia, like its neighbour Hierapolis, was devastated by earthquakes then rebuilt, in all historical periods. While Hierapolis and other cities were restored with help from the Roman Empire, Laodikeia was able to rebuild the city by itself.

Laodikeia enjoyed its wealthiest times in the from 1st to 3rd century AD. Extensive trade and the manufacture of wool brought the city great wealth and it rightly gained great fame in antiquity. Its geographical importance derives from its position at the crossroads of routes from Central and Southern Anatolia with routes leading west.

Laodikeia had many other claims to fame in antiquity, and the city was one of the most important and flourishing commercial centres in Asia Minor. Hierapolis, Colossae and Laodikeia formed a union and sold their products to overseas countries. Because of the production power of this union the quality and sales of goods increased. We could perhaps say that the groundwork of the European Union was established in this region.

A great source of wealth to the city was a kind of raven coloured sheep raised in Laodikeia and woven products were made from their wool. Attouda, Trapezopolis, Karoura, Tripolis and Thiounta obtained sheep wool from Laodikeian, Hierapolisian and Colossaian textile producers. When we look at this situation we can see that the textile industry in modern Denizli has a long background. In the Late Roman Period, the Emperor Diocletianus declared a limit in cloth prices to Laodikeia and this shows the importance and value placed on its products.

The city suffered from frequent earthquakes throughout its history. Following an earthquake during the time of Emperor Focas (602-610), the settlement moved to the district of Kaleiçi in Modern Denizli and its nearby areas.

At Laodikeia, you can see; A stadium, 2 theatres, monumental gates and streets, 4 baths, 3 commercial agoras, Bouleuterion, prytaneium, odeion, 2 water distribution terminals, 5 monumental fountains, temples, 7 churches and a necropolis area spread out towards four sides are visible in the city which was based on the Hippodomic system.

Laodikeia excavations have continued since 2002, concentrating on different areas: surface surveys, Central Bath, Central Agora, West Theatre, Syria Street, Nymphaeum A- Emperor S. Severus Fountain, Temple A, South Roman Villa, the North Necropolis and the Painting Workshop.

Key words: Laodikeia, Phrygia, Lykos.

Web: www.pamukkale.edu.tr/laodikeia

Oral Presentations

(O-01 — O-44)

O-01

Simulation of cerebrovascular circulation in human cadaver for training of surgical neuroanatomy

Güvençer M*, Sayhan S**, Ay Dereli N***, Tetik S*, Yücesoy K**, Arda MN**

Dokuz Eylül Üniv. Tıp Fak, Anatomi AD, Nöroşirurji AD**, Kalp Damar Cerrahisi AD***, İzmir, Türkiye.*

Today, the development in the diagnostic and screening methods and surgical equipment technologies facilitate the accessibility to numerous anatomic structures by different interventional approaches. Consequently, the exact knowledge of the anatomic locations of neurovascular structures and their interactions may ensure that the surgical intervention is planned in the most appropriate way and the structures are accessed with the least complication risk during the intervention.

A decapitated and formalin fixated whole-head of a male human cadaver kept for educational and research purposes in DEU Department of Anatomy was used in this study. Two separate reservoirs (for the arterial and the venous system) were connected to the Truno System 3 labelled perfusion pump. The reservoirs were filled with blue and red warm tap water. Colored tap water pumped on the right was emptied from the left. Continuous flow of the water in the closed-circuit arterial and venous systems was achieved.

As the circulation was continuing, pterional craniotomy was performed and the dura mater was accessed and lifted under Zeiss dissecting microscope and Sylvian Fissure, cortical veins and Medial Cerebral Artery were exposed. As coloured fluid was circulated, the observation of vascular structures became possible and simulation of the surgical procedure on patient was achieved. Since hemodynamic fluidity was available, the experience offered was very similar to the actual vascular interventions such as anastomosis and aneurysm repair. We believe that this model may contribute to neuroanatomy education and provide experience for the safe and ethical performance of surgical interventions during the intraoperative period.

Key words: Cerebrovascular circulation, simulation, education of neuroanatomy, intracranial surgery, pterional craniotomy.

O-02

'Window anatomy' for neurosurgical approaches: navigation with anatomical base

Kendir S*, Açar H*, Özdemir M**, Cömert A*, Kahiloğulları G**, Elhan A*, Uğur HÇ**

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During present neurosurgical operations the knowledge about projection of cerebral gyral and vascular structures to the cranium is necessary for decrease complications rates and for minimal invasive interventions. This study was performed on non-autopsied 10 formalin fixed cadaver heads. First of all dissection of scalp was performed and some craniometric points (like asterion, pterion, bregma, lambda, superior temporal line, external occipital protuberance) and cranial sutures were exposed. Windows were formed with an aid of high speed pneumatic system (with high rate of revolution of a motor) and keeping these points and structures. The coordinates of important structures in these windows (like precentral gyrus, area of Broca, angular and supramarginal gyrus, genu of the corpus callosum, dural venous sinuses, Sylvian fissure) according to these anatomical points were determined. The contribution of these anatomical coordinates during surgical contradictions and the way to use them during different approaches was discussed in details. Our opinion is that results of this study provide practical guides for routine neorosurgical operations.

Key words: Brain, anatomy, craniotomy, gyrus, navigation.

O-03

Oral autopsy

Şakul BU*, Bilecenoğlu B**, Orhan K***, Görür Dİ****

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As one of the most important disciplines of the forensic sciences, forensic dentistry has advanced in recent years and practices about identification by teeth or dental restorations, identification of gender, age estimation, DNA analysis, saliva analysis, bite analysis are made with consultations with dentists.

Especially with the increase of marine transportation and airliners the accidents of these transportations become unfortunately unavoidable and as a result of these accidents corpses become traumatized and unidentified in great extent. Therefore usage of teeth and dental restorations that are mostly recovered become inevitable for identification of the corpses.

The information gathered by forensic dentistry could be used in execution of legal rules about murder, suspect or victim beyond identification. In most of the oral autopsies, there is absence of specialist on oral autopsy and therefore investigation of oral cavity neglected, potential evidences unobtained and could not be evaluated.

Trying to open the jaws with force or mechanic tools especially in corpses with rigor mortis, putrified, burnt or frozen bodies could harm teeth, dental restorations or another characteristic structures and therefore identification could be difficult. In these cases for adequate intraoral examination appropriate oral autopsy procedures must be followed.

Key words: Oral autopsy, forensic sciences, forensic dentistry, identification, disaster victims.

O-04

Innervation pattern of the cremaster muscle: is cremaster a striped muscle?

Kayalıoğlu G*, Uyaroğlu FG**, Altay B***, Uludağ B**, Bademkıran F**, Ertekin C**

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The cremaster muscle is one of the rare muscles attaching to soft tissue. It was observed that the motor units of this muscle have a different EMG pattern when compared to other skeleton muscles and this muscle shows excessive spontaneous decharges (Ertekin et al., 2000). In this study, we aimed to reveal the innervation properties of the cremaster muscle to understand its different electromyographical properties. Six human cremaster tissues from orchioectomy specimens were used for this study. Myosin (slow, fast) immunohistochemistry and axonal staining with Bielschowsky protocol, anti-neurofilament immunostaining, acetylcholinesterase immunostaining and Nissl staining were used. We observed a large number smooth muscle fiber of the internal cremaster muscle located on the internal spermatic fascia. The cremaster (externus) muscle, a striated muscle, lied between the fibers of the internal cremaster muscle. Results showed multi-focal motor end-plates terminating on muscle fibers. Intramural nerve plexuses of the internal cremaster muscle were stained intensely for neurofilament-like immunoreactivity and Nissl staining. The plexuses were ondulated or irregular in shape, arranged as loosely packed clusters within the connective tissue. Neuronal cell bodies were elongated or multipolar in shape. The neurons were small-medium sized, with the largest axis diameter ranging from 8-35 _m. There were 7-38 neurons in each plexus. Multi-focal motor end-plate neurons explained the fast electromyographic decharges in this muscle, and the slow tonic character of the muscle was attributable to the smooth muscles of the internal cremaster muscle.

This study was supported by The Scientific and Technological Research Council of Turkey (TUBITAK), Project number: SBAG 3119.

Key words: Innervation, skeletal muscle, neuromuscular junction, smooth muscle, intramural plexus.

O-05

Vascular architecture of the arterialized venous instep flap

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In reconstructive hand surgery, the general goal is to restore form and function of the hand with a flap with minimum donor-site morbidity. The arterialized venous flap has been reported as the flap that can preserve a major artery of the donor site, can be elevated easily without deep dissection, and can provide thin, nonbulky tissue. The flap has been used for treating multiple skin defects of the hand. The volar aspect of the forearm and lower leg are the most common donor sites for the venous flap. Nevertheless, there is no literature concerning arterialized venous instep flap. We aimed to investigate venous architecture of the flap harvested from nonweightbearing area of the foot. Ten feet were examined with dissection and injection-corrosion casting tech-

niques. Seven to twelve vessels were observed at the lower border of the flap. Their mean diameters, from anterior to posterior respectively, at 10 mm below the lower border of the flap were 0.84±0.38, 0.85±0.23, 0.74±0.12, 0.84±0.23, 0.88±0.21, 0.77±0.23, 1.05±0.37, 0.82±0.30, 1.08±0.67, 1.27±0.56, 1.35±0.8 and 2.06±0.23 mm. The vessels travelled upward on the flap. Many anastomoses were observed between adjacent vessels. Mean diameter of the anastomotic branches was 1,16±0,34 mm. Four to six vessels draining into the great saphenous vein were observed at the upper border of the flap. Their mean diameters, from anterior to posterior respectively, at 10 mm above the upper border of the flap were 1.55±0.09, 1.11±0.32, 1.18±0.15, 1.27±0.57, 1.05±0.42 and 1.54±1.34 mm. In conclusion, we observed that arterialized venous instep flap had many venous vessels which anastomoses each other. After the cadaveric study, Dr. Fatih Zor from Gülhane Military Medical Academy, Department of Plastic ve Reconstruktive Surgery firstly in the world have began to use the arterialized venous instep flep, taken from similar manner, for palmar contracture release operations.

Key words: Flap, contracture, plastic, palmar, hand surgery.

O-06

Internal accreditation of postgraduate education among anatomy departments in Turkey

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The post-graduate education of the candidates of anatomy specialist or Ph.D. by the academic staff with taking the advantage of their own as well as all the anatomy departments among the country has a special importance. This fact will also contribute to train these candidates as equipped with the ability of conducting national & international research studies, conveying experience and communicating with other people. Therefore, the anatomy departments among the country should serve their academic staff as well as their educational hardware to get the standardization in post-graduate education in anatomy. The rotations, relations and evaluation of faculty training programs have to be taken into consideration.

Key words: Anatomy, post-graduate education, internal accreditation, training as a specialist, training of doctorate students.

O-07

Anthtopometric characteristics in different sports groups: a comparative study

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Information on the anthropometric status of the athletes is one of the elementary issues in modern sports. Morphological structure of the body is of importance especially in the selection procedure of the individual to the field in which he could be successful. Studies up to date indicate that the anthropometric characteristics of the athletes, active in a specific sport are biased in comparison with the ones in different fields or ordinary non-athletes. Body types influence the level of performance as well. Another method on describing morphological characteristics is somatotyping in which body shape is expressed rather than size. Especially in our country comparative studies on the anthropometric dimensions of the athletes are limited. The main aim of this study is to determine the physical characteristics of the athletes who are active in different sports comparing with each other and ordinary non-athlete individuals. The sample embraced 146 male subjects with a mean age of 20 ± 2.12 years. Of these 146 subjects 27 were American football players, 26 volleyball, 31 basketball, 34 football players and 28 were non-athlete university students. Together with body weight and stature 21 anthropometric measurements (length, breadth, circumference, skin fold thicknesses) were taken. BMI and somatotype components were calculated. Statistical package SPSS for windows, version 13.0 was used for the statistical analysis. Depending to our data and analysis it could be concluded that American football players were characteristic with their bulky bodies and high BMI, basketball players with their mesomorph structures, large width measurements, and relatively longer legs, volleyball players with their slim body morphology, and football players with their mesomorph body structure, but short body height.

Key words: Anthropometric, somatotype, sport, mesomorph, basketball.

O-08

Growth retardation is seen also in the unaffected side of the upper extremities of the children with hemiplegic cerebral palsy

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The aim of the study was to investigate in detail the growth retardation of the upper extremities due to HCP in children by anthropometric methods.

Upper extremities of 32 children with HCP in the age group 5-12 years taking treatment in physical therapy and rehabilitation centers and 40 normal children in the same age group were measured anthropometrically and the results were compared statistically.

All of the values for circumference, length and width on the unaffected side of the upper extremity of the children with HCP were significantly higher than those of the plegic side of the upper extremity of the children with HCP. All of the values for circumference, length and width of the upper extremity of the normal children were significantly higher than those of the plegic side of the upper extremity of the children with HCP. Nevertheless some of the values for circumference, length and width of the upper extremity of the normal children were significantly higher than those of the unaffected side of the upper extremity of the children with HCP.

The results we obtained by means of anthropometric measurements show that the plegic sides of the upper extremities of the children with HCP are less developed than the unaffected sides and also both sides of these children are so when compared with the normal children. In conclusion, reduced use of the plegic and less developed side in the children with HCP causes developmental retardation of the muscles and bones in the unaffected side by limiting the daily living activities. This difference can be reduced by early diagnose and rehabilitation.

Key words: Hemiplegic cerebral palsy, anthropometry, upper extremity, growth retardation, rehabilitation.

O-09

Gait problem can be quickly overcome by the good assessment of the lower extremity development

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Problems of late walking or not walking are seen due to brain lesions in children with Hemiplegic cerebral palsy (HCP). In this study our aim was to investigate the effects of the functional limitation seen in the children with HCP on the development of the lower extremity by using anthropometric measurements.

Lower extremities of 32 children with HCP in the age group 5-12 years taking treatment in physical therapy and rehabilitation centers and 40 normal children in the same age group were measured anthropometrically and the results were compared statistically.

Most of the values for the circumference, length and width of the plegic side of the lower extremity of the children with HCP were significantly lower than those of the unaffected side of the lower extremity of the children with HCP. Nevertheless, all of the values for the circumference, length and width of both the unaffected and the plegic sides of the lower extremity of the children with HCP were significantly lower than those of the lower extremity of the normal children.

In conclusion, the lower extremity on the plegic side develops less compared to the healthy side since it is affected. Muscle and bone development in the lower extremity both on the plegic and unaffected side is retarded due to functional limitation, when compared with the normal children. Performing an intensive strengthening and gait exercise program of the unaffected side as well as rehabilitation of the plegic side may shorten the process of gaining the ability of walking.

Key words: Walking, hemiplegic cerebral palsy, anthropometry, lower extremity, rehabilitation.

O-10

Gender determination and stature estimation via foot measurements

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In forensic investigation difficulties are being experienced in the gender determination and stature estimation of bodies dismembered in mass destruction. So as to eliminate these difficulties, new methods are being tried. This study aims at developing formulas for determination of gender and estimation of the stature through foot measurements when need arises. For this purpose, the length, width, malleol height, navicular height measurements as well as stature measurement of the right and left feet have

been taken from the 249 subjects of Turkey attending Medical Faculty of Dokuz Eylül University and School of Physical Therapy and Rehabilitation. The descriptive statistics of all the measurements have been presented and the comparison of measurement values between genders have been evaluated with t-test analysis. The relation between foot measurements and stature has been determined via correlation analysis. The formulas have been worked out by employing regression analysis for gender determination and stature estimation. It has been found that male stature and foot measurements are greater than female measurements and the differences between measurement means are significant. Upon the evaluation of relation between stature and foot measurements, it can be found that the highest correlation is in the right and left foot length in the study, female and male groups, whereas the lowest is in the foot width in all the right foot measurements of all the groups and the lowest correlation varies in all the groups in the left foot measurements. Stature estimation and gender determination formulas have been established through right and left foot measurements taken separately. As a consequence, the gender determination formula can help determine the gender with 95.6% accuracy via right foot measurements and 96.4% accuracy via left foot measurements. While stature estimation formulas depending on gender allow 9-10 cm errors, those independing on gender help make estimation with less than 4 cm errors.

Key words: Foot, identification, stature, sex, regression analysis.

O-11

The analysis of face asymmetry with statistical shape analysis

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Facial asymmetry is a common finding in healthy individuals but in aesthetically pleasing faces. Asymmetry becomes important when it affects function, aesthetics or social acceptance of an individual. Several kinds of measurements have been used for the quantification of facial asymmetry. Statistical shape analysis, a relatively new method, compares anatomic shape by using specific landmarks determined by anatomical prominences.

In our study, totally 42 soft tissue landmarks consisting of right half, left half and midline section of the face were marked on the digital frontal images of 171 female (17-23; mean±SD: 18.88±1.24) and 150 male (17-23; mean±SD: 19.76±1.42). Subsequent to landmark marked, the asymmetry between the right and the left half of the face was analyzed with EDMA statistical shape analysis method.

The comparison between the right side and the left side was comparison with statistical shape analysis method in terms of 280 linear distances in total. Differences were found between the right and left half of the face according to the vertical midline axis ($p<0.001$). Subsequent to the comparison of the right and left in females, the ratio of the distances showing meaningful asymmetry statistically to the total distances is 33% (91/280). For females, the left side is larger than the right one in 86% (78/91) and right side is larger than the left one in 14% (13/91) of the distances showing asymmetry. The ratio of the distances showing asymmetry to the total distances in males is 13% (36/280). For males, the left side is larger than the right one in 81% (29/36) and right side is larger than the left one in 19% (7/36) of the distances showing asymmetry. Asymmetry was much more in females. Zygion was the most asymmetric landmark both female and male groups.

Key words: Face, asymmetry, geometric morphometry, shape analysis, EDMA.

O-12

Unbiased estimation of the eyeball volume using the Cavalieri principle on computed tomography images

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The size of the eyeball has been the subject of a few studies. None of them used stereological methods to estimate the volume. In the present study, we estimated the volume of eyeball in normal males and females using the stereological methods.

Eyeball volume (EV) was estimated using the Cavalieri principle as a combination of a point-counting and the planimetry techniques. We used computed tomography scans taken from 36 subjects (15 male and 21 female) to estimate the EV.

The mean EV (±SD) obtained by planimetry method was 7.49±0.79 cm^3 and 7.06±0.85 cm^3, in males and females, respectively. By using point-counting method they were 7.48±0.85 cm^3 and 7.21±0.84 cm^3 in males and females, respectively. There was no statistically significant difference between the findings of two methods (P>0.05). The EV estimated by point-counting and planimetry methods and axial length of eyeball correlated (P<0.05; r=0.494 and 0.523, respectively).

The findings of the present study using the stereological methods could provide data for the evaluation of normal and pathological volumes of the eyeball.

Key words: Eyeball volume, computed tomography, stereology, Cavalieri principle, axial length.

O-13

Evaluation of normal pattern of abdominal, pelvic and inguinal lymph nodes at lymphangiography

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Purpose of this study; was to determine normal changes at lymphangiographic views of abdominal, pelvic and inguinal lymph nodes and to evaluate topographical distribution of these nodes. Also, technique of lymphangiography was defined and was give knowledge about complications which might come about during to lymphangiography, normal lymphangiographic views of abdominal, pelvic and inguinal lymph nodes and differences at normal pattern of these nodes in this study. For this purpose, researches of abdominal, pelvic and inguinal lymph nodes were made in 106 lymphangiography from 32 adult humans. The number, size and shape of lymph nodes were to determined in each of anatomical region. In our study, a total of 2841 lymph nodes were visible. The number of abdominal, pelvic and inguinal lymph nodes were found that mean 30,97; 36,56 and 21,25 respectively. The size of abdominal, pelvic and inguinal lymph nodes were found that mean 2.1 mm, 2.8 mm and 4.9 mm, respectively. In this study, we are identified to normal changes at lymphangiographic views of abdominal, pelvic and inguinal lymph nodes and compared our results to those of previously reported literature in Turkish population. We could not find a study that made concerning the shape of abdominal, pelvic and inguinal lymph nodes as our study when investigate literature. Knowledge of number, size and shape of lymph nodes in different surgical regions provide a great benefit in radiologic imaging and planning radiation therapy.

Key words: Lymphangiography, lymph node, abdomen, pelvis, inguinal region.

O-14

Sulcal variability of Broca's area and relationship to the planum temporale

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Considering the functional asymmetries known in Broca's area since the 19th century with regard to language, an asymmetry in the number of neurons, thus volume may exist in this region. In the present study, an analysis of the asymmetry of sulcal/gyral anatomy of the Broca's area was performed in combination with the morphology and volume of the planum temporale in 32 healthy, right-handed females using MRI. Broca's area was subdivided into the pars opercularis and pars triangularis. Volume estimation of the grey matter within the brain structures was performed using the Cavalieri method of stereology.

We found a significant laterality difference in the frequency of the diagonal sulcus within the pars opercularis and the termination of the posterior Sylvian fissure. There was a significant leftward volume asymmetry of the pars opercularis, which was significantly related to the asymmetrical presence of the diagonal sulcus. Groupwise pars opercularis volume asymmetry did not exist when a diagonal sulcus was present in none or both of the hemispheres. There was no significant volume asymmetry of the pars triangularis. There was a significant leftward volume asymmetry of the planum temporale, which was significantly associated with the shape of the posterior Sylvian fissure as a unilateral right or left upward oblique termination was always associated with leftward or rightward volume asymmetry respectively. There was no relationship between asymmetries of the Broca's area and planum temporale.

Present study indicates the importance of simultaneous consideration of morphology and morphometry in studies of cerebral asymmetry

Key words: Pars opercularis, pars triangularis, variability, magnetic resonance imaging, planum temporale.

O-15

The evaluation of the relationship between temporal muscle insertion and TMJ disc via measuring signal intensity values

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Introduction: The purpose of this study was mentioned as below (1) to figure out the ratio of pure side-way disk displacements of temporomandibular joint (TMJ) (2) to calculate SIR values in normal joints (3) to calculate SIR values for pure side-way disk displacements and to make a comparison of SIR values between normal and pure side-way disk displacements.

Material and methods: In this study MR imaging was performed on 112 joints in 56 patients. DICOM 3.0 formatted MR images were sent to the DICOM server and after that downloaded to a computer. The images were evaluated with OSIRIS 4.0 computer software and TMJ's were classified as normal, medial disk displacements (MDD) and lateral disk displacements (LDD). Masticator muscle's signal intensities were measured with elliptic ROI on 4Echo MR images. The correlation between the groups of TMJs and masticator muscles were done with Independent Samples t-test. Statically analysis $P<0.01$ was considered to indicate statistical significance.

Results: LDD was determined in three of 112 asymptomatic TMJ while two of them had MDD. All masticator muscles showed higher signal intensity value in pure side-way disk displacements than normal patients. For MDD, masseter and for LDD, lateral pterygoid SIR values was statistically significant.

Discussion: The increase of signal intensity of masticator muscles in this study can be caused by the inflammation of the muscles or morphological changes due to MDD and LDD. A possible explanation for masseter muscle in MDD and pterygoid lateral muscle in LDD can be from the localization of the muscles.

Key words: Magnetic resonancance imaging, masticator muscles, signal intensity, anatomic localization, disc deplacement.

O-16

Assessment of morphometric differences of thoracic vertebrae with a measurement method

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In our study, antero-posterior thoracal radiographs of 217 patients; 118 male, 99 female aged 20 - 45, were taken at Gazi University, Faculty of Medicine, Department of Radiology. The most distant points on the inferior surface of the corpus vertebrae (I), and the distances between the pedicules (S) of every thoracal vertebrae were measured with a sensitive millimetric compass on each film.

Afterwards, the ratios of I and S values were taken and fixed values were calculated for each thoracal vertebrae. Student's t - test and discrimination variance tests were performed by an SPSS programme to analyze the whole values. According to these measurements, the difference between male and female subjects was not statistically different ($p>0.05$). Besides, the same measurements were made on the thoracal vertebrae of five intact protected, columnae vertebralis from Ankara University Faculty of Letters and on Computerized Tomography images of thoracal vertebrae from Gazi University, Faculty of Medicine, Department of Radiology. When all the measurements were compared, it was determined that they were not different from each other using the thoracal radiographs and the constant values calculated from I / S ratios; although statistically it is not easy to distinguish the 8 th thoracal vertebrae from the 9 th; and the 9 th thoracal vertebrae from the 10 th ($p>0.05$) which can be distinguished by their other morphological properties besides their I and S values.

Key words: Thoracic, vertebrae, morphometric, assessment, method.

O-17

The intranasal anatomy of the lacrimal sac

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In nasolacrimal duct obstructions, dacryocystorhinostomy performed by either an external or an intranasal approach corrects the pathology by creating a passage between the lacrimal sac and nasal cavity. Intranasal surface anatomy is fundamental to the technique of endoscopic (intranasal) dacryocystorhinostomy. In the current literature the intranasal localisation of lacrimal sac is described differently. The aim of this study was to optimize the approach to the lacrimal sac at intranasal dacry-

ocystorhinostomy and avoid the damage of the lacrimal sac at endoscopic sinus surgery.

20 sides of nasal cavity from formaline fixed cadaver heads were investigated under operating microscope at the department of anatomy. The anatomic landmarks were measured under an operating microscope. The entire lacrimal sac was in 2/20 sides anterior and in 3/20 sides posterior to the axilla of the middle nasal concha. The fornix of the lacimal sac was situated above the axilla in all sides (20/20). We determined the agger nasi cells in 8/20 sides. We evaluated the localisation of the lacrimal sac to the maxillary line, which is of clinical importance in intranasal osteotomy during DCR. In 17/20 sides is possible to achieve the axilla of medial nasal concha during osteotomy. We believe that numerical values between lacrimal sac and landmarks are beacon for endoscopic dacryocystorhinostomy.

Key words: Lacrimal sac, endoscopic dacryocystorhinostomy, maxillary line, agger nasi cell, cadaver.

O-18

The role of the hypoglossal nerve's branching pattern and relationship with lingual artery and lingual nerve, in radiofrequency ablation therapy of root of the tongue

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Owing to the fact that the hypoglossal nerve is the extralingual and intralingual motor nerve of the tongue; its course and branching pattern is very important in surgery and other clinical procedures. Thus, we investigated the extralingual and intralingual branches, variations of the branching pattern of the hypoglossal nerve, and also the relationship of the nerve with other neurovascular structures in root of the tongue; aiming to help clinicians especially those applying radiofrequency therapy to root of tongue for treatment of snoring.

We studied on 10 adult cadavers with microdissection method. The extralingual branches of the hypoglossal nerve, which were given before arriving to tongue, were determined. The distance between the points where the nerve enters to tongue body and the foramen caecum linguae, the landmarker for the electrode needle of the radiofrequency therapy, were measured. We investigated the positional relationship of the hypoglossal nerve with lingual artery and lingual nerve and also identified the intralingual branches of the hypoglossal nerve, which were given in the body of tongue.

We believe that, being aware of the different branching patterns of the hypoglossal nevre, its intralingual course and the relationship with adjacent anatomical structures will be useful in radiofrequency ablation treatment to the root of tongue, in surgery of the tongue and adjacent structures (such as sublingual glands, submandibular glands, submandibular duct, etc.) and also in other clinical procedures.

Key words: Hypoglossal nerve, root of tongue, lingual nerve, snoring, radiofrequency ablation treatment.

O-19

The long thoracic nerve, its origin, branching pattern and relation with scalene muscles

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The purpose of this dissection study was to explore the anatomy of the long thoracic nerve and its origin, configuration, branching pattern and relation with scalenus medius muscle. The course of the long thoracic nerve was investigated in fourteen cadavers. We defined four different types for long thoracic nerve configurations. Most common form of the long thoracic nerve was formed by three branches which origined from fifth, sixth and seventh cervical ventral roots. When we look relationship between the roots of the nerve and scalenus muscle; nerve roots mostly lay between the scalenus medius and scalenus posterior muscles. The C7 contribution to the long thoracic nerve was always located anterior to the scalenus medius muscle. The C8 also was found over the scalenus medius muscle. Each of the long thoracic nerve has 7-13 branches and 0-4 branches arising directly from the nerve roots or before exact nerve configuration, 5-10 branches origin from the main trunk of the nerve. By findings with relationship between long thoracic nerve and scalenus medius muscle, we believe that long thoracic nerve may be preserved during surgery and the frequency of long thoracic nerve injury can be decreased. Evaluating the configuration diversities of long thoracic nerve according to the lower four cervical nerves has been crucial in the success of surgical approaches apply-

ing the serratus anterior muscle flap. We hope that this study will be helpful for many neurosurgical procedures and anatomic studies.

Key words: Long thoracic nerve, middle scalenus muscle, cervical roots, serratus anterior muscle, nerve injury.

O-20

Topographical anatomy of the true retaining ligaments of face

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The adherence of the overlying tissues to the underlying structures in the face is maintained by connective tissue condensations known as retaining ligaments. True retaining ligaments named orbital, zygomatic and mandibular ligaments are a series of fibrous bands that run from periosteum to the dermis. The tethering effect of true retaining ligaments must be released for achieving a satisfactory movement of facial skin and SMAS during facial rejuvenation procedures.

The aim of this study was to develop a simple topographical definition of true retaining ligaments for avoiding unnecessary dissection, which could endanger the facial nerve during face lift procedures.

The study was made on ten half- faces of formaline- fixed cadavers. Dissections resembling face- lift procedures were applied and ligaments were determined. The distances of the ligaments to lateral canthus, tragus and commissure and to the lines from tragus to lateral canthus and commissure were measured. Correlations were investigated statistically.

The distances of the zygomatic and mandibular ligaments from the tragus were 66.50± 10.78 mm and 114.80± 9.76 mm respectively. The distances of the zygomatic ligament from the commissure and the commissure- tragus line were 56.30± 8.94 mm and 28.40± 5.19 mm respectively.

The distances of zygomatic and mandibular ligaments from the tragus were strongly correlated with a ratio of 3/5 (0.713, p=0.021) and there was a strong correlation between the distances of the zygomatic ligament from the commissure and commissure- tragus line with a ratio of 2 (0.648, p=0.043).

The results of this study may be useful for a plastic surgeon for avoiding from excess dissection of the face by estimating the location of zygomatic and mandibular ligaments.

Key words: Retaining ligaments, facial ligaments, facial nerve, face- lift, facial rejuvenation.

O-21

Determination of the safe incision area on dorsal surface of the hand and the wrist joint: an anatomical study

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Purpose: In the operations of distal end of radius and ulna, wrist joint and carpal bones, the damage of sensitive branches of the radial and the ulnar nerve extending in this region, results in significant loss of sense in fingers and painful neurinoma. Knowledge about course of these nerves is necessary to prevent the denervations during operations. In this study, we evaluated the relationships between the sensitive branches of the radial and the ulnar nerve, and also the relationships between these branches and radiocarpal, mediocarpal, carpometacarpal joint.

Findings: The distance between dorsal branch of ulnar nerve (DBUN) and superficial branch of radial nerve (SBRN) were measured as 54.63 cm at the level of radiocarpal joint, 46.55 cm, at the level of mediocarpal joint and 28.54 cm at the level of carpometacarpal joint. These two nerves extend in the manner of becoming closer on the dorsal surface of the hand and connect each other on a point, forming a triangle with the top on the distal of hand and the bottom suitable to the radiocarpal joint. The distances between the vertical line passing through the top of this triangle and the radialmost branch of the DBUN, and the ulnarmost branch of the SBRN were determined at the levels of radiocarpal, mediocarpal and carpometacarpal joints.

Results: The top of this triangle is the most distal point for vertical incision that can be extended safely without any loss of sense in fingers. Knowledge of connecting point of these two superficial nerves and safe area on the lateral and medial side of the vertical line passing through this point provides the opportunity for the orthopedists, especially the ones working on hand surgery, to study in this area in a safer manner.

Key words: Radial nerve, ulnar nerve, lesion, radiocarpal joint, carpometacarpal joint.

O-22

The lateral lakes of Trolard: anatomy, quantitation

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There is scant and conflicting information in the literature regarding the lateral lacunae (lateral lakes of Trolard). As these venous structures can be encountered surgically, an anatomical study aimed at elucidating further their anatomy with quantitation and surgical landmarks for their identification seemed warranted. Thirty-five adult cadavers underwent dissection of the lateral lacunae. Following quantitation of the lacunae, measurements were made of these structures and the distances from them to the coronal and sagittal sutures. A mean of 1.9 lacunae were identified on right sides and a mean of 1.4 lacunae were seen on left sides. Although there tended to be slightly more lacunae on right sides, this did not reach statistical significance ($p>0.05$). The average length of the lacunae was 3.2 cm and 2.0 cm for right and left sides, respectively. The mean width of these venous lakes was 1.5 cm for right sides and 0.8 cm for left sides. Lacunae were variably positioned but tended to cluster near the vertex of the skull. No lacunae were identified posterior to the lambdoid sutures and only five lacunae were found to lie anterior to the coronal suture with four of these located on right sides ($p< 0.05$). When lacunae were identified anterior to the coronal suture, they were generally 5 to 6 cm from this structure. The vast majority of lacunae could be identified between the coronal and lambdoid sutures and within 3 cm of the midline. Although variable, the lateral lacunae are concentrated posterior to the coronal suture and anterior to the lambdoid sutures. The lacunae are most often found within 3 cm of the sagittal suture. These data may be useful to the neurosurgeon in surgical planning for procedures that traverse the calvaria.

Key words: Anatomy, superior sagittal sinus, neurosurgery, venous sinus, glandulae conglobatae.

O-23

Structural changes of the BBB during the early stages of permanent focal ischemia in rat brain

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Homeostasis of the microenvironment in the neural parenchyma maintained by the blood- brain barrier (BBB) is essential for the normal function of the central nervous system. BBB is composed of the tight junctions (TJs) present between the endothelial cells, capillary basement membrane (BM), astrocyte end-feet ensheathing the vessels, and pericytes (PCs) embedded within the BM.

The aim of this study was to determine the effects of permanent focal ischemia on some essential components of the BBB.

Twenty- eight male adult Wistar rats weighing 250- 350 g were used in this study. Permanent middle cerebral artery occlusion was induced by the suture occlusion model. Experiments were terminated after 1.5, 3, 6, 12, 24 and 72 hours of ischemia and 24 hours after the sham operation. Each group was including 4 rats. Brains were harvested after cardiovascular perfusion and the brains, which had visible infarcts in the fronto- parietal cortex, were used for the study.

Samples were fixed in formalin solution and processed using routine protocols. Following initial histological analysis, the samples were immuno-stained with anti-ZO-1, anti-laminin, anti-collagen- IV and anti-fibronectin primary antibodies utilizing an indirect avidin-biotin peroxidase method. Ipsilateral ischemic cortex and contralateral side were investigated. Immunostaining intensities of antibodies were evaluated as mild (+), moderate (++) or strong (+++).

Strongest immunoreactivities were observed in the samples from the sham operated brains and decreased in all ischemic brains even at the 1.5 h time point. Immunoreactivities were gradually decreasing depending on the time. Ipsilateral sides were more prominently affected but slight and late changes occurred also in the contraleteral side.

Knowledge of the changes in the BBB following ischemia is useful in planning therapy, in order to avoid agents that

might increase brain damage and developing new strategies for restoring BBB.

Key words: Focal ischemia, rat, blood- brain barrier, tight junction, basement membrane, astrocyte.

O-24

The protective effects of melatonin hormone on morphological changes induced by exposure of formaldehyde in rats

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In our study, toxic effects of formaldehyde on testicular tissue and protective effects of melatonin hormone against these toxic effects were investigated at biochemical and immunohistochemical levels. For this purpose, 21 male Wistar-Albino rats were divided into three groups. Rats in group I were used as control. Rats in group II were injected every other day with formaldehyde. Rats in group III were administered melatonin with injection of formaldehyde. At the end of one month experimental period, all rats were killed by decapitation. Then the testes of rats were removed and dissected from the surrounding tissue. The activities of superoxide dismutase (SOD), glutathione peroxidase (GSH-Px) and the levels of malondialdehyde (MDA) were determined in the some of testicular tissue specimens by using spectrophotometric methods. The remaining testicular tissue specimens were used for immunohistochemical examination.

The activities of SOD and GSH-Px were significantly decreased, and MDA levels were significantly increased in rats treated with formaldehyde compared to control. Additionally, apoptotic changes were occurred in testicular tissue after exposure of formaldehyde. It was seen that increase of SOD and GSH-Px enzyme activities and decrease of MDA levels in rats administered melatonin with exposure of formaldehyde. Furthermore, apoptotic changes caused by formaldehyde were regressed in this group.

In conclusion, it was determined that oxidative damage and apoptosis in testicular tissue caused by exposure of formaldehyde were suppressed by administration of melatonin.

Key words: Formaldehyde, melatonin, testis, apoptosis, immunohistochemistry.

O-25

Pedunculopontine nucleus and characterisation of neurons in vitro

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The pedunculopontine nucleus (PPN) is located in mesopontine tegmentum, extending from the posterior pole of substantia nigra back to lateral tip of the superior cerebellar peduncle. Having connections with the spinal cord, brain stem, thalamus and basal ganglia, the PPN has a role in sleep and wakefulness, arousal and locomotion. Indeed, it may be an alternative site of deep brain stimulation in relieving symptoms of Parkinson disease. The PPN contains morphologically, neurochemically and electrophysiologically diverse neurons including cholinergic, GABA, glutamate and dopamine containing cells.

In this study we have used extracellular single-unit recordings in brain slices obtained form 50g male Wistar rats. Neurons were initially classified on the basis of firing rate (range 1.4 - 30.7Hz), firing pattern assessed by coefficient of variation (range 5.8 - 92%) and action potential (AP) duration (range 0.46 - 4.22 ms) . Group 1 exhibited low firing rates, a low coefficient of variation and long AP duration consistent with ChAT positive cells. Group 2 exhibited low firing rates, a high coefficient of variation and short AP duration and Group 3 exhibited high firing rates, a low coefficient of variation and short AP duration. In addition the effect of dopamine, 5-HT and carbachol on firing rate was assessed. Future juxtacellular labelling revealing dendritic morphology may shed further light of neuronal subtypes and allow neurochemical characterisation.

Key words: Pedunculopontine, neuroscience, electrophysiology, Parkinson, basal ganglia.

O-26

The neuroprotective effect of fish oil in the hippocampus of diabetic rats

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Background: Fish oil is a rich source of n-3 essential fatty acids (EFA) is included eicosapentaenoic and docosahex-

oenoic acids. In this study, we examined the neuroprotective effects of fish n-3 EFA in the hippocampus of diabetic rats

Methods: Nineteen adult-male Spraque-Dawley rats were divided into 3 groups. Group I rats (control, n:6) were fed with normal rat diet. Group II rats (diabetic, n: 6) were fed with normal rat diet and administered streptozotocin (STZ) to form diabetes mellitus. Group III rats (n-3+diabetic, n:7) were fed with normal rat diet and fish n-3 EFA (Marincap®, 0.4 gr/kg/day, intragastric) for 30 days and administered STZ to form diabetes mellitus. At the end of the study, the rats were sacrificed and brains were removed. The levels of malonedialdehyde (MDA) and activities of superoxide dismutase (SOD) and catalase (CAT) were measured in left hippocampus. The right hemisphere was blocked totally. The sections were stained with Cresyl Violet and apoptotic neurons were counted in the hippocampus with image analysis software.

Results: The levels of MDA and activities of SOD and CAT statistically increased in diabetic rats as compared to control rats. The levels of MDA and activities of SOD and CAT decreased in n-3+diabetic rats as compared to diabetic rats. The number of apoptotic neurons increased in diabetic rats as compared to control rats, and statistically decreased in n-3 +diabetic rats as compared to diabetic rats.

Conclusion: Fish n-3 EFA prevent the oxidative stress and apoptotic changes in the hippocampus of STZ-diabetic rats. The addition of fish n-3 EFA to diet may be useful in preventing the cerebral damage due to diabetes mellitus or in the treatment of the same condition.

Key words: Diabetes mellitus, hippocampus, fish oil, apoptosis, oxidative stress.

O-27

Injected specific amyloid β oligomers ($\beta_{1\text{-}40}/\beta_{1\text{-}42}$ = 10/1) to medial septum (MS) impairs the memory retention without induction of the apoptosis in the hippocampus CA1 and CA3 neurons of rats

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The Septum of Male Wistar rats was injected with specific Amyloid β oligomers ($\beta_{1\text{-}40}/\beta_{1\text{-}42}$ = 10/1). The deposition of Aβ fragments following injection was visualized by Congored staining. Compared with the control group showed no significant spatial learning and memory impairment in water maze tasks. But there was significant impairment of memory retention after 11 days water maze task without induction apoptosis in the CA1 and CA3 neurons of the dorsal hippocampus. These data indicate that septal injection of specific composition of A_ causes such a hypofunction represents forgetfulness of Alzheimer's Disease (AD).

Key words: Aβ, medial septal area, watermaze, AD

O-28

Investigation of effects of Aloe Barbadensis on reproductive system

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Objective: Effects of Aloe Barbadensis, a type of Aloe Vera, on reproductive system were investigated.

Material and Method: Aloe Vera gel, a commercial and nontherapeutic form of Aloe Barbadensis, was used for this purpose. 3 groups - 1 control and 2 test groups - of female Wistar Albino Rats with no birth before were studied. Group I was administered 25 mg (100 mg/kg) of Aloe Barbadensis per day both orally and through gavage. Aloe Barbadensis was inside capsules that contain 500 mg of soybean oil; therefore Group II was administered that 500 mg of soybean oil. Group III were the control group. All three groups were nourished on normal feed and water ad libitum. The substance had been administered for 20 days until the birth. Organs involved in reproductive system were examined on histological bases.

Findings: Vascular increase and hyperemic form of ovary in the group administered with Aloe Barbadensis was notable. Tissue of uterus had a hyperemic view, and vessels were distinct and dilated. Neutrophil leukocyte infiltration was detected on all layers from lamina propria to myometrium. Glands were cystic dilated, and had a hyperplasic view. Vascular increase, thickened vessel walls and hyperplasia on endometrial epithelium were observed. Reduction and degradation in trophoblastic and spon-

giotrophoblastic cells were detected. Thickening and disorder of basal membrane of the cells were significant. There were abnormal vessel formation in labyrinth and decreased functional capacity in trophoblastic barrier. Despite these negative alterations in placenta, Aloe Barbadensis administered during pregnancy period did not cause fetal death, growth retardation, abortus or anomaly.

Result: The histological changes imply angiogenesis effect of Aloe Barbadensis and an effect like estrogen. However, it has a harmful effect on placenta tissue. This effect did not damage fetus a dose of 100 mg/kg.

Key words: Aloe Barbadensis, reproductive, tissues, morphologic, effect.

O-29

Effects of anti-FGF-2 on in vitro embryonic development

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Fibroblast growth factors (FGFs) have profound effects on various cell types, influencing their proliferation, differentiation and other functions. Basic FGF (bFGF or FGF2) is one of the FGF families that regulates the development and maintenance of the cellular derivatives of mesoderm and neuroectoderm. bFGF induces endothelial and smooth muscle cell proliferation in vitro and angiogenesis in vivo. It is also potent modulators of proliferation in the developing nervous system. Adding a neutralizing antibody for FGF-2 to the cultures inhibited migration and neurite outgrowth, suggesting an endogenous FGF-2 activity in these functions. In this study, in vitro effects of anti-FGF-2 on total embryonic growth were investigated in rat embryos. The rat embryos were explanted on day 9.5 and cultured in whole rat serum (WRS) (for control) and adding 2.5, 5, 10, 20, 40μg/ml anti-FGF-2 in WRS. After 48h culture period, the embryos from each group were harvested and analysed morphologically. The results showed that the embryonic growth and development during organogenesis decreased in the presence of anti-FGF-2 when compared to embryos grown in WRS. Mean morphological scores for the embryos grown in WRS, in the presence of 2.5, 5 and 10 microgram anti-FGF-2 were 60.8, 47.8, 25.6 and 13.4, somite numbers were 24.3, 20.8, 13.4 and 11.8, yolk sac diameters were 6.0, 5.2, 4.8 and 4.8mm, crown rump lengths were 5.4, 5.0, 4.4 and 3.1mm respectively. These results suggest that bFGF is very important for normal embryonic development and anti bFGF neutralizes bFGF effect.

Key words: Rat, embryo, in vitro, FGF-2, basic fibroblast growth factor.

O-30

The course and branching pattern of pudendal nerve in fetus

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The pudendal nerve is a crucial branch of the sacral plexus. Until now, there were many articles on it in adults but there is a lack of literature examining the branching pattern and variations in pudendal nerve anatomy in fetus. In this study, we investigated the pudendal nerve trunking in relation to the piriformis muscle in 25 formalin fixed fetuses (50 sides of pelves, 14 female, 11 male), ranging from 20-37 weeks of gestation. Pudendal nerve trunking could be grouped into four types: Type Ia is defined as one trunked with inferior rectal nerve is branching proximal to the dorsal nerve of penis/clitoris (19/50, 38%), type Ib is also one trunked with dorsal nerve of penis/clitoris is branching proximal to the inferior rectal nerve (12/50, 24%), type II is two-trunked with one trunked as an inferior rectal nerve (17/50, 34%) and type III is three-trunked (2/50, 4%). We measured the average diameter of the main trunk of pudendal nerve in type Ia and Ib group to be 0.98+-0.33 mm. We also measured the average length of the pudendal nerve trunks before branching the dorsal nerve of penis/clitoris to be 7.35+-3.50 mm. There was no significant statistical difference in the average length, average diameter, number of trunk and pudendal nerve variations between male and female or right or left sides of the pelves. This first and detailed fetal study of pudendal nerve trunking in relationship to the piriformis muscle would be useful for educational anatomy dissections and anatomical landmark definitions for relevant clinical procedures.

Key words: Pudendal nerve, fetus, anatomical variation, inferior rectal nerve, dorsal nerve of penis/clitoris.

O-31

Development of fetal duodenums during the fetal period

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Aim: In our study, we aimed to achieve morphometric information in order to evaluate duodenal development and morphological structure of duodenum during the fetal period.

Material and method: A total of 222 human fetuses (114 males and 108 females) between 9 and 40 gestational weeks who have no external pathology or abnormality were included in this study. Fetuses were separated into groups according to gestational weeks, months and trimesters. After the general external measurements of the fetuses were performed, abdominal walls were dissected. The relationship of duodenum with adjacent structures and its localization were determined. Morphometric data such as height, width, length and diameter were obtained.

Findings: The means and standard deviations of the measured parameters were calculated according to the gestational weeks, months and trimesters. There was a significant correlation between the measured parameters and gestational age ($p<0.001$). No difference was found between genders by means of parameters ($p>0.05$). All results were compared with the previous studies and discussed.

Result: New data are derived for human fetuses to evaluate duodenum development. Data acquired in this study are believed to contribute to studies of obstetrics, perinatology, forensic medicine and fetal pathology on fetal development of the duodenum, and diagnosis of its anomalies, pathologies and variations.

Key words: Duodenum, morphometric, development anatomy, fetal period, human fetus.

O-32

Epidermal growth factor receptor (EGFR) expression in rats exposed to hyper A vitaminosis during intrauterine period

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The development of hard palate begins with the elevation of palatal shelves on embryonic day (E) 14 and ends with their fusion at the midline on E15, in rats. During the palatal fusion, expression of the epidermal growth factor (EGF), and accordingly, the expression of epidermal growth factor receptor (EGFR) decrease. This decrease elicits the apoptosis of the medial epithelial cells of palatal shelves, which is essential for the palatal fusion at the midline. In vitro studies indicate that addition of retinoic acid increases the EGFR level and exogenous EGF disturbs the differentiation of palatal medial epithelial cells.

Although vitamin A (retinol) and its derivatives are essential for the normal development of embryo, their excess doses have teratogenic effects, which target the extremities, internal organs and especially craniofacial structures. These effects are stage specific and the most sensitive period in rats is between E8 and E10.

Our previous studies have shown that prenatal exposure to Vitamin A cause anomalies in the palate morphology of rat embryos. The aim of this study was to investigate whether there is a correlation between these anomalies and the expression of EGFR.

Pregnant rats were divided into three groups. The first group was received 500, and the second group 1000 mg/kg vitamin A (retinyl palmitate) orally, at E10. The third group was the control group, not received vitamin A. The embryos were taken with caesarean section at E20 and their palate morphologies were investigated by micro-dissection method. The expression of EGFR on the palate was examined with immunohistochemistry and the findings were compared.

Key words: Vitamin A, teratology, EGFR, palate, rat.

O-33

Third branch derived from left coronary artery: the median artery

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Proficiency in the anatomy of coronary arteries and their variations is significant for proper interpretation of the coronary angiographies, assessment of the complexity and result of the coronary insufficiency as well as surgical myocardium revascularization. Therefore, we was to describe the trajectory of diagonal branches of main trunk of left coronary artery and cases third branch derived from left coronary artery in the Turkish cadavers. In our study, researches of the diagonal branches were made in 50 hearts from adult cadavers, and the numbers

of branches of main trunk of the left coronary artery were analyzed.

The most frequent type of division of the main trunk of left coronary artery was bifurcation (86%); in 14% of cases the main trunk of left coronary artery divided into three branches. In addition, the diagonal branches were seen in 49 hearts.

In cardiology and coronary surgery, anomalies of the coronary arteries were constituted a great potential risk for myocardial ischemia resulting in arrhythmia, angina pectoris, infarction and sudden death. The diagonal arteries derived from anterior interventricular (left anterior descending=LAD) branch supply to anterior 2/3 of the interventricular septum and left ventricle, and median artery third branch derived from left coronary artery are to contribute to supply of the heart. In this respect, blocked to distal of the LAD, diagonal artery; blocked to proximal of the LAD, median artery were proved to contribute to supply of the heart.

Key words: Left coronary artery, median artery, heart, human, anatomy.

O-34

Assessment of origin characteristics of front branches of the external carotid artery

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The neck region has great vital value, its variations and knowing micrometric values are accepted as important orientation points during intervention. Micrometric values of the front branches of the external carotid artery (ECA) and their relations the surrounding structures and metric data pertaining to origin locations of the superior thyroid (STA), lingual (LA) and facial (FA) arteries have been evaluated in 40 samples. As regards the evaluation of the branching types of the ECA, the cases where the STA, LA and FA originated as separate branches was 90%, linguofacial trunk cases was 7.5%, thyrolingual trunk cases was 2.5%. The diameters of the STA, LA and FA at their origins were observed to be 3.53 ± 1.17, 3.06 ± 0.65 and 3.35 ± 0.68 mm, respectively. The distances from the origin of the STA to the CB 3.29 ± 4.27 mm, origin of the STA to that of the LA 10.45 ± 5.16 mm and origin of the STA to that of the FA 18.20 ± 8.81 mm were found. The location of the origin of the STA according to the CB, with a comparison of the right and left sides, and their incidences was studied. In this study, 14 STA cases originating from the CCA was observed. In our study, it has been determined that the STA was originated from the CB level in 40% of the cases. This study has provided measured objective criteria for the arterial features of the neck region, which are crucial during surgery. No differences at a significance level of $p>0.01$ were observed in the right-left side comparison of the data about the all parameters. The present findings may have serious implications for radiologic examinations, exploration of the neck, thyroid and parathyroid surgery, tracheotomy and surgery of the larynx, pharynx, upper oesophagus, pterygopalatine and infratemporal fossa.

Key words: External carotid artery, superior thyroid artery, lingual artery, facial artery, surgery.

O-35

Variations in the anatomical pattern of the coronary arterial orifices in the normal heart

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Identification of the anomalous origin of a coronary artery is important because of significant risks of myocardial ischemia and sudden death associated with it. In the present study, we have focused on the location of the coronary arterial orifices relative to the aortic valve because it has been widely used as a landmark to identify the arterial supply by both surgeons and angiographers.

The number, position, and shape of the coronary arterial orifices, and their relation to the sinotubular junction (SJ), such as the location of the orifice in radial and vertical planes, were studied in 100 normal fresh hearts from autopsied adults.

The mean circumference of the SJ was measured as 8.12 ± 0.21 cm. The mean height of the right, non- and left coronary sinuses were 18.75 ± 1.71, 17. 86 ± 1.55 and 16.41 ± 1.21 mm, respectively. The mean height of the right, non- and left coronary cusps were measured as 16.2 ± 1.2, 15.9 ± 1.1 and 12.3 ± 2.1 mm, respectively. The left coronary artery (LCA) arising below the SJ, above the SJ and at the SJ was observed in 58 %, in 29% and 13% of the specimens, respectively. The right coronary artery (RCA) aris-

ing below the SJ, above the SJ and at the SJ was seen in 78, 13 and 9 specimens, respectively. The diameters of the LCA and RCA were measured as 4.22 ± 0.72 and 3.32 ± 0.82 mm, respectively. An accessory orifice was found in 47 specimens on left and in 54 specimens on the right.

The coronary arteries should be described based on their sinus of origin and their vertical and radial origins. A better understanding of the anatomical pattern of the coronary orifices should allow for modification of surgical techniques for cardiac catheterization and arterial switch operations prevent myocardial injury and improve the prognosis of the patient.

Key words: Coronary arteries, anatomy, aortic valve, orifices, catheterization.

O-36

Morphometry and geometrical shape of trochlea tali

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The importance of geometric shape of the trochlea tali for the biomechanics of the talocrural joint is well known. Talar arthroplasty may be performed for the treatment of various entities such as avascular necrosis, severe crush fractures, talar body tumors and romatoid disorders. Morphometric data also are of great importance when an attempt is made to replace a damaged talus by an artificial one or in reduction of talus fracture.

The purpose of this study is to investigate the morphology and morphometry with special attention to its precise geometric shape.

For this 188 tali (89 right and 99 left) were estimated. Ten parameters was measured and some and some rates and angles were calculated. The relationship of these parameters with general morphometric features of talus was explored.

The morphometric data was obtained and in a great importance it was found that lateral and medial edges werent parallel to each other and angle between the medial and lateral border of the superior surface of the trochlea was calculated in right 9,16 and in left 12,86 degree. The anterior and posterior borders were not founded parallel too. Furthermore the anterior border was calculated to have another angle with posterior border. These rates were associated with dimentions of talus.

In a several studies was observed that superior surface of the trochlea tali may be seen in a proximal view as a trapezium. This wedge-shape is in concordance with important biomechanical features of the talocrural joint.

In our study we showed that superior view of talus and trochlea tali have not ideal trapezoid form. We measured and calculated that these structures have more complex geometric anatomy and the relationship with this geometry with its morphology is constant.

Key words: Talus, trochlea tali, anatomy, morphometry, form.

O-37

Quantitative evaluation of anatomical variations and subchondral sclerosis of sacroiliac joint on CT

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This study has been performed to demonstrate type and frequency of the anatomical variations and subchondral sclerosis of the sacroiliac joint according to age, gender, Body Mass Index and childbirth. The width of subchondral sclerosis was also measured.

It was conducted on 400 consecutive patients without sacroiliac complaint who underwent pelvic CT scanning for various reasons. Patients' ages were 15 or above.

Anatomical variants that we observed were accessory sacroiliac joint (70 patients, 17.5%), iliosacral complex (38 patients, 9.5%), bipartide iliac bony plate (22 patients, 5.5%), semicircular defects on iliac/ sacral side (19 patients, 4.8%), crescent like iliac bony plate (14 patients, 3.5%) and ossification centers (4 patients, 1.0%). We found subchondral sclerosis in 167 (41.8%) patients. The mean width of the subchondral sclerosis on the iliac side was 3.30 ±1.18 mm. and on the sacral side was 2.45±0.62 mm. In adults below 40 years of age the measured width were 3.19±1.07 mm and 2.17±0.63 mm for the iliac side and sacral side, respectively. In adults over 40 years of age the measured width for the iliac and sacral side were 4.08±1.62 mm and 2.48±0.62 mm, respectively.

This study has demonstrated that anatomical variations and subchondral sclerosis are indepentently related to age, gender, Body Mass Index and childbirth in healty

subjects. We believe that all this information is helpful to interpret and examinate the sacroiliac computed tomography images.

Key words: Computed tomography, anatomical variations, sacroiliac joint, subchondral sclerosis, degenerative change.

O-38

Cleland's and Grayson's ligaments; an anatomic study

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The ligaments that are known as Cleland's and Grayson's ligaments in the literature were fisrt described by J.Weitbrecht in 1742 and by J.Cleland in 1867 and then published by J.Cleland in 1878. In 1930 J.Grayson decsribed the location of this ligaments according to the neurovascular bundle. This ligaments are the main functional structures for the normal skin stability during digital movements. We aimed to expose a detailed anatomic study of the cutaneous ligaments' localization.

This study comprises anatomical dissections performed on 120 digits of 12 human adult cadavers (33–76 years; males (n=9); females (n=3)) obtained from the Department of Anatomy at the Akdeniz University of Antalya. After a detailed dissection of the hands the cutaneous ligaments observed and the morphologic analysis were made. The distances between origo and insertion of Grayson's ligaments are 0.43 ± 0.02 in proximal phalanx of thumb, 0.82 ± 0.08 in middle phalanx of index, 0.74 ± 0.05 in middle phalanx of digiti media, 0.70 ± 0.04 in middle phalanx of digiti anulare and 0.49 ± 0.06 in middle phalanx of digiti minimi. The distances between origo and insertion of Cleland's ligaments are 0.56 ± 0.03 in proximal phalanx of thumb, 0.84 ± 0.03 in middle phalanx of index, 0.83 ± 0.05 in middle phalanx of digiti media, 0.74 ± 0.03 in middle phalanx of digiti anulare and 0.51 ± 0.04 in middle phalanx of digiti minimi. Our findings are similar to the literature below.

The data of the present study have advanced the morphological understanding of cutaneous ligaments and have confirmed previous reports regarding the anatomy of Cleland's and Grayson's ligaments. We think that anterolateral aspect is more suitable to reach to the Cleland's ligaments. The knowledge of a detailed anatomy of these ligaments could be important for the surgical procedures of the Dupuytren's disease.

Key words: Cleland's ligament, Grayson's ligament, anatomy, hand, finger

O-39

Tendon variations related extensor muscles of the forearm

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Tendon variations related extensor muscles of the hand in both upper extremities were found, during the routine dissection of a 70-year-old male cadaver.

If one nerve supplied to muscles which same function and different nerve supply injured, the function can be done partly because of movement tolarated by other muscles. If there is common tendon among these muscles, the movement occurs.

The tendons of extensor muscles help to stabilize of the hand during forced graping and provide needed loosness for sensory finger movements is each other dependently done.

Knowledge of normal anatomy and its variations in the tendons of extensor muscles is important for identification of accessory tendons and repair of the functions.

Key words: Extensor carpi radialis longus muscle, extensor carpi radialis brevis muscle, forearm, extensor muscles, variation.

O-40

Anatomo-histological analysis of the juncturae and their relations to the extensor tendons to the dorsum of the hand

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The extensor digitorum communis (EDC) tendons are combined distally in intermetacarpal space (IMCS) by oblique interconnections called juncturae tendineum (JT). The JT may play role in coordination of extension of fingers, force redistribution and stabilization of the metacarpophalangeal joint.

The shape, thickness, location and distribution of the JT's were studied and classified in fifty-four hands. The dissected JT samples were embedded in paraffin and sliced. The samples were than stained with hematoxylin-eosin and Masson trichrome for histological examination.

The JT were classified into three types. Type 1 was consisted of tiny bands of connective tissue. This type was observed in 57.4% cases in the second IMCS, 16.7% cases in the third IMCS and 1.8% cases in the fourth IMCS. Type 2 was detected in 3.7% cases in the second IMCS, 59.3% cases in the third IMCS and in 7.4% cases in the fourth IMCS. Type 3 was observed as the thickest of the three types and divided into two subtypes. Type 3Y was found 14.8% in the third IMCS and 53.7% in the fourth IMCS. Type 3r was found in 5.55% cases in the third IMCS and in 37% cases in the fourth IMCS. In histological examination, the fibers of types 1 and 2 were straight. In Type 3 the tendon was composed of regularly oriented parallel and crosswise bundles of tendineous tissue.

This study is important in terms of giving accurate knowledge on the anatomo-histological analysis of the JT's and their relations to the extensor tendons to the dorsum of the hand. Difference of histological features of the JT was not described in the classification of previous studies. An understanding of the structures of the JT and interactions between the tendons of the fingers is of importance in hand assessment, during reconstructive procedures such as tendon transfers and reconstructions.

Key words: Extensor digitorum, juncturae, hand surgery, intermetacarpal space, tendon.

O-41

A new technique for subscapularis muscle needle insertion

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Objective: To investigate a new technique for needle insertion into the subscapularis muscle for botulinum toxin injection, nerve block with phenol and electromyography.

Design: A new technique, which we have termed inferior approach, was delineated by cadaver study. In the first step of the study, the thickest part of the subscapularis muscle and the route for the accurate course of the needle were determined by an anatomist on 8 cadavers (16 sides). In the second step, using this technique, a physician attempted to inject India ink into the thickest part of the muscle on a separate 12 cadavers (24 sides). The anatomist then examined the accumulated ink by careful dissection of the involved muscle.

Results: The thickest part was determined to be at the lateral half of the muscle. With the exception of two muscles, all the cadavers were successfully injected using the defined route. If the route and injection sites are correct, there is no risk of injecting any muscle in that anatomic region other than the subscapularis. Furthermore, there were no neurovascular structures identified at risk in the area using the inferior approach.

Conclusion: This new technique, termed as inferior approach is not only easy but also anatomically safe, as it did not involve any risk of damage to any major artery, vein or nerve.

Key words: Botulinum toxin A, needle insertion for subscapularis muscle, spasticity, subscapularis muscle, the inferior approach.

O-42

A case report: accessory bone or myositis ossificans in soleus muscle?

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During routine dissections at the Anatomy Department of the Istanbul Faculty of Medicine, the authors encountered a bony structure in the right soleus muscle of a 78 year old male cadaver. The bony structure was not associated with any bones or capsular or ligamentous structures. In order to prove that this structure was a real bone but not a bony segment that was broken from the bones of the leg, first we took a radiograph of this region. In the radiograph, there was no evidence for broken leg bones. Moreover the bony structure had plainly normal trabecular bony scene. Secondly we took out this structure, then a propriate section from it was made and it was examined microscopically. As mature bony lamellae were observed micro-

scopically, at last we felt certain that this was a real bone. There were two possibilities for this unusual structure. It could be an accessory bone that was stated in the soleus muscle like the fabella that can be stated in the gastrocnemius muscle or this cadaver had had myositis ossificans at this region. Certain discrimination could not be made despite macroscopic, microscopic or radiographic examinations. We believe that unusual formations of the locomotor system like the one we reported should be remembered for the discrimination of locomotor disorders.

Key words: Soleus, accessory, bone, myositis, ossificans.

O-43

Anatomical features of the extensors to the index finger and its clinical importance

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The ability to extend the index finger is by means of the existence of some muscles, in addition to the extensor digitorum communis, including, extensor indicis proprius (EI), extensor medii proprium (EMP) and extensor indicis medii proprium (EIMP). The tendons of EI, EMP and EIMP is useful in tendon transfer procedures in conditions of function losses in the hand as a result of trauma, rheumatoid arthritis, ulnar nerve palsy, cervical spinal cord injury, and hypoplasia of the thenar muscles.

The extensor tendons to the index finger were examined in fifty-four embalmed hands and were classified into six types from A to F, considering Komiyama's classification.

According this, Type A in 36 (66.7%), Type B in one (1.85%), Type C in four (7.4%), Type D and E in two (3.7%) and Type F was observed in nine hands (16.6%).

The EMP tendon was observed in 12 hands (22.2%) while the EIMP tendon was detected only in one (1.85%).

The existence of the supernumerary tendons of the index finger is more frequently encountered on the ulnar side of the extensor digitorum-index than on the radial side. Knowledge of variant muscles and tendon multiplicity has clinical importance in cases of post-traumatic hand surgery requiring tendonoplasty or tendon transfer procedures.

Key words: Extensor, tendon, hand, index finger, anatomy.

O-44

Innervation pattern of the abductor pollicis longus and extensor pollicis brevis muscles

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The innervation patterns of abductor pollicis longus (APL) and extensor pollicis brevis (EPB) muscles were investigated in the upper extremities of 52 (25 right, 27 left) formalin-fixed cadavers. In 96% of the cases, the APL consisted of superficial and deep parts and the EPB usually consisted of one muscle belly. The diameter of the posterior interosseous nerve (PIN), terminal motor branch of the radial nerve, was measured 4.74 mm (min. 2.98-max.6.45) at the distal edge of the supinator muscle. The distribution pattern of the PIN innervating the APL and EPB were divided into 6 types (A-F). The most common was type A (36%) where the PIN proximally separated into two branches: a branch for the superficial muscular part of APL, and the other branch distributed to the deep part of the APL then to EPB. The length of the branches of PIN innervating APL and EPB and the distance from the division point from the main trunk to the distal edge of the supinator were measured. This study confirms the variability and gives detailed morphometric information on the innervation of APL and EPB muscles, which is important in surgical approaches to the region.

Key words: Thumb, muscle, innervation, radial nerve, anatomy.

Poster Presentations

(P-01 — P-145)

P-01

Anthropometric measurements and serum leptin concentration in cord blood of newborns

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Objective: To explore the relation between serum leptin concentration in cord blood of newborns and their certain anthropometric and Bioimpedance (BIA) measurements.

Introduction: It is known that in order for the newborn to grow healthy, the life of it during and after the birth is as important as its life before the birth. Anthropometric and BIA measurements provide information about the general health status of the newborn. The relation between body fat ratio, fatless body mass and leptin in the newborns is not known widely. In this study, our aim is to study the relation of the body mass index (BMI), body fat ratio, body fatless mass and body mass ratio derived utilizing certain anthropometric measurements (height, weight, chest circumference, waist circumference, arm circumference) and BIA measurements with the serum leptin concentration in cord blood of newborns.

Methods: In this study, we use a sample of 118 newborns (61 girl, 57 boy) born at the Aydın Maternity Hospital and Adnan Menderes University, Faculty of Medicine, Child Health and Diseases Department.

The cord blood was taken from the newborns at their birth and the anthropometric and Bioimpedance measurements (using the device called Bioelectrical Impedance Assay - BIA 101) of newborns were taken by trained staff in 24 hours after birth. After separating the serums from the cord blood, they were analyzed at the temperature of -80 °C and the serum leptin concentrations were measured. Results were evaluated using SPSS 11.5.

Results: The results for girls and boys are as follows, respectively: Height 49.52, 50.07; weight 3212.79, 3212.79; head circumference 33.89, 34.26; chest circumference 32.96, 33.22; arm circumference 10.60, 10.66; waist circumference 30.58, 30.66; BMI 13.5, 12.9; body fat mass (kg) 0.43, 0.40; fatless body mass (kg) 3.09, 3.11; Leptin (ng/ml) 10.62, 11.88.

According to Pearson correlation test, there is a positive correlation between weight, BMI, chest circumference, arm circumference, waist circumference and leptin level in boys; whereas there is positive correlation between weight, BMI, head circumference, chest circumference, arm circumference and leptin in girls.

Conclusion: In the newborns, although the anthropometric measurements do not differ between the sexes, it was observed that leptin and anthropometric measurements are correlated both at girls and boys.

Key words: Anthropometry, body mass index (BMI), newborn, leptin.

P-02

Validity of metric assessment of the mastoid triangle in sex determination

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Bones such as cranium and pelvis are anatomic structures used for skeletal sex determination. The purpose of the current study was to evaluate the validity of the mastoid triangle area between three craniometric points (porion, asterion, and mastoidale) as a sex determinant.

In this study, 60 dry skulls (30 male and 30 female) were assessed for morphometric analysis and a total of 120 mastoid triangles were evaluated. Porion is defined as the superior surface of the external auditory meatus, the mastoidale as the lowest craniometric point at the mastoid process, and asterion as the craniometric point at the junction of the lambdoid, the occipitomastoid, and the parietomastoid suture. Based on these informations, these landmarks were identified for both sides of each cranium and the points were marked to demarcate a triagle. The area of the demarcated triagle for the each side of the skull was determined with a caliper (± 0.1 mm), using

Heron's formula, and the total value of these measures was calculated.

The measurement data for the mastoid triangle revealed that the values of the mean for female skulls were 570.9 mm2 and 575.1 mm2 in right and left sides, respectively, and that those for male skulls were 723.9 mm2 and 731.2 mm_ in right and left sides, respectively. The total area values were 1455.2 mm2 for males and 1176.1 mm2 for females; the differences between the sexes in the areas studied were statistically significant ($p<0.01$).

The results of the present study demonstrate that the value of total area of mastoid triangle was significantly greater in males compared to that in females. Therefore, it is concluded that the value of the mastoid triangle can be used as a sex marker.

Key words: Os temporale, trigonum mastoidale, porion, asterion, mastoidale.

P-03

Turks and Europeans with regard to anthropometric proportions

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In visual arts, the proportion refers to the ratio of different parts that forms the whole body. Artists and also scientists had made innumerable studies to determine human body proportions. Paul Richer, who was a French physician and painter-sculptor had made the most comprehensive study of post renaissance period around 20th century. Without searching for the ideal beauty, he had made lots of scientific measurements to achieve the acceptable proportions for 'medium height Europeans'. Our purpose is to determine if these data match with today's Turks or not.

Students and research assistants of Trakya University took place in our study. Measurements were made with Harpenden anthropometer by using anthropological measurement techniques. To determine the effect of body height to proportions participants were separated into 3 groups as 'short', 'medium' and 'tall'.

Comparing our data with 'medium height Europeans' data we have found only a %3.8 difference. The length of the body and lower extremity, and width of the shoulder and hip are in standards of medium height Europeans. Although Turk's neck length is much longer, the head height is relatively much shorter.

As a conclusion, it is possible to say that young Turkish men are substantially matching with the European standards with regard to body proportions.

Key words: Anatomy, anthropometry, proportion, Paul Richer, artistic anatomy.

P-04

Assessment of head and neck development in children with hemiplegic cerebral palsy using anthropometric measurements

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Cerebral Palsy is a neuro-developmental disorder resulting from non-progressive injury of immature brain tissue. Permanent and also changeable movement disorders and impairment of posture are also seen in CP.

Our objective was to study the effects of hemiplegic cerebral palsy (HCP) on the development of head and neck. We measured the anthropometric parameters such as head circumference, neck circumference, head width, head length, face height, distance between the pupils both and neck width in the children with HCP and in the normal children. The results were compared.

We found that head circumference was 49.1±2.4 cm, head width was 13.8±0.8 cm, neck circumference was 26.8±2.3 cm, head length was 15.8±1 cm, face height was 11±1 cm, face width was 7.8±1 cm, distance between the pupils was 5.4±0.6 cm and neck width was 7.9±0.8 cm in the children with HCP. The results in normal children were for head circumference 51.1±1.6 cm, for head width 14.6±0.6 cm, for head length 16.1±0.7 cm, for face height 11.2±0.6 cm, for face width 8.9±0.6 cm, for distance between the pupils 5.5±0.4 cm, for neck width 8.6±0.7 cm.

Head circumference, head width, face width, neck width values were significantly higher in normal children than those in the children with HCP. We think that impairment of the brain development due to neurodegeneration accounts for the low values seen in the anthropometric measurements of the head in the children with HCP and decreased neck width values may be associated with poor nutrition in the same group.

Key words: Hemiplegic cerebral palsy, anthropometry, measurement, head development, neck development.

P-05

Maternal, placental parameters and newborn evidences

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Purpose: To search relationships between maternal, placental, and newborn's parameters.

Material and Method: 195 women's maternal, placental and newborn's parameters were filled up on the forms that prepared before and then they were examined prospective longitudinal analysis. All women who delivered live newborn in the Hospital of Zonguldak Karaelmas University Faculty of Medicine, Department of Obstetrics.

Findings: There were no correlations that we determined between maternal and placental parameters. Between maternal and newborn parameters, we found positive correlation only maternal length and umbilical cord length, maternal length and umbilical cord diameter. We found positive correlation between umbilical cord length and 5th minute Apgar score with placenta's central thickness. Also we determined positive correlation between umbilical cord's diameter and placenta's weight with placenta's size. Furthermore we found negative correlation between umbilical cord's length and umbilical cords diameter. There is no correlation between cord's length and diameter with newborn's parameters. We established that there is positive correlation between placenta's weight and newborn's weight, newborn's length, newborn's head circumference, newborn's chest circumference, 1st minute Apgar score, 5th minute apgar score and cord diameter. When we examine umbilical cord settling, we saw that cords that settled at middle place have much placenta central thickness.

Results: Newborn's growing ratio and placenta's growing ratio have direct proportion. Thickness of umbilical cord's diameter and growing of placenta have direct proportion also, but inverse proportion with umbilical cord's length. Mother's weight has no proportion with any of them. Mother's length and umbilical cord length, mother's length and umbilical cord diameter have direct proportion

Key words: Maternal, placental, newborn, parameters, relationship.

P-06

Clinical results of teeth and gum examination in people with cerebral palsy

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Purpose: In this study it was aimed to define tooth and gum health of individuals diagnosed with cerebral palsy through a prospective study.

Material and Method: Tooth and gum examinations of 113 individuals of different age groups - 47 females and 66 males - with cerebral palsy studying at Kozlu Saribasak Special Education Center were performed by a dentist. Numbers of Decays (D), Missings (M) and Fillings (F) were recorded and the DMFT index was evaluated. The enamel defect types were recorded, and also the enamel color defects and hipoplasy rates were investigated. The enamel color defect and hipoplasy were evaluated by examining maxillary central incisor, while the enamel defect was evaluated by examining left the 1st mandibular molar tooth. The gums were evaluated via gingival index, and pHs of mouth were checked.

Findings and Results: The DMFT index was found to be 6.08 for females and 6.22 for males. Various types of enamel defect were encountered in 82.67% of females and 86.87% of males. It was mostly observed on the occlusal surface in both females and males. Acute gingival inflammation was diagnosed in 31.91% of females and 22.72% of males. Hipoplasy was found in 46.80% of females and 37.87% of males. Enamel color defects other than white-cream were found in 21.28% of females and 33.34% of males. pHs of mouth were found as 7.44 ± 0.54 for females, and 7.59 ± 0.60 for males. While calculating DMFT index it was observed that the number of decays (D) was very high, which was followed by missings (M), however the number of fillings (F) was only 1. It was realized that families did not pay attention to tooth health of individuals with cerebral palsy. It was suggested that these individuals who are not capable of brushing their teeth should regularly be taken to dentist.

Key words: Cerebral palsy, teeth, gum, clinical, examination.

P-07

Calculation of cranial capacity in 7-24 years old students in Muğla

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It is natural that there is close relationship between cranial capacity, and the size of brain. The purpose of the study was to investigate the relation between the cranial capacity and age, body weight, body height, body mass index in living subject.

This study was carried out on 2485 (1169 male and 1316 female) healthy students aged between 7-24 years old in Mugla. The cranial capacity was calculated using the previous formula given by literature.

By using linear dimensions of the head the mean cranial capacity and in males and females were calculated. There was a significant difference between genders ($p<0.05$).

This investigation was showed the cranial capacity is larger in males than females. We also proposed a regression formula that could be used to predict the cranial capacity

Key words: Anthropometry, craniometry, cranial capacity, sex, regression formula.

P-08

Evaluation of hand morphology and hand performance in table tennis players

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The individual's genes and genetic structure has part in the development and differentiation of the hand. Outer factors and occupational factors are believed to affect not only the morphology of the hand but the performance as well. The aim of this study was to evaluate the hand morphology and performance in table tennis players. Seventy table tennis players participating in the national table tennis championship and 77 age- and gender-matched controls participated in the study. Hand length, hand width, third finger length and palmar length was measured using a digital compass with a resolution of 0.01 mm. Shape index, digit index, palmar length/width ratio were also assessed. Grip strength and finger tapping test were used to evaluate hand performance. Independent samples test and Pearson correlation analysis were used for statistical analysis. Right hand width and shape index of table tennis players were higher than those of the control group and the differences were statistically significant ($p<0.05$). Right palmar length/width ratio was significantly higher in control group ($p<0.05$). Right and left hand single finger tapping test results were significantly higher in table tennis players ($p<0.05$). There were no statistically significant differences between the study groups for right and left hand double finger tapping tests and grip strength ($p>0.05$). There was moderate, positive, significant correlation between right grip strength and right hand length, third finger length, palmar length, shape index in table tennis players ($p<0.05$). There was a strong, positive, significant correlation between right grip strength and hand width in table tennis players ($p<0.05$). There was a strong, negative, significant correlation between right grip strength and palmar length/width ratio in table tennis players ($p<0.05$). There was a strong, positive, significant correlation between left grip strength and left hand width and palmar length ($p<0.05$) and a moderate, positive, significant correlation between left grip strength and left hand length, third finger length and shape index ($p<0.05$) in table tennis players. There was a moderate, negative, significant correlation between left grip strength and palmar length/width ratio in table tennis players ($p<0.05$). These results may bring insight into the relationship between the morphology and the functional aspect of the hand in future studies in different sports branches.

Key words: Hand morphology, anthropometry, hand performance, fingertapping, grip strength.

P-09

Clinical anatomical evaluation of shoulder joint among weightlifting children

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As the popularity of weightlifting increases, the numbers and types of injuries caused by weightlifting increase too. However the clinical studies concerning these pathologies are still limited.

The purpose of our study is to evaluate the shoulder injuries of weightlifters participating in weightlifting competitions in Istanbul. In our study, a total of 37 (10 female-27 male) weightlifters were evaluated whose ages ranged between 10 and 19.

In the first part of our study, we inquired if a shoulder injury occurred after the athlete began weightlifting. The shoulders of these athletes were then examined by an orthopedist. Several functional tests were carried out in the examination. (Hawkins, Obrien, Speed)

8 of the weightlifters (21.6%) reported a shoulder injury after beginning weightlifting. At the time of examination, a shoulder injury was observed in 12 athletes (32.4%).

62.5% of the athletes who reported an injury were tested positive in functional tests. 58.3% of athletes whose functional tests were positive were not aware of a shoulder injury caused by weightlifting.

The average age for starting weightlifting was 12.81 ± 0.29. There was no statistically significant difference in starting ages between weightlifters who had a shoulder injury (13,15±0,57) and who did not (12,65±0,64) (p=0.253). the average duration of doing weightlifting was 17.8 ± 2,67 months. Doing sports duration of weightlifters with shoulder injuries was 26.25 ± 5,61 months and the duration of the ones without an injury was 13,76 ± 2,61 months which showed that it was significantly higher according to Mann-Whitney- U test.

As a result of the present study we conclude that shoulder injuries are common in weightlifters and more than half of the athletes who has shoulder pathology are not aware of their injuries.

Key words: Shoulder joint, weightlifting, clinical anatomy, athlete, shoulder injury.

P-10

Upper extremity injuries and sociodemographic examination among weightlifters aged 10-19

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Weightlifting is a branch of sports that involves overloading and that causes injuries frequently. The purpose of our study is to determine the relationship between weightlifting injuries and some demographic factors among athletes aged ranged between 10-19.

Our study involves 37 athletes participating weightlifting competitions in İstanbul.

At the beginning of our study, athletes' sociodemographic characteristics and interests in weightlifting was determined using face-to-face interviewing. Afterwards orthopedical and clinical examinations were performed. For evaluation of sociodemographic properties and injury status, SPSS 14.0 software was used and percentage distribution and averages were calculated, chi-square and Mann Whitney-U test were applied.

The average age of the weightlifters were 14.3 years and the duration of weightlifting for these athletes were 17.8 months. It was found in the examination that 16 of 37 athletes (43,2%) had upper extremity (shoulder, elbow, wrist and hand) injuries.

The rate of upper extremity injuries among weightlifters varied due to gender. The probability of an injury caused by weightlifting among female weightlifters was 80% while in male athletes it was 29,6 % (p=0,009).

Statistical evaluations showed that the duration of doing weightlifting of athletes who was examined positive for a sports injury was found to be significantly higher than those who did not have an injury (p=0,008).

A statistically significant difference was not found between upper extremity injuries and sociodemographic properties such as social assurance, nutrition and growth.

As a result, duration of doing weightlifting and gender difference are thought to be determinant in upper extremity injuries of athletes.

Key words: Weightlifting, athlete, upper extremity, sports injury, sociodemographics.

P-11

An investigation of the ratio between second and fourth fingers during the period of newborn and adulthood

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Purpose: In this study, we aimed to determine the measurements and the relation between measured parameters of hand, second and fourth finger during the period of newborn and adulthood.

Materials and method: We were studied 30 newborns, 200 children who were aged between newborn and 5 years, and 120 adult who were aged between 16 and 60 years. In all cases, hand length, hand width, second and fourth finger lengths, hand index [(hand width / hand length) x 100] and second-fourth finger index [(2nd finger length / 4th finger length) x 100] were measured.

Results: The measurements of hand width and second finger were significantly different between sexes in whom it was greater in full term female newborns infants ($p<0.05$). There were differences in the second finger lengths during the childhood infants between sexes ($p<0.05$). A significant positive correlation between the hand and finger dimensions was found in the all groups. Furthermore, the second / fourth finger index of male was higher in full term newborns, during the childhood and adulthood.

Conclusions: With more expressions of the parameter of hand and second-fourth finger at full term newborns, during the childhood and adulthood, the possibility of more information about individual variations will be given. Knowledge about normal variations in hand and second-fourth finger dimensions can help in diagnosis of pathologies or anomaly of skeleton and endocrine development.

Key words: Hand, finger, childhood, adulthood, morphometry.

P-12

Evaluation of sole morphology: a preliminary study

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Foot health and comport depend on suitable and ergonomical footwear usage. In order to design and product suitable shoes, foot morphology should be well known. The aim of this study is to evaluate the foot morphology of healthy males. 104 males aged between 19-36 years participated in the study. Footprint images of both feet were obtained by a special designed scanner system. Images of the right and left static weight bearing footprints acquired under 50 % of the body weight (standing straight with body weight evenly distributed on both feet) and 90 % of the body weight (standing straight single-limb weight-bearing stance). Measurements were done using AutoCAD 2004 software. Arch angle, Chippaux-Smirak index, Staheli index, arch length index, arch index, footprint index, truncated arch index were calculated for both left and right feet. Ankle height and ankle circumference were also measured using standard anthropometric methods.

There were statistically significant differences between the two weight bearing conditions for arch angle, Chippaux-Smirak index, Staheli index, arch length index, arch index of left and right foot ($p<0.05$). On the other hand there were no statistically significant differences between the two weight bearing conditions for footprint index, truncated arch index of right and left foot ($p>0.05$).

We suggest that the result of this study may bring insight to the foot morphology of Turkish people and may constitute a guideline for suitable and ergonomical shoe design.

Key words: Foot, footprint, foot dimensions, footprint indices, anthropometry.

P-13

Evaluation of Traube's space by percussion: a preliminary study

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Traube's space, which is used to assess spleen enlargement, is at the precardial area on the anterior wall of the chest. In this respect, correct assessment of this area during physical examination is very important. The aim of this study is to evaluate the area of Traube's space by percussion, which is known to be sensitive and specific over 70% and assess effects of gender and defecation habit. Thirty four males and 32 females participated in the study. All the individuals were examined by the same physician and Traube's space was determined on the chest wall by percussion. Images of the Traube's space were drawn on a transparent paper depending on certain references for each participant. All of the images were scanned and measurements were done by AutoCAD 2004 software. In addition weight and height of the individuals were measured and their defecation habit for the morning they participated in the study was also asked. In the males, weight,

height, BMI and traube's space values of males were significantly higher than those of females ($p<0.05$). There was positive, strong and significant correlation between Traube's space and weight and height for the whole study group ($p<005$). Forty one of the individuals defecated in the morning and 25 of them did not. According to morning defecation habit there were no statistically significant differences between these two groups ($p>0.05$). We suggest that the results of this study may be useful for the evaluation of Traube's space and spleen enlargement during physical examination.

Key words: Traube's space, percussion, physical examination, spleen enlargement, tympanic sound.

P-14

Craniofacial morphometric measurements in Turkish children with beta-thalassemia major

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Beta-thalassemia is the most common hereditary disease in Turkey, especially in Antalya region and characterized by reduced synthesis or absence of the beta-globin chain of hemoglobin. Beta-thalassemia creates serious health problems including hematologic, endocrinologic, and skeletal deformities in patients with beta-thalassemia major. In the present study, we aimed to determine the morphometric alterations in head and extremities of the children and adult with thalassemic phenotype. Our patient group was consisted of 37 individuals (7 males and 10 females aged between 5-14 years and 6 males and 14 females aged between 15-25 years) with beta-thalassemia major. A control group of same number of volunteers with identical age-sex match distribution was also measured by same method. Comparison of the data obtained from control and patient groups revealed that there was a significant difference between both groups. We think that such measurements will provide the necessary findings for understanding the phenotypic appearance of the patients with beta-thalassemia major.

Key words: Beta-thalassemia major, head, extremity, morphometric measurements, microsribe G2X.

P-15

Bone mineral density, hormonal and biochemical measurements in Turkish children with beta-thalassemia major

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Beta-thalassemia is the most common hereditary disease characterized by reduced synthesis or absence of the beta-globin chain of hemoglobin. Beta-thalassemia creates serious health problems including hematologic, endocrinologic, and skeletal deformities in patients with beta-thalassemia major. In the present study, we aimed to determine bone mineral density, hormonal and biochemical alterations of the children and adult with thalassemic phenotype. We used DEXA and hormonal and biochemical markers for measurements. Our patient group was consisted of 37 individuals with beta-thalassemia major. A control group of same number of volunteers with identical age-sex match distribution was also measured by same method. Bone mineral density, hormonal and biochemical parameters (DEXA, n-telopeptit, serum 25.OH. kolekalsiferol) related to beta-thalasemia were also evaluated. Comparison of the data obtained from control and patient groups revealed that there was a significant difference between both groups. We suggest that such measurements will provide the necessary findings for understanding the hormonal and biochemical alterations of the patients with beta-thalassemia major.

Key words: Beta-thalassemia major, beta-globin chain, DEXA, n-telopeptit, serum 25. OH. kolekalsiferol.

P-16

Analysis of ground reaction forces in young adults during stepping over obstacles and level walking

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In daily life, the ground we walk is usually uneven. We encounter obstacles like doorstep, water, mud, drainage that constrain us to alter normal gait. With this idea, we have planned our study to analyze the Ground Reaction

Forces (GRF) during stepping over obstacles and level walking.

30 healthy volunteers (15 female, 15 male) who had a mean age of 19,8 years participated in this study. 'Zebris Force Measurement System' in Gait Analysis Laboratory of Trakya University, Faculty of Medicine, Department of Anatomy was used for measuring the GRF during stepping over obstacles and level walking. Participants are asked to step over a 0 cm height, 2,5 cm depth adhesive tape and 2 cm height, 10 cm depth wooden doorstep model. In stepping over obstacles, the GRF values of the leading foot are compared with each other and also with level walking.

According to our findings, in stepping over each obstacle the time needed for reaching the maximum GRF in heel and middle regions of the foot is shorter than in level walking. Besides, the maximum GRF in heel region during stepping over the doorstep is significantly higher than the maximum GRF measured in level walking. There is no significant difference between stepping over each obstacle.

In conclusion, as the height and depth of the obstacle increases, the GRF which the leading limb is exposed in stepping over obstacles increases and the time needed for reaching the maximum GRF decreases particularly in phases of initial contact and loading response, with respect to level walking.

Key words: Ground reaction force, walking, human, gait, obstacles.

P-17

Analysis of two different karate techniques from anthropometrical and biomechanical viewpoint

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This study was performed to analyze two different karate techniques (gyaku tsuki and mawashi geri) in the anthropometrically and biomechanically points of view. Fifty three males and 22 females (totally 75) elite karate athletes (age: 20.7±2.92 years, weight: 65.5±10.01 kg, height: 170.3±8.44 cm) were voluntarily participated in this study. Anthropometric measurements consisted of the length of the upper and lower extremity; the circumference of the trunk, knee, hand and ankle, the biomechanical measurements were the hip flexion and extension, the range of motion (ROM) of vertebral flexion and extension, the vertebral rotation angle, the vertical jump, the motion time and the motion velocity. SPSS 11.0 program was used for statistical analysis. When the techniques were omitted, there were no statistically significant differences between males and females in the anthropometric and biomechanical properties except the lengths of the segments of the upper extremity. When the techniques was considered; a) The upper and lower extremity of the females who used the mawashi geri technique were longer than that of gyaku tsuki ($p<0.05$). b) The weight of the males who used the mawashi geri technique more than that of gyaku tsuki ($p<0.05$). The hip extension ($p<0.04$), lumbar flexion ($p<0.01$) and left lumbar rotation angle ($p<0.01$) in the males bigger than in the females. The longer upper extremity is in the athletes who used the gyaku tsuki the less motion time, and therefore, the more motion velocity it is ($p<0.05$). In contrary, the longer lower extremity is in the athletes who used the mawashi geri the less motion time and therefore the more motion velocity it is ($p<0.01$). Based on these findings, it may be suggested that in the karate athletes, the anthropometric features affect both the technique and the biomechanical properties on vice versa, the karate training also may affect the posture of the athletes.

Key words: Karate, spinal column, anthropometry, biomechanics, range of motion.

P-18

Sagittal parameters of the sacrum: anthropological, biomechanical and surgical perspectives

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The sacral bone plays a role in determining the acquisition of the spinal curves to achieve the most economic position. Quantitative analysis of the sagittal sacrum serves as a baseline in the evaluation of the spinal balance. Based on this knowledge, the present study was conducted to determine the sagittal anatomic parameters of the sacrum and to examine the association between these parameters and the inclination of the superior articular facet. Sacral slope (SS), ventral curvature of the sacrum (VSC), ventral depth of the curvature (VDC), the deepest point of the ventral curvature (VDP) and the inclination of the superior articular facets (ISF) were measured on 20 dry sacra of unknown sex. Intraclass correlation coefficient (ICC), Spearman's rho and Mann

Whitney-U tests were used for statistical analysis. Intraobserver reliability were found to be high (ICC= 96.5%) for all measurements and time intervals. The mean values (and standard deviations) were 36.2 ± 5.9° for SS, 132.3 ± 10.5° for VSC, 1.9 ± 0.7 cm for VDC, 77.2 ± 11.1° for the right ISF and 78.6 ± 8.2° for the left ISF. The VDP is at the level of S3 vertebra in 17 sacra (85%) and that of 3 (15%) sacra is at the level of the S4 vertebra. A strong correlation was found between VSC and SS (r = 0.94); between VSC and VDC (r = -0.56) and, finally, between VDC and SS (r = -0.67). The ISF did not at all depend on the other parameters. Since the sacrum contributes to the shape of the sagittal spinal curve of an individual, this data may be incorporated along with factors, such as biomechanics and anthropology for the operative approaches and procedures to the spinal imbalance.

Key words: Vertebral column, spine, sacrum, sacral slope, sagittal alignment.

P-19

Diameters and lengths of the hypoglossal canal; significans for the transcondylar approach

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Lateral approaches to the foramen magnum are now frequently used to treat anteriorly located lesions at the craniocervical junction. The transcondylar approach requires drilling of the occipital condyle posteriorly and threatens opening of the hypoglossal canal.

This present study was carried out to determine what steps are necessary to safely drill around the hypoglossal canal. For this purpose we measured the length and openings of the hypoglossal canal.

Thirty seven dry human skulls from Turkish sources (74 sides) were used in this study. A compass and a flexible wire were used to measure openings and lengths of hypoglossalcanals.

We found that the length of the hypoglossal canal on the lateral wall varied from 4 to 12 mm, on the medial wall; 5-12 mm. Endocranial openings of the hypoglossal canal were measured as 3x3-7x5 mm, exocranial openings were measured as 3x2-9x6 mm. We also defined doubled endocranial openings from this collection. Three dry skulls (8.1%) had hypoglossal canal with doubled endocranial openings bilaterally. Five hypoglossal canal (13.5%) on the right side were separated by a bony septum at the endocranial openings. This occurred on the left seven numbers (18.9%).

We thought that knowledge the size of hypoglossal canal will aid to safely drill around the hypoglossal canal during the transcondylar approaches.

Key words: Hypoglossal canal, transcondylar approach, hypoglossal nerve, skull, foramen magnum.

P-20

The morphology of the foramen Vesalius

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Aim: Anatomic structures located between the ala major of os sphenoidale and the corpus sphenoidale in the fossa cranii media, including foramen rotundum, foramen ovale and foramen spinosum, are clinically important. One of those, which is rarely encountered in this region, is foramen Vesalius. It is an inconstant foramen situated anteromedial to the foramen ovale and lateral to the foramen rotundum. Foramen Vesalius transmits an emissary vein, called vein of Vesalius, through which the pterygoid venous plexus and cavernous venous sinus connect. This study has been conducted to evaluate various types of this variation in the Western Anatolian population.

Material and Methods: We studied 81 dried adult human skulls (30 female and 51 male) available in the Department of Anatomy, Adnan Menderes University School of Medicine, Aydın, Turkey.

Results: In the present study, foramen Vesalius was present in 15 sides out of the 60 sides (25%) in females and 34 sides out of 102 sides (33%) in males. No remarkable differences were observed in the incidence values of foramen Vesalius between the male and the female sex. Overall, the incidence of bilateral foramen Vesalius was 19.8% for both sexes. In one of the craniums in males, there was a double foramen in right side and a single foramen in left side; in one of the craniums in females, there was a double foramen in left side and a single foramen in right side.

Conclusion: Based on our findings and literature data, foramen Vesalius is an important anatomical structure because of the fact that an infected thrombus from an extracranial source may reach cavernous sinus. There is no doubt that the characteristics of foramen Vesalius and

its incidence is essential information for surgical approaches related with this region.

Key words: Foramen Vesalius, os sphenoidale, skull, anatomical variation, vein of Vesalius.

P-21

Foramen of Vesalius

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Foramen of Vesalius (FV) is known to be an inconstant foramen, which is usually located in the anteromedial side of the foramen ovale. It transmits an emissary vein through which the cavernous sinus and pterygoid plexus communicate. As an infected thrombus from an extracranial source may reach cavernous sinus by a FV, this foramen is important. The FV is classified into the open type and the closed type. We examined the frequencies and the types of foramen Vesalius in adult dry skulls; 22 complete craniums (44 probable FV), 15 craniums whose calvarias were taken out (30 probable FV), 31 half craniums (31 probable FV), 19 sphenoid bones (only two of them could be bilaterally examined, so 21 probable FV). Totally 126 probable FV were examined. In 28 sides (right or left), there weren't any FV. In 31 sides (right or left), there were FV but, they were closed type. In 50 sides (right or left), there were open FV. 12 sides (right or left) had double FV. 4 sides (right or left) had FV which were divided into two foramens by a septa. 1 side had a FV which was divided into three foramens by two septas. We believe that our data about foramen vesalius and its incidence will be enlightening not only for anatomists but also for clinicians.

Key words: Foramen, Vesalius, sphenoid, bone, emissary.

P-22

Median occipital condyle (condylus tertius)

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A median osseous process, which is found to exist on the anterior margin of the foramen magnum is considered as a median (third) occipital condyle (MOC) or as a condylus tertius. MOC can be of various shapes and sizes and can be located in various positions. On an occipital bone, an erroneous diagnosis of MOC can be made instead of basilar processes. Basilar processes are found in a slightly paramedian location and are often bilaterally at the anterior rim of the occipital foramen magnum. In our study, our aim was to investigate the existence of the MOC and the basilar processes in dry bones. We searched totally 77 occipital bones of the laboratory of the Anatomy Department of the Istanbul Faculty of Medicine; 40 separate occipital bones, occipital bones of 22 complete craniums and occipital bones of 15 craniums whose calvarias were taken out. We found MOC in 2 complete craniums and basilar processes in 1 complete cranium and in 1 separate occipital bone. Unfortunately we were not able to reach the atlases that belonged to those skulls. A MOC may touch the anterior arch of the atlas or even the tip of the dens axis and form an osseous contact zone, which histologically represents a joint and can possibly even constitute part of an accessory median joint. Further more it has been reported that MOC can cause progressive myelopathy. Consequently we think that this rare variation of the occipital bone should be remembered in craniovertebral junction disorders and should be searched by magnetic resonance imaging or computerized tomography of the related region.

Key words: Condylus, tertius, median, third, occipital, basilar, process.

P-23

Morphological evaluation of the bony bridging of the jugular foramen

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Aim: Foramen jugulare is an important region because of its complex relationships with surrounding anatomical structures. At the foramen jugulare, the bridging between the processus intrajugularis of the occipital bone and the processus intrajugularis of the temporal bone is rarely seen in the medical literature. Therefore, this study has been conducted to evaluate various types of this variation in the Western Anatolian population.

Materials and Methods: We studied 81 dried adult human skulls (30 female and 51 male) available in the Department of Anatomy, Adnan Menderes University School of Medicine, Aydın, Turkey. Incidence and types of the bridging between the processus intrajugularis of the occipital bone and the processus intrajugularis of the temporal bone were noted. Type A was described as absence of the bony bridging, while Type B had a bridging in the jugular foramen. Further, Type B was divided as Types B1 and B2, according to the location of the starting point of the bridging; in Type B1 the bony processes of the occipital bone was projecting from just above the hypoglossal canal, and in Type B2 it was projecting from posterior to the hypoglossal canal. Type C was described as a variation composed of the processes of the occipital bone reaching the intrajugular process of the temporal bone, resulting with the jugular foramen with three compartments.

Results: In the present study, Type A was present in 44 sides out of the 60 sides (73.3%) in females and 79 sides out of 102 sides (77.5%) in males. Incidence of Type B1 was found in 8 sides (13.3%) in females and 18 sides (17.6%) in males, while incidence of Type B2 was found in 4 sides (6.7%) in females and 3 sides (2.9%) in males. No remarkable differences were observed in the incidence values of different types of the bony bridging of the jugular foramen between the sexes. No Type C was observed in our study, but Type B1 and Type B2 were bilateral in 6 skulls (4 male and 2 female) and 2 skulls (1 male and 1 female), respectively.

Conclusion: The results of the current study demonstrate that there was no sexual dimorphism in respect to the bony bridging of the jugular foramen.

Key words: Foramen jugulare, os occipitale, os temporale, bony bridging, proccessus intrajugularis.

P-24

Vermian fossa

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A shallow fossa of varying size may occasionally be found on the dorsal aspect of the foramen magnum, and has been named as the vermian fossa (VF) or the middle cerebellar fossa of Verga. This fossa is termed as the VF since it is occupied by part of the inferior vermis of the cerebellum. It is bounded by the limbs of the internal occipital crest, which diverge around the foramen magnum giving the fossa a somewhat triangular shape. In the present study we examined 54 occipital bones of the Anatomy Department of the Istanbul Faculty of Medicine for determining the frequency of presence of the VF. We found that only 2 of the 54 (3.70 %)occipital bones had a VF. The VF of those two occipital bones were quite different from each other. We could find only one study reporting the frequency of this fossa in the literature. Our result was compatible with that study in which the frequency of the vermian fossa was reported as 4 %. As there is not enough information about the frequency of this structure in the literature, we believe that our result will provide additional information for it.

Key words: Occipital, fossa, vermian, verga, vermis.

P-25

Patterns of talar articular facets and measurements of bony markers of human calcanei

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The description of superior articular facets (for talus) of the calcaneus varies widely from one textbook to another. Many researchers state that there are 3 articular facets for the talus: posterior, middle and anterior. Using parameters as degree of separation, fusion and shape, several researchers have described types and preponderance of articular facets.

A total of 221 calcanei (98 right and 123 left), dry, were collected. All measurements were done using a digital caliper. We found 38.91% (86 cases) type A, 58.82% (130 cases) type B, 2.26% (5 cases) type C calcanei.

The anteroposterior length found in right calcanei: 77.53±5.75 mm, in left calcanei: 77.98±5.63 mm

The transverse width found in right calcanei: 48.19±4.01 mm, in left calcanei : 46.98±4.46 mm

Length of groove on sustentaculum tali in right calcanei: 21.53±2.29 mm, in left calcanei: 21.28±2.37 mm

Width of groove on sustentaculum tali in right calcanei: 6.63±1.04 mm, in left calcanei: 7.00±1.3 mm

Depth of groove on sustentaculum tali in right calcanei: 2.09±0.56 mm, in left calcanei: 1.87±0.51 mm

Length of sulcus calcanei in right calcanei: 30.06±3.02mm, in left calcanei: 30.84±3.29 mm

Width of sulcus calcanei in right calcanei: 5.88±1.71 mm, in left calcanei: 6.5±3.73 mm

Depth of sulcus calcanei in right calcanei: 2.59±0.72 mm, in left calcanei: 2.69±0.7 mm

Bony markers are significant to physical and forensic anthropology. Besides these, morphometric measurements of calcaneus are important for the anatomical, orthopedical, physical and rehabilitation studies.

Key words: Calcaneus, talus, anatomy, foot, human.

P-26

Morphometric features of the intertubercular sulcus in relation to hand dominance

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In this study, the relation of intertubercular sulcus (of the proximal portion of humerus) morphometry to hand dominance was investigated in 123 humerus dry bones (58 right, 65 left) of unknown age and sex from the bone collection of Ege University, Faculty of Medicine, Department of Anatomy. We observed the supratubercular crest in 78 humerus (63%) of bones. The width (X1) and depth (X2) of the intertubercular sulcus was 8.22 mm and 3.61 mm on the right side, and 8.30 mm and 3.71 mm on the left side. The medial wall angle of the sulcus (X3) was 51.66° on the right side, and 56.43° on the left side. The lateral wall angle (X4) was 120.21° on the right side, and 128.8° on the left side. It was concluded that the intertubercular sulcus width and depth, medial and lateral wall angles were greater on the left side when compared to the right. The results were discussed with the previous studies in relation to hand dominance.

Key words: Humerus, upper limb, anatomy, human, handedness.

P-27

Morphometric features of the piriform aperture and nasal bones

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The piriform aperture which is the bony entry of the nasal cavity, the nasal bones and cartilages make the nose structure. The morphometry of these structures making the dorsal part of the nose and the entry paint of the respiratory tract are functionally important for the respiratory system. In this study, the piriform aperture and nasal bones are investigated in 38 craniums. The inner border of the nasal bones were measured 21.02±3.5 mm in length, outer border 24.00±3.53 mm, upper border 8±1.94 mm, bilateral 12.25±2.55 mm, width of the lower border 10.29±1.67 mm, bilateral 14.26±1.86 mm. The piriform aperture height was 35.95±3.14 mm and width at the widest point in the lower margin 23.99±2.62 mm, and width at the upper margin 15.37±1.97 mm. The most common types of the nasal bones were Type 1 (%57.9) and Type 4 (%15.8). The findings of this study were discussed with former studies.

Key words: Nasal bone, anatomy, human, skull, face.

P-28

Evaluation of the volumetric relation between intracranial cavity and orbits

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The orbits, situated between the cranial vault and face, are a dominant esthetic element in the craniofacial complex. They greatly influence visual judgments of healthy persons as well as those with facial deformities. However, there is no available study evaluating the volumetric relation between the orbits and intracranial cavity. In the presented study the volume of intracranial cavity and orbits of 20 skulls (10 males and 10 females) were measured using water filling method. The right-left side comparison of orbits and volumetric relation between orbits and intracranial cavity were evaluated. The mean volume of intracranial cavity and orbits were 1262±35 cm3 (±SEM) and 21±0.9 cm3 (±SEM), respectively. There was no statistically differences between the right-left side volumes of the orbits ($p>0.05$). However, there was high correlation between the intracranial and orbital volumes ($r=0.714$; $p<0.01$). Abnormal development of one region of the face may affect another and in addition, irregularities of growth and shape in either the cranial vault or face will disturb the harmonies relationship between them and the orbits. Our findings can be used for the volumetric evaluation between the intracranial and orbital size of the human beings.

Key words: Orbita, cranial cavity, volume, anthropometry, morphometry.

P-29

Investigation of variations in the patterns of the bronchial tree and its morphometrically assessment

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In our study we aimed to expose to view the variations of segmental branches and the patterns of segmental distribution of the bronchial tree to be useful for the clinicians and especially surgeons who are interested in this region. The aim of the present study was to estimate the patterns of the bronchial tree morphometrically and to determine the variations of bronchial tree.

This study was conducted on 30 lungs taken from 15 cadavers. In our study we used injection-dissection method to estimate prevailing patterns and to display frequent variations in ramification of bronchial tree and distribution of the segmental bronchi. We statistically analyzed the relationship between the data acquired.

The patterns of segmental and some subsegmental distribution of the bronchial tree were determinated and whether an accessory bronchus exist or not was examined. It is identified that most of the variations in the patterns of bronchial tree are results of the displacement of segmental and subsegmental bronchi. Also it is demonstrated that variations are more frequent in subsegmental bronchi.

Our results are consent with the results of other investigators. Knowledge of anatomy and its variations in the patterns of the bronchial tree will provide a great benefit in minimizing the rate of complications, which may occur during surgery and bronchoscopy.

Key words: Bronchial tree, accessory bronchus, lung, human, anatomy.

P-30

Abdominal aorta and its' variations

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Abdominal aorta (AA) is an important structure which supplies blood to intra-abdominal organs and abdominal wall. Knowing the morphology of AA and branches is important as regards to diagnose and surgical treatment. The aim of this preliminary study was to make morphometric measurements of AA and its branches, to investigate sites of the origins of the branches and their relationships and to compare the results with literature.

Thirty AA which had been removed in autopsies were measured with caliper morphometrically as diameters of branches and distances between branches. Possible variation of the vessels were investigated and photographed.

It was found that diameters of coeliac trunk (CT), superior mesenteric artery (SMA) and inferior mesenteric artery (IMA) were 6.13±1.06 mm, 6.98±1.01 mm and 3.28±0.55 mm respectively. The distances between CT and aortic bifurcation (AB), CT and SMA, SMA and IMA, IMA and AB were 111.05±10.26 mm, 16.88±3.77 mm, 57.65±8.51 mm, 35.55±7.02 mm respectively. Numerous variations were observed during the study. These variations involved inferior phrenic artery (single trunk arising from TC, 10%), renal artery-RA (duplicated right RA 16.6%, duplicated left RA 3.33%, bilaterally duplicated 6.66%), gonadal arteries-GA (single GA, 3.33%), lumbar arteries-LA (3 pairs of LA 30%, 3rd or 4th LA arising as single trunk 10%) median sacral artery (agenesis 3.33%).

We think our study will contribute to the medical education of our country and to clinical medicine. Based on the results of our preliminary study, we plan to increase our sample size to 130 and make new evaluation.

Key words: Abdominal aorta, variation, morphometric, coeliac trunk, superior mesenteric artery.

P-31

The variations of iliolumbar artery and its relation with important surgical landmarks

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Iliolumbar artery originates from posterior division of internal iliac artery, crosses obturatory nerve, external iliac artery and vein posteriorly, and bifurcates into lumbal and iliac branches. A thorough knowledge of anatomy of iliolumbar artery is of utmost importance while performing anterior and antero-lateral exposures of the spine, endoscopic procedures of lumbar and lumbosacral

region, and excision of far-lateral disc herniations. The aim of this study is to reveal the variations of origin of iliolumbar artery, and its relations with the surrounding surgically importance anatomical structures.

In this study, the origin, diameter and tract of iliolumbar artery were observed bilaterally in twenty-one formaldehyde fixed adult male cadavers in laboratory of Dokuz Eylul University Department of Anatomy. It was observed that, iliolumbar artery was originating from common iliac artery in 4.8%, internal iliac artery in 71.4%, posterior division of internal iliac artery in 19%, and as two different arteries, one from internal iliac artery, one from posterior division of internal iliac artery in 4.8% of the cases. The average diameter of the iliolumbar artery was 3.7 mm.

In study, the relation of iliolumbar artery to anatomical landmarks used during surgical procedures were determined as well as the anatomical properties of iliolumbar artery. We think that the information presented here may be helpful in decreasing iatrogenic trauma to iliolumbar artery during surgery.

Key words: Iliolumbar artery, iliac crest flap, anatomy, cadaveric dissection, anterior lumbar surgery.

P-32

The relationship between the length of 2nd - 4th digits ratio (2D:4D)

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The ratio of the lengths of the 2nd and 4th digits is negatively related to prenatal and adult levels of testosterone. It is known that testosterone protects coronary arteries from the formation of the atherosclerotic plaque. Men with higher 2D: 4D are younger at first myocardial infarction than with low 2D:4D. Our study population consists of 20 heterosexual male autopsy cases aged from 18 to 30 who had no history of stroke and coronary heart disease. The length of the 2nd and 4th digits in both sides will be measured in each autopsy case, in addition the anterior interventricular and posterior interventricular arteries will be dissected from their origins to their first branches given. The sections will be investigated histologically in terms of the plaque formation by oil red o staining. The results will be compared statistically to show whether there is a relationship between the length of 2nd - 4th digit ratio and plaque formation in the branches of coronary arteries.

Key words: Testosterone, digit ratio, myocardial infarction, coronary artery, atherosclerosis.

P-33

Branching patterns of the popliteal artery and its clinical importance

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Knowledge of normal anatomic features of the popliteal artery and its branches have clinical importance as a guide in diagnosis of arterial injury and surgery below the knee. The aim of this study was to evaluate the popliteal artery branching patterns and related measurements. A cadaveric study was performed to improve the understanding of anatomy of the popliteal artery and its main branches. Forty lower limbs were dissected and the popliteal artery with its branches was identified. Their diameters, lengths and distances from anatomic landmarks were recorded.

The length of the popliteal artery from the adductor hiatus to the origin of the anterior tibial artery was 191.1±34.7 mm and the diameter at the level of distal edge of the femoral condyles was 7.5 ±1.3 mm.

Normal branching of the popliteal artery was present in 36 specimens (90%).

High origin of the anterior tibial artery was seen in three specimens (7.5%). The popliteal artery divided into its terminal branches at the level of distal edge of the femoral condyles and the inferior genicular arteries originated from the anterior tibial artery in one of three. The bifurcation was at the level of middle portion of popliteus in the second specimen. The bifurcation was at the level of proximal border of popliteus and the peroneal artery arose from the anterior tibial artery in the third specimen.

Trifurcation pattern with no trunk was observed in one specimen (2.5%).

The results related to the anatomic features and measurements of the popliteal artery and its branches were compared with textbook descriptions and literature reports. We believe that a review of the anatomic characteristics of the popliteal artery and its branches will be beneficial for the surgical approaches and the choice of suitable arterial graft sites.

Key words: Popliteal artery, tibioperoneal trunk, anterior tibial artery, posterior tibial artery, peroneal artery.

P-34

Anatomic features of the intracranial and intracanalicular portions of ophthalmic artery

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The intracranial and intracanalicular portions of the ophthalmic artery are susceptible to various diseases and injuries; therefore, knowledge of the anatomy regarding this segment is necessary for preservation of the neurovascular structures during subfrontal, pterional and intracanalicular procedures. The artery was studied in 38 human adult cadaver specimens. The ophthalmic artery originated from the intradural portion of the internal carotid artery, except in 5% where the ophthalmic artery originated extradurally. The ophthalmic artery originated from medial of superior wall of internal carotid artery in 73.7%, from the central in 21% and the lateral in 5.3% of the specimens. The diameter of the ophthalmic artery at its origin was 2.25±0.3 mm on the right and 2.16±0.4 mm on the left. The intracranial and intracanalicular course of the artery was divided into short limb, angle 'a', long limb, angle 'b' and distal part to the apex of the orbit. Knowing of variations in anatomic structures is importance both for diagnosis and treatment of vascular lesions of the brain.

Key words: Ophthalmic artery, origin, intracranial portion, intracanalicular portion, surgery.

P-35

A study of the course of the internal carotid artery in the parapharyngeal space

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The differences in course and shape of the internal carotid artery (ICA) in the parapharyngeal space were investigated to determine possible risks for serious hemorrhage during simple pharyngeal surgery and traumatic cases relationship with cerebrovascular disease.

Although several anatomical studies have described the coursing of the ICA of the parapharyngeal area in detail; its topoanatomic relation and histological investigation is limited. The purpose of this study was to investigate the pattern of the variability and its incidence.

In 50 men cadavers to assess the relationship between anomalies and possible risk in routine pharyngeal surgery were studied. The carotid abnormalities were found in 30 out of 100 (30%) cases. A straight course for the ICA was observed in 70 specimens. The convexity of the curve was medial in 25 cases. The ICA was bilateral in 6 cases (6%), but in those with unilateral ICA 18 specimens, most was on the left (18%). Kinking was detected in 5 cases. All of the kinking cases were located at about 3 cm beyond the carotid bifurcation. Kinking was bilateral in 2 specimens. In 2 cases kinking of the ICA was located near the pharyngeal wall. The histological examination of kinking specimens were demonstrated in tunica media such as decreasing muscle tissue and increasing vasa in the tunica adventitia of ICA. Variations in the course of ICA related to age in revealed was seen in the 50-60 year-old-group. No significant differences were observed between the left and right sides in the comparison of ICA variations.

Curving and kinking of the ICA can constitute a risk factor acute hemorrhage in routine surgical procedures are performed by inexperienced surgeons. The data will provide a guideline for neurosurgeons, otolaryngologist and clinicians dealing with the syndromes of the cerebrovascular disease.

Key words: Internal carotid artery, hemorrhage, anatomical variability, tortuosity, kinking.

P-36

The variations of vertebrobasilar system

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The aim of our study was to demonstrate the possible variations of vertebrobasilar system (VBS) in Turkish population and to discuss comparing with the literatures. VBS samples were taken from 109 fresh forensic autopsies and one anatomic cadaver. The widths of the vertebral artery (VA) and basilar artery (BA) and their branches were measured; dominancy and hypoplastic arteries and the types of variations and their localizations were determined.

Hypoplastic VA was observed as 20.2% in the right, 14.4% in the left and 4.8% bilateral. Vertebrobasilar junction was

found to be at the level of medullopontine sulcus (20%), below the sulcus (67%) and above the sulcus (12%). BA variations were observed as the duplications of the proximal (0.9%) and distal segments (1.8%). Anterior spinal arteries (ASA) were originating as a single trunk in 12.5% of the cases. ASA was arising from a transverse anastomosis connecting VAs in 6.3% of the cases. Furthermore 15.6% of the ASA were double. The variations of superior cerebellar artery were early bifurcation (7.2% in the right, 12.7% in the left), fenestration (4.5% in the right, 7.2% in the left), duplication (14.5% in the right, 12.7% in the left), and origin as a common trunk (6.3% in the right, 10% in the left).

Our results show that a high percentage of variations can be seen even in a small number of cases. We believe that our data are clinically important. We also think our results will contribute to the demography of our country and to clinical medicine.

Key words: Variation, vertebrobasilar system, artery, vertebral, basilar.

P-37

Arterial features of inner canthus region

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The medial canthus represents a fixed-point fulcrum that is necesarry for eyelid function. The aim of the study was to investigate the arterial distribution of the inner canthus. The origin, calibration, and branches of the inner canthus arteries and their topographical relations were examined by dissecting 19 cadavers. Before the dissection into arterial system injected colored latex. The distance from the dorsal nasal artery to the inner canthus was found to be 7.2± 0.3 mm. In this study, the average diameter of the dorsal nasal artery was 0.74 mm on the right side and 0.88 mm on the left. Concerning the course of dorsal nasal artery on the lateral side of the nose, 4 types were observed. In most of the examples (44.7%), dorsal nasal artery anastomosed with angular artery via thick branch and gave off supplying branches to the medial canthus and to the lateral side of the nose. Dorsal nasal artery is a good vascular source for a thin free flap. Therefore detailed knowledge relation to vascularity of the inner canthus should allow modification of reconstructive techniques and reduce postoperative complications.

Key words: Dorsal nasal artery, angular artery, inner canthus, flap, reconstruction.

P-38

The surgical anatomy of the lacrimal apparatus

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In nasolacrimal duct obstructions, dacryocystorhinostomy performed by either an external or an internal approach corrects the pathology by creating a passage between the sac and nasal mucosa. The external dacryocystorhinostomy has been established as the most efficient cure for epiphora from nasolacrimal duct stenosis or obstruction.

The aim of this study was to optimize the approach to the lacrimal apparatus at external dacryocystorhinostomy and oculoplastic surgery. We investigated 40 sides on 20 formaline fixed cadaver heads under operating microscope at the department of anatomy. We determined anatomical landmarks for the topography of the lacrimal sac, lacrimal punctum and lacrimal gland and measured the distances between the landmarks to optimize the localization of the lacrimal apparatus for avoiding complications at surgery.

Key words: Lacrimal apparatus, lacrimal gland, lacrimal sac, external dacryocystorhinostomy, oculoplastic surgery.

P-39

Investigation of the course of trigeminal nerve in the cranial base and histological analysis

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Trigeminal nerve (Cr5) is root part and trigeminal ganglia (TG), locates to area, where important attachments expose to surgeries, often. Anatomical and histological studies of the Cr5 and TG were aimed to increase success of the surgery. Additionally, in this study, it was aimed to investigate anatomical details and variations of the related connections or structures which effect Cr5.

In our study totally 40 Cr5's intracranial parts were examined and taken sample structure from 20 forensic autopsy cadaver. The intracranial course of Cr5 was noted carefully, and the possible types of variation were investigated. Then, tissue examples were taken and these were painted with Hematoksilen-Eosin and Mallory's anilin blue collagen stain to make histological investigation of the tissues.

Macroscopically, Cr5's length was found as 25.32±2.90 mm and TG's wideness as 13.5±1.2 mm. In two cadaver motor roots were located at the bottom of the radix sensory, and the other cadavers were located at medial. Cr5 located nearly especially to vascular structures.

Microscopically, the total number of bundles was found as 71.75±8.20. The diameter of the fibers of the big fascicule was found as 9.11±0.98 μm, and the diameter of the fibers of the small fascicule was found as 3.17±0.26 μm. Fibers with big diameter observed as motor fibers, and the fiber with small diameter observed as sensory fibers. Histologically, satellite cells were observed more in TG. Additionally, the difference between ganglion (2/5) and neurons (1/6) according to the ratio of the neuron and collagen cause to think us about making deeper investigation on this topic.

In the conclusion, we think that the result of our survey will contribute to country's demography, to success on surgery, and to clarify possible different diseases.

Key words: Trigeminal nerve, trigeminal ganglia, anatomy, histology, neuroanatomy.

P-40

Investigation of fiber structure of olfactory tract in human

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Nervus olfactorius (1st cranial nerve) is a collection of sensory nerve fibers. Olfactory cells of N olfactorius (bipolar ganglion cells) are present in the nostrils (regio olfactoria) from where they extend to the bulbus olfactorius. The aim of this study was to investigate the fiber structure of the tractus olfactorius, which is an important neuronal junction.

Forty bulbus and tractus olfactorius tissue samples were obtained from 20 cadavers for analysis. Tissue samples were stained with H&E (Hematoxylin-Eosin) and histologically examined. Macroscopic examination revealed that the lengths of left and right bulbus olfactorius were 0.74±0.02 cm; while the length of left and right tractus olfactorius, located in the sulcus olfactorius, was 4.82±0.13 cm. When examined microscopically, a layered structure of the olfactory bulb was immediately apparent. These layers (n=6) were; the layer containing olfactory nerves without myelinated axons, the glomerulus layer, molecular and outer granular layer, mitral cell layer, inner granular layer and the layer of tractus olfactorius.

In the light of our findings and information available in literature, it was found that the fibrous structure of tractus olfactorius contains, in addition to mitral and tufted cells in the bulbus olfactorius, efferent axons leaving higher brain regions from the anterior nucleus olfactorius and the opposite bulbus olfactorius.

Key words: The olfactory tract, olfactory bulb, olfaction, nerve, fiber structure.

P-41

T2 and T3 contributions to the brachial plexus

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Although the surgical anatomy of the axilla has been well described, little is known regarding the degree or frequency of potential contributions to or communications with the brachial plexus. The aim of our study, therefore, was to explore extrathoracic as well as potential intrathoracic contributions to the brachial plexus from T2 and T3, in prefixed post fixed and typical brachial plexuses. The anatomy of the ventral primary ramus of T2 and the 2nd intercostal nerve, including its lateral cutaneous contribution as the intercostobrachial nerve (ICBN) and the ventral primary ramus of T3 was examined in 75 adult human cadavers (150 axillae), with particular emphasis on the communications with the brachial plexus. From the 150 brachial plexuses, 31 (20.6%) were prefixed and 10 (6.6%) were postfixed. Extrathoracically, communications were

observed to occur in 86% of specimens. These contributions arose variably from either the ICBN or one of its branches and communicated with the medial cord (35.6%), medial antebrachial cutaneous nerve (25.5%) or posterior antebrachial cutaneous nerve (24%) While the majority of specimens (68.2%) were observed to have only one extrathoracic communication, 31.7% of specimens exhibited two. Intrathoracically, communications were observed to occur in 17.3% of specimens. These communications always arose from the ventral primary ramus of T2. When combining and comparing data within individual specimens, it was observed that those axillae without an extrathoracic contribution from the ICBN always contained an intrathoracic communication. In addition, 8 of the postfixed specimens had a communication branch with T3. All the specimens with prefixed brachial plexuses had an extrathoracic communication with ICBN, while in all postfixed specimens the ICBN had an intrathoracic course. Based on our findings, we conclude that 100% of specimens contained communication branch between T2 and the brachial plexus and that the majority of the post fixed brachial plexuses had an intrathoracic communication with T3. Considering the possible implications of this data, with regards to sensory innervation of the arm and axilla, further studies in this area of research could prove extremely beneficial.

Key words: Anatomy, brachial plexus, intercostobrachial nerve, surgery, axilla.

P-42

A topometric approach to the branching patterns of the medial antebrachial cutaneous nerve at the arm: preliminary results

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Medial antebrachial cutaneous nerve (MACN) or medial cutaneous nerve of the forearm is a branch originating from the medial cord of the brachial plexus. MACN innervates the medial cutaneous aspect of the elbow and proximal part of the forearm. The branching patterns have gained importance in cubital tunnel surgery and donor grafting. This study was performed to evaluate the branching patterns of the MACN, which according to standard textbook knowledge bifurcates into an anterior and posterior branch at the level of the arm. MACN dissections were performed under loupe magnification (4 x 4 mm) on 21 upper extremities of 14 formaldehyde-fixed cadavers. Fourteen cases bifurcated at the level of the arm into an anterior and posterior branch without giving rise to an additional branch. The mean distance of the bifurcation to the midpoint of the interepicondylar line was measured 12.77 cm. The nerve gave off its terminal branches at the forearm in one case. Detailed schematics of secondary branchings of the anterior and posterior branches were evaluated. We believe that these preliminary results of our ongoing study will be informative for surgical procedures at this region.

Key words: Medial antebrachial cutaneous nerve, branching pattern, topometry, arm, cadaver.

P-43

Histological and morphometric characteristics of donor nerves commonly used in peripheral nerve reconstruction

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The functional recovery of peripheral nerve injury is dependent on the nature, location and severity of any trauma. When a nerve has been injured, the goal of surgical repair is generally to reapproximate the ends of the injured nerve. Nerve grafts are generally portions of a sensory nerve that are harvested from the cutaneous nerves of the extremities, head and neck. Most commonly, sural nerve, greater auricular nerve, the superficial radial nerve, medial cutaneous nerves of the arm and forearm, posterior and lateral cutaneous nerves of the thigh, lateral cutaneous nerve of the forearm, superficial ulnar nerve, superficial peroneal nerve have been used for nerve grafting. Although there have been extensive histological studies on donor nerves such as sural and greater auricular nerve, we aimed to study the histological and morphometrical characteristics (number of fascicles, total area of the fascicles, nerve area) of the donor nerves commonly used in the peripheral nerve surgery. A total number of 12 donor nerves of 13 cadavers were included to the present study. Routine histological procedures were done. Preparats were stained by Hematoxyline-Eosine, Masson-Tricrome, and Woelke's myelin stain and then analyzed by image analysis system. We found that each nerve has specific characteristics. We suggest that these histologic and morphometric characteristics of the donor nerves should be remembered during selection of the appropriate donor nerve for reconstruction of recipient nerve.

Key words: Donor nerve, microanatomy, peripheral nerve, number of fascicles, nerve area.

P-44

The cause of the difference in the submental region: aberrant muscle bundles of the anterior belly of the digastric muscle

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A difference in the submental region could have significance; it may be due to a motor lesion of the trigeminal nerve or may stimulate a soft tissue mass, such as tumors or lymph nodes. The aberrant bundles presence in anterior belly of the digastric muscle is important in terms of causing asymmetry in submental region, getting confused with some pathological cases, radiological examination and aesthetic facial surgery.

To provide data, aberrant bundles in the submental region were investigated in 30 cadavers' heads. During the dissection of the submental region, origin, insertion, shape and bilaterality of the anterior bellies of the digastric muscles and the aberrant bundles were investigated.

The 20 heads with aberrant bundles were classified into two types based on the muscle arrangement: digastric fossa type and crossover type. The aberrant bundles, which did not cross the median line, were classified as being of digastric fossa type, while those that crossed the line were of the crossover type. 15 of the heads contained bundles of the unilateral type and five heads contained the crossover type. In three heads, digastric fossa and crossover types coexisted.

In this study, a wide range for incidence in the submental region was observed of variations. Some cases were not described in the classification of the previous studies of this muscle. It is also possible that the incidences may vary due to the ethnic differences of the populations studied. Bilaterality was frequently observed in this study.

Anatomical variations of the anterior bellies of the digastric muscle can easily be confused with the pathological conditions in ultrasonography, CT and MR imaging, therefore, it is necessary to recognize that variants of the anterior belly of the digastric muscle occur to avoid confusion when diagnosis shows abnormal lesions in the floor of the mouth and submental region. Additionally, possible occurrence of such anomalies should be remembered during the surgical procedures involving the submental region.

Key words: Digastric muscle, anterior belly, aberrant bundles, anomaly, submental region.

P-45

Anthropometric measurements of trachea in forensic cases

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Our study was performed as a common investigation via application of Kocaeli University Medical Faculty Department of Anatomy and Department of Forensic Medicine to Istanbul Forensic Medicine Center. In this study, 96 male and 26 female corpses were included, which were brought to Istanbul Forensic Medicine Center with the aim of routine autopsy. Male and female corpses were analyzed separately. Cases were sub-grouped to adult age group (17-44 years) and advanced age group (45-85).

The main aim of this study was to determine some anthropometric measurements of trachea in cases submitted to Istanbul Forensic Medicine Center. The statistical interrelations between the found values are evaluated via correlation-regression analysis.

In adult age group (17-44 years) a moderate correlation was observed between tracheal antero-posterior diameter and tracheal left-to-right diameter in male ($r=0.53$) and female ($r=0.58$) cases ($p<0.05$). In the same age group a strong correlation ($r=0.75$) between apex lingua-bifurcatio trachea length and cartilago cricoidea-bifurcatio trachea length was observed in female corpses ($p<0.05$). In advanced age group (45-85 years) a moderate ($r=0.61$) correlation was observed between apex lingua-bifurcatio trachea length and cartilago cricoidea-bifurcatio trachea length in male cases ($p<0.05$). Other parameters demonstrating a statistically significant ($p<0.05$) though a weak correlation ($r<0.50$) was presented in the results section.

We have found that average tongue-to-tracheal bifurcation length is 26.21±1.68 cm in male and 23.54±1.24 cm in female; average cricoid-to-tracheal bifurcation length is 10.12±0.88 cm in male and 9.32±0.84 cm in female; average tracheal anterior-posterior diameter is 1.46±0.21 cm in

male and 1.15±0.19 cm in female; average tracheal right-to-left diameter is 1.60±0.25 cm in male and 1.25±0.11 cm in female; average angle of tracheal bifurcation is 62.52±9.030 in male, 61.88±11.250 in female.

Consequently, we may say that our results are important in related clinical branches and surgical interventions (tracheostomy, bronchoscopy, intubation).

Key words: Trachea length, trachea diameter, bifurcatio trachea, carina, autopsy.

P-46

Morphological assessment of the extensor tendons on the dorsum of the hand: its importance for surgery

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The long extensors to the fingers such as the extensor digitorum communis (EDC), extensor indicis (EI), and extensor digiti minimi (EDM) function primarily to extend the metacarpophalangeal joints, but also extend the proximal and distal interphalangeal joints. The EDC muscle has one origin and a common muscle belly that splits into three or four sections that continue as tendons to the extensor hood on the dorsum of the fingers such as EDC-index, EDC-middle, EDC-ring and EDC-little.

Fifty-four dissected adult hands were examined to study the pattern of the extensor tendons on the dorsum of the hand.

The most common distribution pattern of the extensor tendons of the fingers was: 1- a single extensor indicis (EI) tendon which inserted ulnar to the EDC-index; 2- a single EDC-index; 3- a single EDC-middle; 4- a single EDC-ring; 5- an absent EDC-little; 6- a double EDM and 7-a single EDC-ring to little finger. The longest and thickest type of JT is found primarily EDC tendons to the middle and ring fingers (20%) and between the tendons to the ring and little fingers (90%). In this study, absence of the EDC-little was associated with thick type JT which substituted for the absent EDC-little tendon.

It is necessary to have a through understanding of the arrangements of the human extensor muscles and their junctural connection of the hand when tendonoplasty or tendon transfer required.

Key words: Extensor digitorum, extensor digiti minimi, extensor indicis, hand surgery, cadaver.

P-47

Determination of the attachment area of anterior cruciate ligament on femur

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Purpose: As the surgical procedures, in which the each bundle of ligament were repaired, have became popular in the last years; the attachment area of anterior cruciate ligament (ACL) on femur were researched in a more detailed manner. In this study, we tried to describe easy-to-apply, reproducible key points that will guide for the surgeons during the arthroscopic repair of each bundle.

Findings: Insertion areas of antromedial (AM) and posterolateral (PL) bundles of ACR on inner surface of lateral condyle were determined on lower limbs of eight embalmed cadavers. Then, this area was described according to the bony landmarks defined.

In the next stage, the attachment area of the bundle on 20 femur (8 left, 12 right) was examined according to the data obtained by the dissections. The attachment area of ACR was described according to the obvious bony structures that can also be determined easily during arthroscopy and the measurements of these structures were taken.

It was observed that, the attachment point of ACR was in a depression in the posterior half of inner surface of the condyle (at the 90o flexion on the lower half). In that region, a triangular surface that the bundles of ligament were attached was determined. For the knee joint repaired in the flexion, the top of triangle was the middle point of posterior edge (intercondylar line) of intercondylar notch (point A). The line between this point and the spur that can be easily noticed on the anterior edge of intercondylar notch (point B) formed the antero-superior border of the triangle. The lateral half of intercondylar line formed the posterior border of triangle. Antero-inferior border of the triangle was the line between point A and the point where the posterior edge of intercondylar notch connected to the most posterior point of medial edge of articular cartilage of lateral condyle (point C). In this area; AM bundle of ARC was located on postero-superior angle, and PL bundle was located on antero-superior angle.

Results: The knowledge of this triangular area provides easiness for the orthopedists that repair ACL artroscopically.

Key words: Arthroscopy, knee joint, anterior cruciate ligament, femur, lateral condyle.

P-48

Insertions of the lateral pterygoid muscle to the disc-capsule complex of the temporomandibular joint and condyle

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Despite the perform of various studies including macroanatomical analysis of the lateral pterygoid muscle and the temporomandibular joint, the reason of disc displacement is still unknown. There is a great deal of confusion with respect to the attachment of this muscle to the disc-capsule complex. The purpose of this dissection study was to investigate the disc-capsule complex and condyle attachments of the lateral pterygoid muscle and its variations. Twenty-six human cadavers consisted of 49 temporomandibular joint specimens were used. The width of fibers inserting into disc-capsule complex and condyle of heads of lateral pterygoid muscle were measured from midpoint between its origo and insertio. The length of the heads of the lateral pterygoid muscle were also studied.

In this study, we defined four different types for attachment of the heads of the lateral pterygoid muscle. In most common attachment type of the lateral pterygoid muscle, the superior lateral pterygoid muscle was inserted to the disc-capsule complex of TMJ and condyle, and the inferior lateral pterygoid muscle was inserted to condyle.

In 32 specimens an upper and a lower head of the lateral pterygoid muscle were present. In the other 17 specimens, not only an upper and a lower head, but also a third inner head of the lateral pterygoid muscle covered with a separate fascia was observed.

We thought that the surgeon should evaluate lateral pterygoid muscle morphology to determine temporomandibular joint surgery and we hope that this study will be helpful for many radiological and anatomical studies.

Key words: Temporomandibular joint, lateral pterygoid muscle, disc-capsule complex, condyle, inner head.

P-49

The investigation of morphometry of trigonum femorale in human fetuses

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The study was conducted on 36 lower extremities of human fetal cadavers of 14-40 weeks of age. Following the dissections of inguinal and anterior femoral regions, required measurements related to the region were performed. The distance between spina iliaca anterior superior (SIAS)-Tuberculum pubicum (TP), the length of lateral margin of trigonum femorale (TFLM), the length of medial margin of trigonum femorale (TFMM), the distances between SIAS- Arteria femoralis (AF), TP- AF, SIAS-Condylus medialis of femur (CM), TP-CM, the angle at the distal intersection of trigonum femorale (TFA^{o}), the length of course of AF in trigonum femorale (AFL) were measured. All measurements were done by the use of a caliper sensitive to 0,05 mm. The min-max measurement values of trigonum femorale (mm): SIAS-TP: 7 – 44, TFLM: 7 - 46, TFMM: 7 - 46, SIAS-AF: 4 - 22, TP-AF: 3 - 22, SIAS-CM: 18- 82, TP-CM: 19- 80, TFA^{o}: 27^{o} - 43^{o}, AFL: 5 - 25.

Trigonum femorale is a very essential region especially due to its neurovascular contents. Protecting the neurovascular structures in this region during intramuscular injections in children will lessen their risk of encountering any permanent musculoskeletal disorder in their future life. Besides, thorough knowledge on the localization of and relations with the other neighboring structures of femoral vessels frequently used in surgical interventions such as intravascular catheter applications in adults bears importance from the point of increasing the success rate of the applications as well as avoiding from the likely vascular injuries.

Understanding the prenatal features and relations of trigonum femorale and the neurovascular structures in it will put a light on the normal and abnormal developmental stages between the postnatal and adult periods to the investigators dealing with this subject.

Key words: Aborted fetus, regional anatomy, femoral artery, morphometry, anatomy.

P-50

Radiological anatomy of the Liliequist's membrane

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Described first by Key and Retzius in 1875, Liliequist's membrane is an arachnoid structure extending between from the upper border of the. Dorsum sellae to the anterior edge of the mamillary bodies, forming the superior wall of the interpeduncular cistern and separating it from the chiasmatic cistern. This structure has gained popularity by the introduction of endoscopic third ventriculostomy (ETV) during which may reduce the effectiveness of the procedure in certain cases of hydrocephalus. Liliequist's membrane may block the cerebrospinal fluid (CSF) flow from the defect of the third ventricle floor, resulting in unsuccessful ETV. Present study aims to establish the MR appearance of the Liliequist's membrane in healthy subjects.

One hundred and four healthy volunteers aged between 19 to 86 were recruited from the general public. A 3D fast-spin echo sequence was used to collect 120 contiguous T2-weighted images (TR: 3000 msec, TE: 85 msec, echo train length: 32, slice thickness: 1.6 mm) in the sagittal plane. Flow compensation option was on to eliminate CSF artifacts of varying degrees. The image data set was linearly interpolated to 254 slices, rendering the voxels cubic.

Visualization of the Liliequist's membrane was possible in most subjects, presenting as an avascular structure.

Three-dimensional (3D) fast spin echo sequence is useful in depicting the membrane. Liliequist's membrane has the potential to complicate the exposure and dissection of lesions within the interpeduncular cistern. The outcome of ETV could be predicted with MR imaging of Liliequist's membrane in patients with obstructive hydrocephalus

Key words: Arachnoid membranes, interpeduncular cistern, anatomy, magnetic resonance imaging, endoscopic third ventriculostomy.

P-51

High jugular bulb and related otologic symptoms

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Jugular bulb variations can be seen in various ways. High jugular bulb is a rare finding anomalous. It is generally asymptomatic but sometimes might cause grumble. In this study, the jugular bulb surveys of the patients who had temporal bones tomography were done and the findings that had high jugular bulbs were determined by measurement. The otologic symptoms and findings in these patients were determined and saved.

The temporal bone CT scanes of 46 patients, 27 patients (58.7%) were found to have high jugular bulb. When we examined these patients we determined tinnitus (n=22, 47.9%), vertigo (n=17, 37%), chronic otit (n=9, 19.7%), and mastoidit (n=4, 8.7%). The findings we had were compared with the literatures available. As a result, among patients who applied with tinnitus and vertigo whose etiology has not been determined yet, the high jugular bulb's existence should be taken into consideration in probable reasons.

Key words: High jugular bulb, temporal bone, tinnitus, vertigo, otit.

P-52

Biological variations of the precentral sulcus

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The precentral sulcus lies in front of the central sulcus, running parallel to it and separating the inferior, middle, and superior frontal gyri from the precentral gyrus. In the majority of brains, the precentral sulcus is divided into two parts: the inferior precentral sulcus and the superior precentral sulcus. However, the precentral sulcus may also be divided into three parts or form one continuous sulcus.

The morphology of the precentral sulcus was examined on surface rendered magnetic resonance (MR) images of 24 male human brains (mean age: 34.6 years, SD: 3.2). The subjects were healthy, right-handed volunteers. The MRI scans were performed on a 1.5 Tesla SIGNA whole body imaging system operating on a 5.5 software platform. One hundred and twenty four 1.6 mm thick contiguous T1-weighted images encompassing the whole brain were acquired coronally with the spoiled gradient echo (SPGR) pulse sequence (TR: 34 msec, TE: 9 msec, flip angle: 30°). The volumetric images were linearly interpolated to 254 slices and a 3D model of the brain was generated using surface rendering algorithm of ANALYZE Image Analysis software.

The precentral sulcus is found to be composed of two distinct sulcal configurations: the inferior precentral sulcus (IP) and the superior precentral sulcus (SP). In 4% (n: 1) of the cases the precentral sulcus was continuous, while in 50% of cases (n: 12) it consisted of two segments and three segments in 46% (n: 11) of the cases

Key words: Frontal gyri, sulcal variability, magnetic resonance imaging, anatomy, brain.

P-53

Estimation of ventricle volume in newborns with hydrocephaly

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Hydrocephalus is a pathologic disease, which was seen often in the Central Nervous System. Hydrocephalus was characterized by enlargement of the cerebral ventricles due to imbalance between production and absorption of Cerebrospinal Fluid (CSF) or due to obstructed of cerebrospinal fluid somewhere along its path, as a result of these process intracranial pressure was usually increased. Computed Tomography (CT) and Magnetic Rezonans Imaging (MR) were commonly used methods for diagnosis of hydrocephaly. Cavalieri method is one of the volume estimation methods in stereology in recent years, and this method was often applied on imagines, which are obtained from radiological images. Aim of this study is to estimate in ventricules volumes by using Cavalieri method on BT sections which were obtained from pre and post operative shunted 10 newborns (5 female and 5 male). The results showed that the ventricular volume decreased in six patients and increased in four patients. This method could give reliable results for therapy evaluation and objective diagnosis of patients.

Key words: Hydrocephalus, shunt, ventricle volume, stereology, newborn.

P-54

Volumes estimation of brain and cerebellum using the Cavalieri estimator which is one of stereological methods on MR images, in 2nd decade

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The cerebellum is located beneath the occipital lobes at the base of the skull and controls equilibrium, muscle tone and movement coordination in human. The Cavalieri estimator using a point grid is used to estimate volume of three-dimensional structures based on two-dimensional slices of the object. The purpose of our study is to estimate brain and cerebellum volumes were obtained from sections of MR images using the Cavalieri estimator, which is one of stereological methods.

In our study, it was evaluated brain and cerebellum MR images of 10 health people and groups were constituted 5 female and 5 male in the 2nd decade. Whole cerebellum and brain was scanned with MR in 5 mm section thickness and slice gap 1.5 mm in transfer position. Stereological software (version 6.0, Microbrightfield, Colchester, VT) was used to estimation volumes of cerebellum and brain. In our study, a coefficient of error (CE) was received an appropriate range which was less than 5%. Obtained data was analyzed statistically by SPSS for Windows version 13.0 (independent samples T test).

According to our stereological estimations, mean brain volumes and were 1132 cm^3 and 1096 cm^3 in men and women, respectively. Also mean cerebellum were 134 cm^3 in men and 105 cm^3 in women and the ratio between volume of brain and cerebellum were 8.4 and 10.4 in men and women, respectively.

Finally, It is obtained that MRI estimated brain and cerebellum volumes in different gender may be provide an index for anatomical structures.

Key words: MRI, brain, stereology, cerebellum, volume.

P-55

In 2nd decade, volumes estimation of brain and lateral ventricle using MR images

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The lateral ventricules are fraction of the ventricular system of the brain and produced cerebrospinal fluid. In vivo, evaluation of lateral ventricle volume increase is very important. In vivo, we evaluated volume of lateral venricle and brain by modern stereological methods.

In the 2nd decade, we evaluated brain MR images of 10 health people constituted 5 female and 5 male. Transfer MR brain images (5 mm section thickness and 1.5 gap) were obtained for volume estimation. The stereological volume estimation was used stereological software (version 6.0, Microbrightfield, Colchester, VT) including a combination of point grid and Cavalieri method. In this study, a coefficient of error (CE) was calculated according to appropriate range, which was less than 5%. Data was analyzed statistically by SPSS for Windows version 13.0 (independent samples T test).

Mean brain volumes and were 1132 cm^3 in men and 1096 cm^3 women. Mean lateral ventricle were 146 cm^3 in men and 171 cm^3 in men and in women. The ratio between volume of brain and lateral ventricle were 7.8 and 6.4 in men and women, respectively.

It is concluded that data of our study may be important a index of anatomical structures for brain and lateral ventricle volume change.

Key words: Brain, lateral ventricle, 2nd decade, volume, Cavalieri.

P-56

Volumes estimation of brain and lateral ventricle using Cavalieri methods in 3rd decade

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Lateral ventricles are the largest of the ventricles and provides pathway for the circulation of Cerebrospinal fluid and one in each has a central part and tree horns. The purpose of the this study is to estimate brain and lateral ventricle volumes were obtained from sections of MR images using the Cavalieri estimator which is one of stereological methods.

In our study, we evaluated brain MRI of 10 health people and groups were constituted 5 female and 5 male in the 3rd decade. Transfer MR brain images (5 mm section thickness and 1.5 gap approximately 16-17 sections for brain) were used for volume estimation. For volume estimation, a stereological software (version 6.0, Microbrightfield, Colchester, VT) was used. The size of the point counting grid was predicted to receive a coefficient of error (CE) in an appropriate range, which was less than 5%. Data was obtained our study was analyzed statistically by SPSS for Windows version 13.0 (independent samples T test).

Data in our study, mean brain volumes and were 948 cm^3 and 1017 cm^3 in men and women, respectively. Also mean lateral ventricle were 103 cm^3 in men and 149 cm^3 in women. The ratio between volume of brain and lateral ventricle were 9.2 and 6.8 in men and women, respectively.

According to data were obtained from our study, gender differences related changes in brain and lateral ventricle volume is necessary to be considered in clinical and experimental study.

Key words: Lateral ventricle, brain, volume, MRI, stereology.

P-57

The volume estimation of brain and cerebellum with gender, in 3rd decade: a stereological study

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Quantitative magnetic resonance imaging (MRI) techniques provide an opportunity to examine brain and cerebellum in vivo. This study showed changes of brain and cerebellum volume with gender difference via Cavalieri principle, which is one of stereological methods.

In this study, ten healthy people (5 female and 5 male in the 3rd decade) with were chosen at random from a bank of controls in the MR image data library at Department of Radiology, Medical Faculty, Ataturk University. The MRI examinations were performed using a 1.5 -T clinical scanner (Magnetom Vision, Siemens Medical Systems, Erlangen, Germany) . The brain and cerebellum slice thickness was 5 mm and the gap was 1.5 mm. Stereological software (version 6.0, Microbrightfield, Colchester, VT) was used to estimation brain and cerebellum volumes. The size of the point counting grid was predicted to receive a coefficient of error (CE) in an appropriate range, which was less than 5%. SPSS for Windows version 13.0 (independent samples T test) was used to analyze the gender difference in the changes of brain and cerebellum volume.

At the end of handled data, mean brain volumes and were 948 cm^3 and 1017 cm^3 in men and women, respectively. Also mean cerebellum were 131 cm^3 in men and 117 cm^3 in women. The ratio between volume of brain and cere-

bellum were 7.2 and 8.6 in men and women, respectively.

This study showed that sex differences affect brain and cerebellum structures such as volume in 3rd decade

Key words: Brain, cerebellum, MRI, volume, stereology.

P-58

Termination of vena saphena parva; a radiological anatomic study

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In the popliteal fossa, the short saphenous vein (VSP) curves 4 cm above the popliteal crease to describe an anterior concave arch before terminating on the posterior or posterolateral surface of the popliteal vein. However, there are many variants of this classical arrangement, and several classifications of the modes of termination of the short saphenous vein have been proposed on the basis of surgical and radiographic arguments.

In this study total number of 112 patients (74 Female and 38 Male) were studied by color doppler ultrasonography. 141 of 224 VSP terminated to the popliteal vein in the suprapopliteal region. In 21 case VSP terminated to the popliteal vein in the popliteal region. In 47 cases the VSP penetrated in to the deep fascia to terminate to the deep femoral vein. In 15 cases VSP showed a Giacomini communicating vein in the posterior aspect and correlated to the long saphenous vein. After a detailed dissection for 44 legs of 22 formaldehyde fixed cadaver the termination types of VSP discussed according to the literature below. Knowledge of sapheno-popliteal junction varieties can be important for the varicose vein surgeries.

Key words: Saphenous vein, varicosel, anatomy, leg.

P-59

Densitometric analysis of the first tarsometatarsal joint and first metatarsophalangeal joint in athletes

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The aim of this study was to investigate bone mineral density (BMD) of the first tarsometatarsal (TMT) and first metatarsophalangeal (MTP) joints in two young groups of highly trained male professional players and age-matched sedentary controls. Our secondary aim the hallux abductus angle (HAA) and first intermetatarsal angle (FIMA), is to determine and to compare the relationship between among BMDs of these joints and two angles of the first metatarsal bone in these groups.

The groups were consisted of football (n=20) and basketball (n=17) players. The control group was consisted of 18 university students. BMDs were measured by DEXA at the all four joint surfaces (first TMT and first MTP joints) and compared between groups. Two angles were measured on the radiographs of each foot.

BMDs of the control groups were significantly lower than those of football and basketball players. There was a significant difference at the first TMT joint between the football and basketball players ($P<0.05$). Subchondral BMDs of the right distal part of the medial cuneiform and the left the first metatarsal base of the basketball players were significantly higher than the football players ($P<0.05$).

In all the there groups, BMDs of the first TMT joint were significantly denser than first MTP joint ($P<0.05$). FIMA was higher in football players than control group on the left side ($P<0.05$).

In conclusion, we believed that the densitometric changes of subchondral bone layer of the first TMT and first MTP joints have also important clinical results. This study has demonstrated higher BMDs of the both joints in young male sportsmen than these of control groups.

Key words: Bone mineral density, first tarsometarsal joint, first metatarsophalangeal joint, football, basketball.

P-60

Metacarpal bone measurements in children aged between 0 and 19

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The correlation of lengths and widths of metacarpal bones has importance for hand surgery. In literature, wrists' kinematical indexes and rational values which determine normal and pathological boundaries are gen-

erally determined using graphs of adults whose bone developments had been completed. Studies about these rational values concerning children are limited.

The purpose of our study is to determine the variability in metacarpal bone measurements rates in children.

In our study, hand graphs of 48 patients, ages ranging between 0 and 19, who applied for medical examination for wrist and/or forearm trauma, were examined. The hand graphs were taken for the non-traumatic sides. Metacarpal bone measurement rates were investigated for age groups of 5 (ages 0-4, ages 5-9, ages 10-14, ages 15-19).

When evaluated according to age groups, difference in the ratio of 1. metacarpal bone length to 2. 3. 4. and 5. metacarpal bone lengths was found statistically significant. This difference is a result of the age group involving children whose ages were 15 or more.

We believe that our indications will provide information for studies that attempt to determine the required parameter standardization for hand surgery in children.

Key words: Metacarpal bones, bone development, radiography, measurement, age groups.

P-61

Relationship between cartilage thickness and meniscal lesions in early osteoarthritis of the knee

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Early changes of osteoarthritis (OA) include meniscus degeneration and cartilage erosions. The purpose of this study was to evaluate cartilage thickness of patients with chronic knee pain and clinical findings of early OA to show relationship between the meniscal and articular cartilage. We assessed 46 knees by MR (magnetic resonance) imaging. These knees were recorded as osteoarthritic on the basis of MR imaging evaluation. The first group included 34 patients (36 knees) with cartilage and meniscal defects. Sixteen of them were female and 18 male. The second group included 10 patients (10 knees) with cartilage defects and normal, intact menisci. Eight of them were female and 2 male. The MR images were interpreted by radiology specialists in Kocaeli University, Department of Radiology. We compared the femoral articular cartilage thickness between the group with normal menisci and the group with meniscal degeneration. Two articular surfaces were assessed: medial and lateral femoral condyles. The cartilage thickness of the femoral medial and lateral condyles in control and study group were measured in anterior, medial and posterior regions. In this study, we found no relation between meniscal lesions and cartilage thickness (P> 0.05). Although there is a close anatomical relationship between articular cartilage and meniscus with disease progression, this study demonstrated existing meniscal damage have not effect on cartilage thickness in early stage of OA. A possible explanation of this result may increase tissue hydration in early OA. Since all the knees used in this study had early hypertrophic phase of OA, changes in physical properties in articular and meniscal cartilage during the early stages of OA may similar.

Key words: Cartilage thickness, meniscus, osteoarthritis, knee.

P-62

Evaluation of cervical vertebral morphometry

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We evaluated age-related changes in the morphometric features of cervical spine in both sexes using plain lateral radiographs of cervical spine. Plain lateral radiographs of 200 individuals (74 males, 126 females; 16-87 years old) were evaluated retrospectively. The anterior height (Ha), posterior height (Hp) of the body of each cervical vertebra and anterior height (Da) and posterior height (Dp) of each intervertebral disc between C3-T1 were measured using a digital compass with a resolution of 0.01 mm. These measurements were used to calculate the anterior wedge index (Ha/Hp), and Da/Dp ratio. The differences regarding anterior wedge index and Da/Dp ratio of each cervical segment between genders were not statistically significant ($p>0.05$). No significant changes were observed in the value of the anterior wedge index with the advance of age in either sex ($p>0.05$). There were no significant correlations between age and Da/Dp ratios in males ($p>0.05$). There was weak, positive and significant correlation between age and C3-4, C4-5, C5-6, C6-7, C7-T1 Da/Dp ratio in females ($p<0.05$). It could be suggested that cervical lordosis increases with the advance of age in

females. These results may be useful for evaluating age-related morphological changes that occur in the cervical vertebrae.

Key words: Cervical vertebra, intervertebral disc, morphometry, plain radiograph, gender.

P-63

The measurement of the transverse pedicle width and pedicle angle of lumbar vertebrae with computed tomography

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The sizes and angles of the pedicle of vertebrae varies throughout the spinal column. It's extremely important to know the pedicle width and angle when inserting pedicular screw. The aim of our study is the radiologic evaluation of the pedicle widths and angles of lumbar vertebrae in CT examinations.

The study was conducted in radiology department of Sisli Etfal Research and Education Hospital. 32 abdominopelvic CT examination performed with different clinical indications were reviewed and measurements for lumbar vertebral pedicles were done for both sides. The cases with prominent osteodegenerative changes were excluded.

The pedicle angle varied between 170 and 400 in right side, whereas 180 and 390 in left side. The most obtuse pedicle angle was at the L5 vertebrae level in both sides.

The pedicle width varied between 4.3 and 21.9 mm in the right side, 3.2 and 21.0 mm in the left side. In both sides, the largest pedicles belong to L5, and the thinnest pedicles were at the L1.

Statistically, there was a positive correlation between right and left pedicle angle and width in each lumbar level.

The pedicle width of the L1 vertebrae in both sides and the left pedicle width of the L5 vertebra was narrower in woman than in men ($p<0.05$).

In conclusion we are in opinion that our findings can be helpful in preoperative evaluation of lumbar spine surgery and in providing convenience in inserting screw and decreasing the complications of the procedure.

Key words: Spinal column, lumbar vertebrae, pedicle width, pedicle angle, computed tomography.

P-64

The linear and angular dimensions of the lower lumbar zygapophysial facets: measurements on the axial and parasagital-oblique MRI planes

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The L4/L5 lumbar zygapophysial (facet) joint was studied with magnetic resonance imaging in healthy subjects to analyze the linear and angular dimensions of facet and to determine the existence of gender, age, height, weight and body mass index (BMI) dependency on facet morphology. One hundred and twenty-three volunteers (51 male and 72 female) were participated to this investigation. The mean age was 32.9 ± 6.3 years. The facet height and width were measured on the axial plane. Since the parasagital-oblique MRI plane clearly showed the facet joint, this plane was used for the measurements of the sagittal and transvers facet angles. The parasagital-oblique MRI plane has not been previously described in the literature. In general, the male linear and angular parameters were larger than the female ones. There were significant differences between males and females for the length and width of L4 facet ($p<0.01$ and $p<0.03$ respectively). The following mean dimensions were found for total lumbar facets: length = 23.83 ± 2.68 mm (L4), 23.97 ± 2.65 mm (L5); width = 18.35 ± 2.42 mm (L4), 18.59 ± 2.44 mm (L5); transverse angle (L4/L5) = 53.26 ± 7.07°; sagittal angle (L4/L5) = 36.74 ± 7.07°. Intraobserver reliability was found to be high (intraclass correlation coefficient = 99.5%). Both linear and angular dimensions of facet were not correlated with age, height, body weight and BMI. This study may aid in the understanding of the geometry of L4 - L5 facet, help improve the clinical diagnosis and treatment, and provide the necessary data as a reference for biomechanical research. Furthermore, the data may assist mathematical modelers to accurately simulate this component of the lumbar facet joint in finite element analysis of the spine.

Key words: Spine, lumbar vertebrae, zygapophysial joint facet joint, facet joint, magnetic resonance imaging.

P-65

Changes in lumbal intervertebral discs and vertebras related with age and sex

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In this study, to evaluate changes in lumbal intervertebral discs and vertebras related with age and sex, lateral lumbosacral graphics of 310 subjects, were researched.

Anterior height measurements of lumbal intervertebral discs and measurements of anterior margin height and midheight of lumbar vertebras on lateral lumbosacral vertebra graphics, were established. Concavity index values for each lumbal vertebra were designed. Obtained measurements for each disc level designed concavity indexes' relations in both sex-age groupings were researched.

In females and males, height of lumbar intervertebral disc heights related with disc level had changed with age, was reached. In females height of disc 2, disc 3, disc 4 and in males height of disc 5 and disc 6 was increasing until 50 years of age, was decreasing after 50 years of age, in males height of disc 2, disc 3, disc 4 and females disc 6 was increasing until 40 years of age, remain steady between 40-49, and continue to increase after 50 years of age, was determined. Concavity index values of lumbal vertebras in men and women related with age were not found significant. With this result, concavity index was not determined criteria for aging, was thought.

In conclusion, we are of the opinion that, our results for radiological diagnosis and clinical researches to be contributed.

Key words: Lumbar intervertebral disc, disc height, concavity index, age, gender.

P-66

Radiographic measurements of the hip joint width and angles of healthy high school students

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This study has been performed to determine the joint space width of the hip joint and the influence of age, gender, weight, height and lower extremity length of normal high school students.

It was conducted on 70 students (35 men and 35 women) between the ages of 18 and 25 without hip or lumbar pain. Anteroposterior radiograph were taken in the supine position. Joint space width (JSW) was measured at three points (superolateral, superointermediate and superomedial), HTE angle, VCE angle and acetabular depth were also calculated.

The mean JSW values that we observed were as follows: superolateral site 5.46 mm, superointermediate site 4.06 mm, and superomedial site 3.71 mm. The differences were statistically significant (r=0.269, p=0.025; r=0.320, p=0.007; r=0.257, p=0.032 respectively) at the location in both gender. In this study, men demonstrated a higher joint space width than women for each measurements site. We also found that statistically significant correlation between weight (r= 0.332, p=0.005; r=0.418, p=0.000; r=0.380, p=0.001 respectively), height (r= 0.290, p=0.015; r=0.336, p=0.004; r=0.364, p=0.002 respectively) and lower extremity length (r= 0.317, p=0.007; r=0.326, p=0.006; r=0.298, p=0.012 respectively) and each measurements site of the joint space width of the students. We did not find any significant correlation between age and joint space width.

These values are a part of our study. We will perform this study on 200 high school students to get a range of the hip joint space and angles and to assess the inter individual variability.

Key words: Joint space width, angles, hip, acetabulum, radiography.

P-67

Evaluation of liver, spleen and kidney size in football players with ultrasonography

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The aim of this study was to determine the normal limits of liver, spleen and kidney size in 41 men football players with ultrasonography.

The football players' ages ranged from 16 to 30 years (21.44 ± 3.25). We obtained three sequential measurements of the organs that we measured and calculated the mean; thus, we ensured minimum intraoperator variation and greater accuracy and reliability of measurements. We also noted height, weight, age and active weekly training time from the players.

In our study the results are given in mean and (SD) format. The splenic length was 11.02 (1.37) cm and width, 4.94 (0.54) cm. We observed the length of the liver 14.45 (0.95) cm and the width was 11.94 (2.46) cm. The right kidney length was 10.36 (0.92) cm and width, 4.07 (0.58) cm. At last, the length of left kidney length was 10.45 (0.75) cm and the width was 5.03 (0.56) cm. All these players have a training time of 7 hours per week.

These values are a part of our study. We will perform this study on 60 football players and 70 control groups to determine the influence of active training time, age, weight and height to the size of these organs.

Key words: Football players, ultrasonography, liver, spleen, kidney size.

P-68

Anatomical variations with joint space measurements on CT

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This study has been performed to demonstrate the type and frequency of the anatomical variations of the sacroiliac joint according to age, gender, Body Mass Index and childbirth, and the influence of the anatomical variants to the uniformity and width of the joint space.

It was conducted on 400 consecutive patients without sacroiliac complaint who underwent pelvic CT scanning for various reasons. Patients' ages were 15 or above.

Anatomical variants that we observed were accessory sacroiliac joint (70 patients, 17.5%), iliosacral complex (38 patients, 9.5%), bipartide iliac bony plate (22 patients, 5.5%), semicircular defects on iliac/ sacral side (19 patients, 4.8%), crescent like iliac bony plate (14 patients, 3.5%) and ossification centers (4 patients, 1.0%). The mean joint space width of the 400 patients was 1.72±0.57 mm (from 0.77 mm to 4.39 mm). In adults below 40 years of age the measured width was 2.49±0.66 mm and in older patients 1.47±0.21 mm. Joints which presented anatomical variants (206 articulations) had a non-uniform joint space in 164 (79.6%), whereas uniform joint space were seen in 42 (20.4%) articulations. The joint widths were less than 2 mm in 193 (93.7%) articulations and in 13 (6.3%) articulations were greater or equal to 2 mm.

This study has demonstrated that anatomical variations and joint space are independently related to age, gender, Body Mass Index and childbirth in patients.

Key words: Computed tomography, anatomical variations, sacroiliac joint, joint width, pelvic CT.

P-69

The evaluation of face morphology for female and male

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This study is performed to express the importance of the morphologic measurements of the face in facial aesthetic surgery. Morphologic measurements are performed on digital photos taken from the faces of 96 young adults (46 female, 50 male) between age 18-23 years. On these photos eyebrow peak (EP), dorsum nasi shape (DNS), nostril shape (NS), nostril size (NSi), lip shape (LS), forehead slope, presence of malar prominence (MP), malar prominence shape (MPS), malar prominence degree (MPD) are evaluated. Besides nose width (NW), nose length (NL), forehead height(FH) are assessed in computer after measurement through Image J analyses program.

The results of this study are as follows: EP on the level of midpupil (13%; 24%), on the level of lateral canthus (87%; 76%), DNS being straight (93.5%; 72%), convex (4.3%; 28%), concave (2.2%; 0%), NS oval (93.5%; 86%), triangular (4.3%; 8%), round (2.2%; 6%), NSi small (47.8%; 22%), medium (41.3%; 68%), large (10.9%; 10%), LS thin (34.8%; 40%), medium (45.7%; 40%), full (19.6%; 20%), FS negative slope (41.3%; 56%), straight (52.2%; 42%), positive slope (6.5%; 2%), MP present (84.8%; 90%), non existent (15.2%; 10%), MPS oval (61.5%; 60%), square (38.5%; 31.1%), triangular (0%; 8.9%), MPD mild (41%; 64.5%), moderate (41%; 31.1%), extreme (18%; 4.4%). The results performed with Image J is respectively as follows for female and male:

NW (40.4±2.7 mm; 43.6±3.4 mm), NL (59±4.1 mm; 63.7±4 mm), FS when compared to whole face greater than 1/3

(50%; 48%), less than 1/3 (34.8%; 28%), and equal to 1/3 (15.2%; 24%) was measured.

We believe the data obtained by our study can enlighten surgical procedures on face of young Turkish adults.

Key words: Eyebrow, lip, nostril, face, aesthetic.

P-70

Comparison of MR imaging and orcein-picroindigo-carmine staining nethod in foetal sectional anatomy

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Sectional anatomy has an indisputable role in learning and understanding macroscopic anatomy. The inability to differentiate tissues both in radiological images and cadaver sections are the most important problems in sectional anatomy. In the present study, orcein-picroindigo-carmine (OPIC) staining method and foetal magnetic resonance (MR) images were compared in order to investigate foetal sectional anatomy. Following MR imaging of the head, neck and extremities of six human foetuses at 18-20 weeks, histological sections of these regions were obtained and stained with OPIC. The OPIC staining method was found to be superior to MR imaging to differentiate soft tissue planes, particularly in extremities. In the head and neck regions, no evident difference, except for slight details was determined between OPIC and MR.

Studies on foetal MR anatomy are limited in medical literature. It is believed that more detailed studies should be performed on this subject.

Key words: Human foetuses, magnetic resonance imaging, orcein-picroindigocarmine, histological staining and labelling, cross-sectional anatomy.

P-71

The sectional anatomy of the structures located in the parotid region and infratemporal fossa

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The parotid region, infratemporal fossa and parapharyngeal space contain complex anatomical structures. Therefore, in surgical interventions of the region, the surgeon should have through knowledge of the detailed anatomy of the region. Lesions occupying the infratemporal fossa and parapharyngeal space are detected only when they reach great volumes. Two-dimensional images obtained through CT and MRI techniques do not always provide sufficient information about the region for the surgeon. As a result, the surgeon has to imagine the three-dimensional view of the area in the light of the two-dimensional sectional images and plan the operation accordingly. Considering the difficulties encountered, a series of sections were obtained from the area between the cranial base and base of mandible of 10 human fetuses with an age of 18-20 weeks. These sections were then stained with routine histological stains. Thus, the anatomical structures and the relationships of the parotid region, infratemporal fossa, and the parapharyngeal space were studied in detail by three-dimensional evaluation.

After major interventions to the area, which includes highly complex anatomical structures, damages to facial mobility and chewing capacity may occur. Thus, three-dimensional knowledge of the anatomical structures in this area and their relationships is essential to minimize the morbidity and to increase the success of the surgeon.

Key words: Parotid gland, fetus, sectional anatomy, infratemporal fossa, parapharyngeal space.

P-72

Upper thoracic corpectomy and instrumentation without laminectomy: a cadaveric study

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Purpose: Cervicothoracic junction is the area extending between C7 and T4; that combines the mobile, lordotic cervical spine to the rigid, kyphotic thoracic spine. Approaches to the lesions that disturb stability and causes compression on the spinal cord, are firstly depend on the type of generation and location of lesions. This compression should be removed and the stability of vertebral column should be immediately provided. Anterior cervical approach can provide decompression and stabilization within the reach of C7 and T1 lesions. But other anterior approaches to the upper thoracic segment that is located lower than T1, are restricted because of the close proximity of vital structures in mediastinum.

A successful upper thoracic corpectomy is guaranteed by way of unilateral costotransverstectomy plus contralateral pediculectomy. If the laminas are not involved in lesion, a strong spinal stabilization can be achieved together with implants by using this procedure.

Findings: The planned procedure was performed on second and third thoracic vertebra on two cadavers and on fourth thoracic vertebra on one cadaver. Cervicothoracic spine was exposed on bilateral with midline incision. In the left side, the related rib removed about 3cm, total facetectomy, pediculectomy and corpectomy and discectomy of the discs above and below, were performed. In order to provide corpectomy to be safe and enough, total facetectomy and pediculectomy were also performed at the right side. The left root on the same level was sacrificed. A cage was placed in corpectomy area. Stabilization was provided with the help of transpedicular and lateral mass screws and hooks that were located bilaterally and rods and transverse bars that connect the hooks each other.

Results: With this operation that can be applied without pleura, mediastinum and dura were opened, a complete corpectomy was performed and at the same time, since the spinous processes were shielded, a better stabilization was provided.

Key words: Vertebral column, corpectomy, stabilization, costotransversectomy, trauma.

P-73

Comparison of three different cephalometric methods

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Accuracy of measurement should be a primary goal of scientists to prevent statistical errors and therefore to promote the comparison of the results obtained from research groups. Several cephalometric studies on the nose, ear and eye have been well documented in the literature. Photographometric, 3D computer-aided and electronic caliper methods were used in these studies. Each method has advantages and also disadvantages. The aim of the present study was to compare photographomectric, 3D computer-aided, and electronic caliper methods. A total number of 25 female and 25 male volunteer adults were included to the study. Our findings revealed that 3D computer-aided method is a easy, robust, and sensitive method compared to the rest methods.

Key words: Cephalometric measurements, electronic caliper, 3D computer-aided system, photographomectric system, head.

P-74

Radiolucent nasal bone on the plain film: anatomical variation? Congenital anomaly? Inadequate mineralization?

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Nasal bones are paired bones which start to ossify within the third intrauterine month in intramembranous fashion.

In this study, we present a 22 year old male, whose nasal bones were found 'radiolucent' incidentally by a plain film and potential causes underlying it are herewith discussed under the light of knowledge on physiological ossification process and its possible disturbances.

Key words: Nasal bones, embryology, intramembranous ossification, inadequate mineralization, plain film.

P-75

Thymomegaly: a case related to SIDS

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The thymus is an indispensable lymphoid organ that plays an important role in the immune system and in T-cell differentiation and maturation. An infant generally dies in sepsis within the first year of life if it is born without a thymus.

The size of the thymus increases after birth, reaches a maximum value at an age of 4 to 6 months, and then gradually decreases after 6 to 8 months. We found an abnormally large thymus in an infant autopsied at the age of 8 months. At autopsy, the thymus was excised and weighed 65 gr. The maximum transverse dimension measured 70 mm and the maximum sagittal dimension measured 55 mm. These values were significantly greater than normal. In this case, the cause of death could not be determined. Thymomegaly is thought to be a condition related to

Sudden Infant Dead Syndrome; hence, we approve publishing this case.

Key words: Thymus, SIDS, infant, autopsy, death.

P-76

A rare variation of the round ligament of the liver

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The round ligament of the liver is formed by the obliteration of the umblical vein, which exists in embryological life. Consequently this ligament begins from the umbilicus, being inside the free edge of the falciform ligament, it ascends upwards to the right side. When it reaches the anterior margin of the liver, it passes to the visceral face of the liver. We report an unusual variation of the round ligament of the liver. During routine dissections at the Anatomy Department of the Medical Faculty of Istanbul, the authors encountered an unusual structure over the rectus abdominis sheath of a 63-year-old male cadaver. With a detailed examination, this structure was determined to be the round ligament of the liver. In this case, this ligament was not only more superficial than it normally should be, but also in an unusual manner it reached the liver's visceral face after continuing its way on the diaphragmatic face of the liver. As the round ligament of the liver was placed at the diaphragmatic face, the fissure for round ligament, which is a structure expected to be formed by the round ligament, wasn't observed. Consequently this cadaver's liver wasn't divided into lobes on the visceral face. The residual lumen of the round ligament of the liver is important for umbilical vein catheterization, consequently we believe that this rare variation (frequency of this kind of case is not stated in the literature) can be important for catheterization and for abdominal surgical procedures.

Key words: Variation, round, ligament, liver, umbilical.

P-77

Pons hepatis: an unusual variation of the liver

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During routine dissection studies of the abdominal region of a 52-year-old male cadaver, we encountered an unusual structure in the visceral surface of the liver. The round ligament of the liver was bridged over by a round structure. Histological examination of the structure revealed that there were numerous vessels and bile ducts. According to its direction and contents, it was considered as pons hepatis. Additionally, the gall bladder laid in a shallow fossa where a superficially located intrahepatic vessel and its branches were found. We think that the pons hepatis and such superficially located intrahepatic vessels should be kept in mind to prevent uncontrolled bleedings during laparoscopic procedures of the gall bladder and liver.

Key words: Pons hepatis, liver, gall bladder, round ligament, visceral surface.

P-78

The sternalis muscle in a cadaver and an overview to its significance in clinical approaches

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The sternalis muscle is a well-known variation of the anterior chest wall since 1867. The incidence of the sternalis muscle differs among the population. Chinese people have the highest incidence with 17.1%.

The sternalis muscle was observed unilaterally in formalin fixed adult male cadaver on the right side during routine dissection. The muscle originated at the level of the third sternocostal articulatio as two heads. It was ended fusing with pectoralis major muscle at the level of sixth costal cartilage 35.2 mm distance from midclavicular line.

Although no function of sternalis muscle has been reported by now, this rare anatomic variation has great importance for radiologists and chest surgeons in diagnosis and therapy. Because of this reason, in this paper we discuss our case and the previous reported cases.

Key words: Sternalis muscle, pectoralis muscle, anterior chest wall, mammography, variation.

P-79

Bifid flexor carpi ulnaris muscle: a case report

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Flexor carpi ulnaris muscle has humeral and ulnar heads connected by a tendineus arch. Its tendon forms along the anterolateral border of the muscle's distal half and is attached to the pisiform bone. In our case, we observed a bifid flexor carpi ulnaris muscle on a 75 year- old, formalin preserved male cadaver. The muscle had humeral originating from the medial epicondyl of the humerus and ulnar originating from the olecranon heads. The heads traveled along the forearm separately to the midpoint of the forearm. Their tendons joined at the wrist and inserted into the pisiform and hamate bones. Lengths of the humeral and ulnar heads were 18 and 13 cm, respectively. Width of them were 3 and 2.7 cm, respectively. Lengths of the tendons of the humeral and ulnar heads were 6 and 11 cm, respectively. Both heads were innervated by branches of the ulnar nerve and supplied by branches of the ulnar artery. In conclusion, variation of the flexor carpi ulnaris muscle should be known because it has been used as a local muscle rotational flap to cover the elbow, arteriovenous shunts and vascular prosthetic grafts and to treat infected non-union of the proximal ulna.

Key words: Flexor carpi ulnaris muscle, variation, bifit, rotational flap, prosthetic graft.

P-80

Compression of superficial branch of radial nerve between the split tendons of brachioradial muscle (Wartenberg's syndrome): a rare anatomical variation

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We encountered a rare course of superficial branch of radial nerve (SBRN) on the left upper extremity of a 36 years old male cadaver during routine dissection in the Anatomy Laboratory. Insert tendon of brachioradial muscle was two parts and SBRN was passing between two slips of tendon. Courses and locations of the other anatomical structures were normal. It was thought that SBRN had been compressed during movements of brachioradial muscle because of its abnormal course. This anatomical variation was assessed as 'Wartenberg's Syndrome' characterized by pain, paresthesia and absence of sense on radial side of dorsum of hand, wrist and forearm. Importance of the region anatomy was stressed for clinical evaluations and surgical approaches to this rarely syndrome.

Key words: Wartenberg's syndrome, superficial branch of radial nerve, brachioradial muscle, cadaver, variation.

P-81

A case of bilateral abductor pollicis longus muscle with a three-split insertional tendon

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During the routine dissections of musculoskeletal system in a 54-year-old male cadaver, musculus abductor pollicis longus (MAPL) was encountered to have an insertional tendon with 3 partitions in both forearms. The muscle belly was originating from the dorsal aspect of ulna, interosseal membrane, dorsal aspect and lateral margin of the radius.

The distal-most and lateral fibers of the muscle were inserting on the proximal and lateral fibers of m.abductor pollicis brevis after crossing the distal 1/3 of radius from back to forward and distally. The muscular fibers at the back of the forearm splitted into two layers as superficial and deep fibers while traversing the distal 1/3 of the radius and forming two separate tendons. Both tendons attached to the dorsolateral aspect of the base of the first metacarpal bone.

The variations of MAPL bear importance in the grasping ability of hand and thumb, development and treatment of some clinical cases and the use in plastic-reconstructive surgery with transplantational purposes.

Key words: Forearm, thumb, anatomy, muscle, variation.

P-82

Bilateral extensor digitorum brevis manus muscle case and anomalous tendons of the extensor digitorum muscle

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During the routine hand dissection of a black, unknown aged, adult, male cadaver, bilateral extensor digitorum brevis manus muscle presence were seen on the dorsum of each hand. Extensor digitorum brevis manus muscle is a rare and a supernumerary muscle in the dorsum manus,

frequently misdiagnosed as a ganglion, exostosis, hemangioma, synovial cyst or soft tissue tumor and often subjected to surgical procedures. The absence of the extensor indicis and the presence of extensor digitorum brevis manus for index finger was observed bilaterally in this report. Extensor digitorum brevis manus muscles were measured about 8.4 cm in length and 1.4 cm in width, 9.8 cm in length and 2 cm in width on right and left sides respectively. Muscles were originated from distal end of the radius, dorsal radiocarpal ligament and wrist joint capsule, inserted into the dorsal aponeurosis of the index finger and innervated by the posterior interosseus nerve on both sides. While dissecting dorsum manus we also observed anomalous tendons of the extensor digitorum muscle and unusual patterns of the intertendinous connections. The remaining tendons and deep muscles of the dorsum manus were normal.

Key words: Extensor digitorum brevis manus muscle, extensor digitorum muscle, variation, dorsum manus, hand surgery.

P-83

Accessory head anomalies of the biceps brachii muscle in two cases

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Two cases of anomalies in the biceps brachii muscle were found during dissection of African, black, male, adult cadavers. We observed bilateral and unilateral accessory head anomalies of the biceps brachii muscle in two cases. First case has two accessory head in the right arm and one accessory head in the left arm. A superior accessory head in the right arm originated from the supraglenoid tubercle with the long head and a second accessory head (inferomedial one) in the right arm and other accessory head in the left arm originated from the anteromedial surface of the humerus at the insertion of the coracobrachialis muscle. A unilateral accessory head anomaly of the biceps brachii muscle was observed in the second case. The accessory head originated from the humerus at the point where the coracobrachial muscle inserted in the right arm. Each accessory head joined the biceps brachii tendon and bicipital aponeurosis. Blood supply was maintained by small branches from the brachial artery in all of the accessory heads and their neural innervation by short thin branches of the musculocutaneus nerve. It's important to be aware of possible occurrences of such anomalies and should be considered during surgical procedures of the brachial region. Therefore, we found these anomalies valuable to presentation.

Key words: Biceps brachii muscle, upper extremity, accessory head, brachial surgery, variation.

P-84

Bilateral supernumerary heads of triceps brachii muscle

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Variations of the triceps brachii muscle are rare anomalies of upper arm. During the routine dissection of brachial region of an African, unknown aged, black, male, adult cadaver, we noticed supernumerary heads of triceps brachii muscle on both sides. On the right side we observed two distinct heads of caput mediale and three additional muscle bundles originated from caput laterale then attached to the caput longum of triceps. On the left side there was an additional muscle bundle lying between caput mediale and caput longum. Furthermore two additional heads that originated with caput laterale that then attached to the caput longum of triceps. It's important to be aware of occurrences of such anomalies and should be considered during surgical procedures of this region and possible results in neurovascular compression.

Key words: Triceps brachii muscle, variation, upper extremity, brachial surgery, accessory head.

P-85

An unusual slip of latissimus dorsi muscle

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During the routine dissection of axillary region of an African, black, male, adult cadaver we found an unusual slip of latissimus dorsi muscle that located in axillary fossa on right side. This muscle bundle was originated from latissimus dorsi muscle's fibers, coursing postero anteriorly in oblique fashion into the axillary fossa and attached to the pectoralis major muscle's fibers. The length of this unusual slip was measured 5.6 cm in length and 1.3 cm in width. Arteries and nerves of the axillary region were also

observed beneath this supplementary muscle bundle's arch. Tensions of the axillary region associated with the passive abduction or external rotation of the shoulder may be related with the signs and symptoms of the neurovascular compression within such anomalies.

Key words: Latissimus dorsi muscle, axillo-pectoral muscle, axillary surgery, axilla, variation.

P-86

Radial nerve contribution to innervation of the brachialis muscle

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It has been reported that the brachialis muscle is innervated by two sources, that is, branches from the musculocutaneous nerve innervating most parts of the muscle, and those from the radial nerve innervating the small inferolateral part. However, the constancy of the radial nerve supply is controversial. Radial nerve supply to the brachialis muscle has been reported in few studies. The reported frequencies were belonged to the East Asian populations and UK Caucasian population. In the present study we aimed to study the existence frequency of the radial nerve contribution to the brachialis muscle in anatomic and electrophysiological examination on 22 cadavers and 20 normal individuals. We found higher existence frequency compared to those previously reported in the literature and found four different types of innervation of the radial nerve.

Key words: Radial nerve, brachialis muscle, innervation, musculocutaneus nerve, EMG.

P-87

A communicating branch between the musculocutaneus and the median nerves

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During the 2006-2007 term, we encountered a communicating branch between the musculocutaneus and the median nerves on the right side of a 45-year-old male cadaver. The branch originated from the musculocutaneus nerve just after it left the coracobrachialis muscle and reached the median nerve about 5 cm. The clinical importance of the case was discussed.

Key words: Musculocutaneus nerve, median nerve, variation, communicating branch, coracobrachialis muscle.

P-88

An unusual case of superior sagittal sinus bifurcation variation

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It is important to define the dural sinuses in assessment of the clinical presentations in neurosurgery and neurology and especially while performing surgical interventions involving the brain.

Superior sagittal sinus, which begins posterior to the foramen caecum in the frontal bone and courses backwards along the superior margin of falx cerebri, widens near the internal occipital protuberance and is referred to as the confluence of the sinuses. Variations of dural sinuses are frequently seen in this region. In our case, cranial venous MRI angiography of a 49-year-old male patient demonstrated that the superior sagittal sinus bifurcated near sutura lambdoidea of the cranium. These coursed as two separate branches and drained into the transverse sinus without forming the confluence of the sinuses. Sinus rectus joined to the left transverse sinus.

We think that this unusual variation, which was not reported before, will contribute to the assessment of the neurologic presentations and also to the surgical interventions.

Key words: Dural sinuses, variation, bifurcation, MR, angiography.

P-89

A unique combination of variations comprising the anterior half of the circle of Willis and anterior cerebral artery distribution: case report

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During the cerebral dissection of a 67-years-old male cadaver, a unique combination of variations at the anterior half of the circle of Willis and anterior cerebral artery (ACA) distribution was encountered. A1 segment of both anterior cerebral arteries fused without an anterior communicating artery (ACoA), giving rise to a common pericallosal artery (CPA), an incomplete distal ACA (IACA) and a recurrent artery of Heubner (HRA) from the fusion site. The IACA had an unusual course which may be important from the surgical point of view. The CPA continued as the A2 and A3 segments and bifurcated into two pericallosal arteries. Branching patterns of the variated arteries to the interhemispheric region were evaluated and results were discussed. Additionally both posterior communicating arteries were hypoplastic. There was no aneurysm formation at the circle of Willis and its branches. Since most of the intracranial aneurysms are seen at the ACoA region, absence of it might be thought as a gift.

Key words: Circle of Willis, anterior communicating artery, incomplete distal anterior cerebral artery, common pericallosal artery, variation.

P-90

A case report of variation of the azygos venous system

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During an anatomic dissection of the posterior mediastinum, the variation of the azygos venous system was observed. The hemiazygos and the accessory hemiazygos veins were absent. The left posterior 2nd-3rd, 4th-5th, 6th-7th, 8th-9th, and 10th-11th intercostal veins united with each other, and their common trunk crossed the vertebral column straightly, lying posterior to the aorta and opening into the azygos vein at the level of different vertebrae. 5th left posterior intercostal vein opened into the second common trunk by passing anterolateral to the autonomic trunk. The azygos vein was located in the vertebral midline. This variation is important for mediastinal surgery and radiology.

Key words: Posterior mediastinum, intercostal vein, azygos vein, hemiazygos vein, hemiazygos accesorius vein.

P-91

Spinal accessory nerve passing through a fenestration of the internal jugular vein: case report

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A unilateral fenestration of the internal jugular vein (IJV) on the right side of the neck was encountered during the neck dissection of a 58-years-old male cadaver. The spinal accessory nerve (CNXI), which normally traverses the IJV medially, passed through the fenestrated vein and then reached the sternocleidomastoid muscle. Due to the macroscopic observation of thinning vein wall at the fenestration site, several histologic sections were taken from different levels of the fenestrated vein and findings are discussed. This very rare anomaly, which is important from the surgical point of view, is also discussed on the embryological basis. Although just a few cases are reported in the literature, it is important for surgeons who operate in this area that these variations should be kept in mind to prevent inadvertent injury.

Key words: Internal jugular vein, fenestration, spinal accessory nerve, embryology, histology.

P-92

A unique variation of the internal iliac and median sacral artery: case report demonstrated by angiography and MR angiography

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In a 53 years old male patient who underwent pelvic angiography and MR angiography because of his complaints, an internal iliac artery variation was encountered which has not defined in the literature. The right internal iliac artery was observed as originating from the left common iliac artery. Additionally the median sacral artery arose from the left common iliac artery at the level of the right internal iliac artery bifurcation from the left common iliac artery. This unusual variation, which is important from the surgical point of view, is also discussed on the embryological basis.

Key words: Internal iliac artery, median sacral artery, variation, angiography, MR angiography.

P-93

Bilateral variation of the arteria mediana

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During the routine cadaver dissection carried out in the Anatomy laboratory, bilateral variation of arteria mediana was found in an 80-years-old male cadaver. This artery arose from arteria ulnaris on a level with common interosseous trunk in the upper third of the forearm bilaterally and than the vessel coursed distally to lie alongside the median nerve under the deep surface of flexor digitorum supercialis muscle. At the wrist it passed deep to the flexor retinaculum, passed through the carpal tunnel and entered the palm. The artery ended by joining the superficial palmar arch. Present variation and similar cases could contribute the clinic evaluation of blood supply of the forearm and the palm and the plastic reconstructions of the hand.

Key words: Median artery, superficial palmar arch, variation, human, vasculature.

P-94

Testicular artery originated from inferior phrenic artery: case report

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In our 2006-2007 dissection courses we have observed variations of the right phrenic and testicular arteries in a male cadaver. In standard textbook knowledge, the inferior phrenic artery originates directly from the abdominal aorta at the same level as the coeliac trunk, gives off its superior suprarenal artery and terminates at the diaphragma. The testicular arteries also originate directly from the abdominal aorta. In our case, the right inferior phrenic artery originates with the right renal artery from the same level. The right inferior phrenic artery gives off as a common trunk the right testicular and middle suprarenal arteries. After the common trunk the inferior phrenic artery gives off the superior suprarenal artery and terminates at the diaphragma. We were unable to find any previous studies of a testicular artery branching from the inferior phrenic artery. This anatomical region is commonly used in clinical interventions therefore the knowledge of these variations are important.

Key words: Inferior phrenic artery, testicular artery, suprarenal arteries, renal artery, variations.

P-95

High originated radial artery variations in two cases

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During the routine dissection we found high originated radial artery variation in a black, unknown aged, adult, male cadaver and a white, 60-years-old, male cadaver. The high-originated radial arteries were located on right arms in both cases and originated 9 cm distally from pectoralis major muscle's inferior border in first case and 6.6 cm distally in second one. Course and branching features of radial artery were found normal. Radial artery variations may cause confusion with veins in this region, often subjected to erroneously injections and bears an importance for cardiac catheterization and coroner artery bypass surgery.

Key words: High originated radial artery, brachial artery, upper extremity, cardiovascular surgery, variation.

P-96

Multiple variations of the abdominal aorta in a single cadaver

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Numerous variations of the abdominal aorta were observed during routine dissection of the abdominal region in a 60-year-old male cadaver in the Department of Anatomy at Selcuk University Meram Medicine Faculty. A common inferior phrenic trunk arising from the abdominal aorta and than divided into two branches. The left gastric artery arose from the front of the abdominal aorta; an accessory right hepatic artery arising from the superior mesenteric artery. Although single right renal artery originating from the abdominal aorta, double left renal arteries were originating from the abdominal aorta. The knowledge of these variations could be useful for clinicians for recognition and protection.

Key words: Abdominal aorta, variation, inferior phrenic artery, double left renal artery, right hepatic artery.

P-97

Arterial and muscular variations in the upper limb of a single cadaver

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During our routine dissection studies we observed arterial and muscular variations in the left upper limb of an adult male cadaver. In this case we observed the superficial radial artery, the superficial palmar arch was formed by the ulnar artery along, the palmaris longus muscle was absent and the extensor digiti minimi muscle had got three tendons. Since the palmaris longus provides a very useful graft in tendon surgery, the surgeon should be fully aware of its anatomical variation. Ascertaining the course of the radial artery pre- and intraoperatively and careful dissection of the artery are essential to minimize problems of flap transfer.

Key words: Superficial radial artery, variation, palmaris longus muscle, extensor digiti minimi muscle, superficial palmar arch.

P-98

Branched variation of deep femoral artery and surgical importances of lateral circumflex femoral artery

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Lateral Circumflex Femoral Artery (LCFA) is originated as the first branch of the deep femoral artery (DFA). It gives off ascending, descending and transverse branches. Ascending branch supplies tensor facia lata and the hip joint on intertrochanteric line. Descending branch supplies rectus femoris and lateral vastus muscle. The transverse branch is the smallest branch and it supplies the lateral vastus, intermedial vastus and the great trochanter. As the LCFA has a close neighborhood with femoral nerve, it is a landmark when a nerve blockage with the aim of anesthesia is required. The LCFA is used as graft in coroner bypass, its branch to tensor facia lata muscle used as flap for plastic surgery purposes. In addition, after peritrochanteric fractures, injuries resulting avascular necrosis can be observed.

In the laboratory of DEU Anatomy Department the femoral artery of adult male cadaver was cannulated just above the inguinal ligament and filled with coloured latex. The femoral artery and its branches were dissected under the Zeiss dissection microscope. It was observed unexpectedly that the LCFA was originated as the second branch from the deep femoral artery and before that it was the first branch its diameter was 5.2 mm and it was 12.2mm above the LCFA. It was originated from the anterior wall of the LCFA and descended between the rectus femoris and vastus intermedius and it had muscular branches for these muscle. Four descending branches were divided in the LCFA. The femoral nerve and branches had a course lateral to the DFA. The branches of the LCFA followed by being under microscope. Because of the nerve blockage of the femoral nerve, the location of LCFA and its branching are thought to be taken into consideration during surgical interventions.

Key words: Femoral artery, deep femoral artery, lateral circumflex femoral artery, vascular origin variation, surgical anatomy.

P-99

Rarely seen double cystic artery fact

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Cystic artery defined as the terminal artery for the nourishing of the gallbladder, generally takes origin from the ramus dexter of proper hepatic artery. Cystic artery comes out from the right hepatic artery, passes behind the common hepatic duct and advances to the Calot's triangle laterally reaching the gallbladder.

During the researches we were making about the common hepatic artery on a cadaver we coincided with a double cystic artery. The first one (ca1), gets origin from the right hepatic artery, passes behind the common hepatic duct and reaches to the gallbladder. The second branch (ca2), comes out from a short stump which origins from proper hepatic artery, passes from the anterior of common hepatic duct and goes in to the Calot's triangle. As this branch goes distally, it advances through the lower side of the triangle and reaches to the gallbladder. The other end of the common stump which the second branch (ca2) comes out, advances to the portal vein and results in the liver as a segmental branch.

Variabilities of cystic artery's origin, number and motion are coincided frequently. In the surgical interventions of the liver and the gallbladder, this artery's origin and motion becomes very important. It should be taken into account that the deficiencies of the definition for anatom-

ic variations could cause dangerous situations specially during the laparoscopic cholecystectomic operations.

Key words: Cystic artery, proper hepatic artery, variation, cystic artery, cystic artery.

P-100

A case report: type B of arch of aorta

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In vascular structures, many variations can be seen not only in peripheric circulation but also in large vessels. One of these was met in the thorax dissection of a 70 year old male cadaver of Anatomy Department of the Istanbul Faculty of Medicine. The arch of aorta of this cadaver had 2 branches, instead of 3. The left subclavian artery left the arch of aorta alone, while the left common carotid artery, the right common carotid artery and the right subclavian artery left the arch of aorta in a common trunk. This common trunk divided into two, upwards. While the left common carotid artery continued alone, the right common carotid artery and the right subclavian artery continued in a common trunk. This variation was classified as Type B of arch of aorta by Adachi and the frequency of this variation was reported to be 10.9±1.37 by him. We believe that the clinicians must take care of possible variations of arch of aorta like the one we reported, especially when performing procedures without good visibility, such as needle biopsies or injections.

Key words: Arch, aorta, variation, cadaver, circulation.

P-101

A case of bitrunkal-noncisternal cisterna chyli

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The case was found during the investigations to explore the cisterna chyli patterns, which is still in continuation.

During the dissection of thorax, thoracic duct was identified and the right crus of the diaphragm was cut off in order to expose the cisterna chyli posterior to the abdominal aorta.

The case was photographed and its scheme was drawn.

According to the literature the rate of a typical cisterna chyli configuration is less than the variations. In our country no study concerning the cisterna chyli variations was found among the available literature.

In our case the right and left lumbar trunks united to form the thoracic duct without dilatation, so no typical cisterna chyli was formed.

Key words: Cisterna chyli, thoracic duct, variations, trunk, lympha.

P-102

Branches of the medial and lateral circumflex femoral arteries originated separately

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During 2006-2007 term, we found variations of the right lateral and medial circumflex femoral arteries of a 67-year-old cadaver. The ascending and the transvers branches of the lateral circumflex femoral artery were branching from a common trunk which was originating from the femoral artery; the descending branch originated from the femoral artery, distal to the origin of the deep femoral artery. The ascending branch of the medial circumflex femoral artery originated directly from the femoral artery, and the descending branch originated from the deep femoral artery. In addition, inferior epigastric and deep circumflex iliac arteries originated from the femoral artery. We discussed the variations on our cadaver with the literature.

Key words: Medial circumflex femoral artery, lateral circumflex femoral artery, variation, femoral artery, deep femoral artery.

P-103

The common trunk of deep femoral artery and the lateral circumflex femoral artery

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During the 2006-2007 term we encountered some variations of the origins of the medial and lateral circumflex femoral arteries in a 77-year-old male cadaver. The ascending and the transvers branches of the lateral circumflex femoral artery branched from the femoral artery by means of a common trunk; the descending branch originated from a trunk from the femoral artery. The medial circumflex femoral artery had two ascending branches one of which branched from the femoral artery, and the other from the deep femoral artery by constituting a common trunk with descending branch. The importance of the case was discussed.

Key words: Lateral circumflex femoral artery, medial circumflex femoral artery, variation, femoral artery, deep femoral artery.

P-104

The ascending branch of the medial circumflex femoral artery originated from the femoral artery

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During the 2006-2007 term, we encountered some variations of the medial circumflex femoral artery on the left side of a 58-year-old male cadaver. The ascending branch of the medial circumflex branched directly from the femoral artery, and the descending branch was double both of which branched from the deep femoral artery. The case was discussed with the literature.

Key words: Medial circumflex femoral artery, femoral artery, variation, deep femoral artery, descending branch.

P-105

Double right coronary artery arising from a single ostium in the right sinus of Valsalva

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Double right coronary artery arising from a single ostium is an extremely rare coronary artery variation. We report a case 50 year old man with atypical chest pain in whom coronary angiography showed double right coronary artery arising from a single ostium in the right sinus of valsalva.

Coronary anomalies should be recognized to avoid problems during coronary intervention and cardiac surgery.

Key words: Double, coronary artery, congenital cardiac anomaly

P-106

The communicating branch between the femoral vein and the great saphenous vein

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During the 2006-2007 term, we encountered a communicating branch between the femoral and great saphenous veins on the right side of a 56-year-old male cadaver. The communicating branch left the femoral vein, crossed the femoral artery from its anterior aspect, and joined the great saphenous vein approximately 10 cm after. The clinical importance of the case was discussed with the literature.

Key words: Femoral vein, great saphenous vein, variation, communicating branch, femoral triangle.

P-107

Examination of intramuscular nerve distribution pattern of the leg in rats

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Experimental studies related with the innervation of skeletal muscles are limited in the literature. For this purpose, the innervation pattern of leg muscles in rats was examined. Tibialis cranialis, tibialis caudalis, extensor digitorum longus, flexor digitorum longus, gastrocnemius, peroneus longus and brevis muscles were dissected from origo and insertion points under operating microscope in 170 rats. Nerves of these skeletal muscles were prevented during this process. All these skeletal muscles were stained by Sihler staining method and their nerve distribution pattern was examined. The most complex intramuscular nevre distribution pattern was observed in gas-

trocnemius muscle while the simpliest was in tibialis cranialis and peroneus brevis muscle. The main nerve branch innervating the gastrocnemius muscle was evidently larger than those of the other muscles.

Knowledge of the branching patterns and some key landmarks for localizing the intramuscular nerve branches of the skeletal muscles is helpful during reinnervation.

Key words: Rat, skeletal muscles, Sihler staining method, intramuscular nerve distribution, morphometry.

P-108

Vascularization pattern of rat sciatic nerve

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The nutrient arteries supplying the peripheral nerves came from either the adjacent axial artery or the fasciocutaneous or muscular arteries. They formed anastomotic channels in the epineurium and penetrated it to form a continuous longitudinal artery. Vascular supply of the rat sciatic nerve from the popliteal artery was studied on 25 rats. We found that the rat sciatic nerve had three different patterns. Patterns were as a muscular perforator artery (Type 1), as a axial artery ramified at proximally (Type 2), and as a axial artery ramified at proximally (Type 3) We think that such vascularization patterns should be kept in mind in peripheral nerve surgeries and understanding of the vasculitic neuropathies.

Key words: Sciatic nerve, rat, vascularization, vasculitic neuropathy, peripheral nerve surgery.

P-109

The course and the importance of the vertebral artery in the guinea pig

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Spinal cord is a vulnerable structure to mechanical traumas and pathological conditions. During the nueropathological process of the traumas, the vascularization plays an important role. The vascular supply of the cervical part of the spinal cord is poor. This region is referred to as watershed zone. The vertebral artery is the main supply of this region. In our study we aimed to examine the origin, branches and the course of the vertebral artery in the guinea pig by corrosion cast method. After we obtained the cast of the vascularization, we examined the casts from morphological point of view. Our results revealed that the vertebral artery is the main supply of this region in the Guinea pig. We identified its braches, course and also some additional variations of the artery in details. We think our results can be useful for researchers who dealing with vasculature of the spinal cord of the small laboratory animals.

Key words: Vertebral artery, spinal cord, guinea pig, vascularisation, cervical region.

P-110

Effect of ritalin (methylphenidate) in corneal stroma

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Methylphenidate, more commonly known as Ritalin, is a piperidine derivative and is the drug most often used to treat attention deficit/hyperactivity disorder of children and young adults. Ritalin influence with binding monoamines like dopamine and norepinefrine, and especially inhibits dopamine transportation in synaptic regions. In cornea's normal anatomical structure, there is a dissociation of dopamine receptors opposite to one and another. In recent studies, it is also found that there is a micromolecular ion transport after dopamine stimulation in isolated part of the epithelial cornea. The aim of this study is to determine dose-dependent changes of dopamine-2 receptor reactivity and apoptosis in corneal stroma as a result of Ritalin's microtransport mechanism by immunohistochemical studies.

In this study, 27 female prepubertal Whistar albino rats, divided into three different dose groups (5 mg/kg, 10 mg/kg, 20 mg/kg) and their control groups, were used. They were treated orally with methylphenidate dissolved in saline solution for 5 days per week during three months. At the end of the third month, after perfusion fixation, eye tissue was removed. Paraffin sections were collected for immunohistochemical and TUNEL assay studies.

In our study, we observed that the cornea D2 receptor reactivity shows a dose-related increase after

methylphenidate treatment, especially in basal cells of the epithelium. Analysis of the cornea thickness results shows no meaningful difference between groups. Apoptotic cell number show a meaningful increase in high dose treated group compared to other groups of the study.

The data suggest that Ritalin has degenerative effect on the important functional part of the eye such as cornea, and its activating dopaminergic mechanism via similar neuronal paths, functionally and structurally, to induce morphological changes. As a result, we believe that this morphological changes negatively effecting functional organization of the affected parts.

Key words: Cornea, stroma, ritalin, methylphenidate, D2 receptor, apoptosis.

P-111

Antioxidant effects of omega-3 fatty acids on experimental formaldehyde toxicity induced injury of hippocampus

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In this study, neurotoxic effects of formaldehyde on hippocampus and protective effects of omega-3 (θ-3) fatty acids against these toxic effects were investigated at biochemical level. For this purpose, 21 adult male Wistar rats were randomly divided into three groups. Rats in group I were used as control. Rats in group II were injected every other day with formaldehyde intraperitoneally. Rats in group III were daily administered θ-3 fatty acid with injection of formaldehyde. At the end of a fourteen-day experimental period, all rats were capitated. Then the brains of rats were removed. The activities of malondialdehyde (MDA), superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px) were determined in the hippocampus specimens by using spectrophotometric methods. The levels of MDA were significantly increased; SOD and GSH-Px were significantly decreased in rats treated with formaldehyde compared to control. There was a statistically significant decrease in MDA levels and, increase in SOD and GSH-Px levels in rats administered θ-3 fatty acids together with formaldehyde. It was determined that exposure of formaldehyde caused oxidative damage in hippocampus of rats and this damage was prevented by administration of θ-3 fatty acids.

Key words: Formaldehyde, θ-3 fatty acids, hippocampus, oxidative injury, rat.

P-112

Neurochemical changes in the nuclei of nervus vagus of esophagitis rat model

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Esophagitis is a commonly seen disease. It is an inflammatory problem due to reflux of gastric juice into the esophagus. The motility of the esophagus is disturbed due to oesophagitis. The roles of nerve layers of esophagus and phrenic nerve have been studied. However, the there are not enough data related to the neurochemical changes in the central system in eosphagitis.

This study is designed to reveal if there is neurochemical changes related to esophagitis in the brain stem. At this preliminary study, esophagitis has been created in the Sprague Dawley rats by surgical techniques. Later on retrograde tracer fluorogold was injected into the lower end of esophagus . The rats were sacrificed by perfusion fixation method. Then esophagus and brain stem were taken. Esophagus was examined to verify the development of esophagitis. Acetylcholine transferase, butyrylcholine transferase and NADPH-diaphorase enzyme reactions were done at brain stem sections. The same reactions were applied to the control and sham groups.

At the pathologic examinations it was observed that esophagitis was developed in all rats. The differences of three enzyme staining were examined in control, sham and esophagitis groups. There were minimal differences between esophagitis and sham and control groups at NADPH-d stainings of nuclei of n. vagus.

Key words: Esophagitis, neuroscience, vagus, anatomy, esophagus.

P-113

Macroscopic evaluation of the sciatic nerve neovascularization after stripping of the vasa nervorum

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Peripheral nerve trunks are well-vascularized structures where a well-developed collateral system may compensate for local vascular damage. Vasculitis in nerve has a predilection for epineurial vessels and causes to the peripheral neuropathy, which is a major clinical feature of

primary and secondary systemic vasculitides. In the present study, we created a vasculitic neuropathy model and for this purpose vasa nervorum were stripped. We examined neovascularization by three days interval using stereomicroscope. Therefore, we found that the model we described is an appropriate method and neovascularization was originated from epineural vessels.

Key words: Vasculitic neuropathy, sciatic nerve, neovascularization, vasa nervorum, stripping.

P-114

Effect of FK506 after crush of the intrapelvic part of the obturator nerve

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The frequency of obturator nerve damage due to pelvic disease or gynecologic procedures is uncertain but thought to be rare. The obturator nerve can be compressed against the lateral pelvic wall or during its course in the obturator canal. In the present study, our goal was to describe a rat model that simulates trauma to the obturator nerve, in order to investigate the effects of the FK506 on obturator nerve recovery from a histological, and functional point of views. For this purpose, a total number of 48 female rats were used. The rats were divided into four groups (control, sham, FK506 +, FK506 -). The nerve recovery was evaluated by using adduction test, pinch test, and by electron microscopic examination. FK506 treatment resulted in dramatic behavioral improvement in nerve function, in the number of functioning nerve fibers. These results suggest that FK506 have potential in the treatment of traumatic neuropathy.

Key words: Obturator nerve, intrapelvic part, surgery, nerve crush, FK506.

P-115

The effects of metabolic changes induced by global cerebral ischemia on spinal cord

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It has been established that a brief period of ischemia increases tolerance to a subsequent severe ischemic episode. We investigated the effects of metabolic parameters on alterations of cell and related proteins from brain damage and spinal cord (SC) alterations induced by ischemia-reperfusion. Global cerebral ischemia (GCI) was induced in adult male Wistar rats by occluding both carotid arteries, resulting in hypotension of variable severity followed by 48 h reperfusion. Rats were subjected to 20 min of global ischemia with (n=5) or without (n=5) 5 min of ischemic preconditioning (IP). Sham control rats (n=5) were only subjected to surgical procedures. Blood gas analyses were monitorized. After 48 h of ischemia, rats were sacrificed and brains and SCs were removed. c-Fos expression and NADPH-d reaction were investigated in lumbar segments of SCs. c-Fos (+) and NADPH-d (+) and double labeled neurons were counted according to lamina of SC.

While significant increases ($p<0.001$) of c-Fos (+) and NADPH-d (+) and double labeled neurons were observed in GCI group, IP+GCI group showed significant ($p<0.05$) regression according to GCI group. There were no laterality differences ($p>0.05$). c-Fos (+) and NADPH-d (+) and double labeled neurons were observed in not only superficial laminae of SC, but also interneurons and motor neurons of laminae VII, IX and X.

Whether via oxidative stress or metabolic disorders following ischemia, the neurons of SC are effected by GCI and IP decreases unwanted effects of ischemia on SC.

Key words: Precondition, ischemia, spinal cord, c-fos, NADPH-d.

P-116

The effect of the sulphite on hippocampus neuron number in old and young rat

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Sulphite salt is a compound that used in food and drug industry commonly for protection. Additionally, sulphite that exists during the metabolism of the amino acids including sulphur in body is very toxic. The aim of the study is to investigate the effect of the sulphite on hippocampus neuron number changes in old and young rat. For this purpose, 250-300 gram, 20 male albino Wistar rats (young ones were 5 months old and old ones 16 months

old) divided into 4 groups with 5 animals in each group as young control (YC), young sulphite (YS), old control (OC) and old sulphite (OS). 70 mg/kg/day Sulphite was given to YS and OS in drinking water for six week. End of this period, animals were cutting abdominal aorta and their brains were removed by craniotomy. Frozen brains were cut by a cryostat. Sections collected via systematic random sampling were stained with haematoxylin and eosin. On microscopic images obtained from CA1, CA2 and CA3 pyramidal cell layers in hippocampus, total neuron numbers were estimated using the optical fractionator method. As a result, neuron number of the YS and OS was less than neuron number of the YC and OC. YS neuron number was significantly less than YC statistically. As a conclusion, sulphite cause neuronal loss in hippocampus. Actually, this effect was less in old one according to young one. This result needs to be investigated in new studies in base of neuroprotection, repairing and neurogenesis.

Key words: Sulphite, rat, hippocampus, neuron number, the optical fractionator.

P-117

The effect of different amount of penicillin dosage on rat hippocampal volume in penicillin epilepsy model

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Hippocampus is a component of the hippocampal formatio. Easy excitability feature of the hippocampus in epileptic seizures cause irreversible alterations like neuronal loss, degeneration in structure and decreasing in volume. In nowadays, experimental epilepsy models have been developed in order to improve the understanding of the epilepsy physiopathology. One of them is penicillin epilepsy model. The aim of this study is to investigate the effect of different amount of penicillin dosage on hippocampal volume by using stereological methods-Cavalieri Principle. For this purpose, male Wistar rats divided into 4 groups with 5 animals in each group. Intracortical saline was injected to control group. 300 IU, 500 IU and 1500 IU penicillin-G was injected to the others three groups. 7 days after injection, animals were decapitated and their brains were removed by craniotomy. Frozen brains were cut by a cryostat. Sections collected via systematic random sampling were stained with haematoxylin and eosin. On microscopic images obtained from pyramidal cell layers in hippocampus CA1, CA2 and CA3 regions, volumetric calculations were estimated using Cavalieri Principle. As a result, volumetric loss was increasing parallel to penicillin dose was increasing when comparing with control group ($p=0.012$). Actually, there was significant volumetric loss in 1500 IU penicillin-G group statistically (Mann Whitney U test with Bonferroni correction). This result exposed that the amount of the penicillin dose was important in observing the volumetric changes in experimental penicillin epileptic model. But, dose difference should be evaluated by correlating with neuronal loss in experimental penicillin epileptic model.

Key words: Rat, hippocampus, Cavalieri principle, volume, penicillin.

P-118

Protective effects of vitamin E on brain in streptozotocin-induced diabetic rats

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Objective: The aim of this study was to investigate histopathologically the effects of an antioxidant alpha-tocopherol (vitamin E: VE) in the brain of streptozotocin-induce (STZ) diabetic rats. Diabetes mellitus is a major cause of vascular complication affecting heart, kidney, retina and peripheral nerves.

Methods: Male Wistar albino rats were made diabetic using a single intraperitoneal injection of 65 mg/kg STZ. Rats were divided into four groups. The brains were dissected after decapitation. Group A (n:8): Control, group B (n:8): Diabetic control, Group C (n:8): Control + VE, Group D (n:8): Diabetic + VE. VE was injected 40 mg/kg/every other day intraperitoneally for 2 weeks.

Results: There was no change at the control group rats. Structural changes in STZ-induced rats included neuronal damage. The histopathological changes in the diabetic control groups were more significant compared to the control + VE and diabetic + VE groups.

Conclusion: These results obtained with the antioxidant VE suggest that oxidative stress is involved in the development of diabetic neuronal damage. The results suggest that VE protected the brain against the neuronal damage.

Key words: Vitamin E, brain, diabetes mellitus, streptozotocin.

P-119

A stereological analysis of glomerulus in high fat diet fed female rats

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Obesity is one of the most frequently encountered medical problems of our time. Among the complications of this pathologic entity, renal disease is an important issue and its pathophysiologic mechanisms are a challenge for the physician, since a variety of etiologic factors are implicated in its genesis. For example, hypertension, hyperlipidemia and insulin resistance affect renal function, each one in a different way. Obesity seems to be a state in which kidneys demonstrate morphological and functional alterations, while hormonal and growth factors play a significant role. For understanding the underlying mechanisms of obesity-related glomerulopathy, qualitative features of glomeruli in kidney samples were analyzed with modern stereological methods.

In this study, rats of control group were fed a commercial rat diet for 3 months, and rats in the high-fat diet group were fed a high-fat diet (30% calories as fat) for the same period of time. The kidney samples removed from all animals and it was processed for light microscopic examination; sections were serially cut using a microtome. These sections were stained with Hematoxyline-Eosin, for stereological analysis. Volume of glomeruli and volume of Bowman space were analyzed with Cavalieri method. Numerical density of glomeruli and total number of glomeruli were analyzed by physical dissector method.

Both volume and numerical density and total number of glomeruli were significantly decreased ($p < 0.05$). Mean volume of Bowman capsule was increased. Also mean volume of the glomerulus of the treatment group was less than that of the control group.

Finally this study suggested that obesity may be lead to many morphological alterations in glomerular morphology. Besides; obesity associated glomerulonephropathy was firstly proved with unbiased quantitative methods in our study.

Key words: Obesity, nephropathy, glomerulus, stereology, numerical density.

P-120

The effect of pyridoxine (vitamin B6) on craniofacial anomalies caused by excess vitamin A

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Vitamin A (retinol) and its derivatives are essential for the normal development of embryo and retaining of cell differentiation in the adult organism. Vitamin A deficiency results in the failure of segmentation and vascularization in the embryo and leads finally to embryonic resorbation. However, an excess dose of this vitamin is teratogenic. The teratogenic effect targets the extremities, internal organs and craniofacial structures.

Multivitamins are routinely used during pregnancy to avoid congenital anomalies. Previous studies have revealed that Pyridoxine (Vitamin B6) is specifically effective in preventing craniofacial malformations. Therefore, in this study we aimed to investigate whether Pyridoxine has protective effects on the craniofacial malformations caused by exposure to excess vitamin A.

The teratogenic effects of retinol and its derivatives show differences at specific stages of embryonic development. For rat embryos, the most sensitive period to teratogenic effects of retinoid and its derivatives is between embryonic (E) days 8-10. For this reason, we first injected Pyridoxine (10 mg/kg) to the pregnant rats at E9 and E10 and then divided them into two groups. The first group received 500 mg/kg and the second group received 1000 mg/kg vitamin A (retinyl palmitate) orally on E10. No Pyridoxine injection has been done to the control group. The embryos were taken with caesarean section at E20 and their palate morphologies are compared by micro dissection technique.

Key words: Vitamin A, pyridoxine, teratology, palate, rat.

P-121

High fat diet induced obesity: one of links for gastric injury (a histological and morphometrical study)

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Obesity is a heavy accumulation of fat in the body's fat cells to such a serious degree that it rapidly increases the risk of obesity-associated diseases and mortality. Obesity is found a little more among men than women. Stomach

obesity is more frequent and occurs in 30 per cent of adult men and, to a lesser degree, in adult women. Obesity and stomach obesity are rapidly increasing, especially in young people. In this study we attempted to investigate effect of high fat diet obesity on stomach structure and morphology.

In this study, adult, Sprague Dawley rats were fed HFD or standard diet (controls) for 8 weeks. At the end of this nutritional process, all animals were anesthetized with Sevorane® and stomachs were removed from all rats. Volume of stomachs was detected with water injection. For this step, water was injected into stomach until water was seen at the lower oesophagus. Then stomachs were prepared for light microscopical examination and it was evaluated histologically.

In the sections of high fat diet fed rats, not the lamina propria but submucosa is infiltrated as nodular and diffuse form by lymphocytes, eosinophils, plasma cells and also macrophages were seen. Occasional intraepithelial lymphocytes are also present. In sections of treated animals; more parietal cells, connective tissue enlargement and edema were observed in comparing with controls. Also there was vascular dilatation in stomach of these animals and necks of the gastric glands longer than those of the controls. In both submucosa and tunica muscularis and adventitia of stomach of treated rats, white adipocyte accumulation was found. According to our morphometrical data volume of stomach was determined 2.4 ml in control group and 2.85 ml in treatment group.

Conclusion: The study indicated that factors that control stomach volume, dependent of body size, are potential targets in fighting obesity and high fat diet may be cause to stomach injury consisting gastritis, connective tissue envelope, edema and vascular dilatation.

Key words: Obesity, central obesity, stomach, histology, morphometry.

P-122

The association between diet-induced obesity and histopathological outcomes in acute lung damages

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Some epidemiologic surveys have demonstrated that lung diseases for example asthma is more prevalent in obese children and adults. However, the mechanism of association between obesity and lung diseases has not been fully clarified. This report investigates a rat model for diet-induced obesity from a histological perspective.

For the induction of obesity, adult female Sprague Dawley rats were fed a high-fat diet supplemented with milted animal oil. Rats were then anesthetized and lungs were removed and light microscopical lung sections were compared with those of non-obese control rats.

Light microscopic investigation of lungs of high fat diet rats shown that connective tissue enlargement in inter alveolar septa and perivascular area, mononuclear cell infiltration around of bronchi and bronchioles, loss of ciliated cells and irregular epithelium of bronchioles, hypertrophied goblet cells, adipocyte accumulation and mild hemorrhage.

In conclusion, we found that diet-induced obese rats have pathological changes in their lungs. Accordingly, in our opinion these pathological changes maybe reflected to lung function, and fat intake may be a lied reason under the pathophysiology of lung diseases in human obesity.

Key words: High fat diet, obesity, lung, histopathology, light microscopy.

P-123

Effects of Aloe Barbadensis on foetus that was applied during pregnancy

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Purpose: Aloe barbadensis, one of the aloe vera types, is the most common used for commercially and also for therapeutic uses in North America, Europe, and Asia. This plant contains anthraquinin, polysaccharide and carbohydrate. Plants containing aloe barbadensis have been used as an anti-inflammatory agent, for the therapy of ulcer, hepatitis and neoplasies, antigenotoxic, chemopreventive, antiviral and also for wound healing. The aim of this study was to search the effects of aloe barbadensis on growing of foetus that was applied during pregnancy.

Material and method: Female rats are divided into three groups. Rats are leaved for coupling for three days as one male to two females. Aloe barbadensis is given in a daily dose of 25 mg/kg (100 mg/kg) group I with gavages starting from fourth day. Aloe barbadensis was in capsules containing 500 mg soybean oil. For that reason 500 mg soybean oil is given to rats in group II every day. III. group rats were control group. All of the three groups are fed

with normal feed and water. On 21st day mother was anaesthetized then placenta and foetus was taken.

Findings and Results: Each mothers and their offspring were weighed, measured and registered. Placentas and foetuses were weighed and also foetuses' head circumference, head-bottom length, top-tail length, tail length, arm span, and chest circumference were measured. Mothers were weighed before copulate and one day before from birth. Then it was appointed that the group I rats which have taken Aloe barbedensis have less putting on weight, less offspring, bigger placenta and bigger foetus and no teratogenic effect. Foetuses' weight, top-tail length and chest circumference were much from the normal group. Our results also demonstrated that the exposure to Aloe barbadensis during pregnancy not led to foetal growth retardation, foetal death, foetal anomaly and abortion at doses used this study.

Key words: Aloe barbadensis, effect, foetus, parameter, growth.

P-124

Testicular SOD, GSH-Px and MDA levels in experimental toxicity of formaldehyde and protective effect of omega-3 fatty acids

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Objective: In this study, it was aimed to investigate the effects of formaldehyde toxicity on the testes at biochemical level. Potential antioxidant effects of omega-3 fatty acids against these toxic effects were also evaluated.

Materials and Methods: In our study, a total of 21 adult male Wistar rats were divided into three equal groups. Rats in group I were used as control. Rats in group II were injected intraperitoneally with formaldehyde every other day while the other ones received omega-3 fatty acids daily via intragastric gavage with injections of formaldehyde. At the end of 14-days experimental period, all animals were killed by decapitation and their testes were removed. Afterwards, the activities of superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px), and the level of malondialdehyde (MDA) in testicular tissue specimens were determined spectrophotometrically.

Results: Biochemical values of group-treated formaldehyde alone showed that the enzymatic activities of testicular SOD and GSH-Px were significantly decreased compared to control values, while testicular MDA levels were significantly increased. On the other hand, it was found that there were increases in SOD and GSH-Px enzyme activities, and decreases in MDA levels in testis specimens of rats administered omega-3 fatty acids with exposure of formaldehyde.

Conclusion: In this study performed on rats, it was determined biochemically that oxidative tissue damage in testes resulting from experimental toxicity of formaldehyde was prevented by omega-3 fatty acids.

Keywords: Formaldehyde, testis, oxidative damage, omega-3 fatty acids, rat.

P-125

Inhibition of apoptosis and oxidative stress by melatonin in experimental liver fibrosis

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The pineal hormone melatonin functions as a cell-protective agent and has an important role in increasing apoptotic cell death in cancer cells. This study was undertaken to investigate the protective effects of melatonin against carbon tetrachloride (CCl_4)-induced apoptosis and oxidative stress in rat liver. For this purpose, twenty-four male Wistar rats were divided in three equal groups. Group I was used as control. Rats in group II were injected every other day with CCl_4 for one month, whereas rats in group III were injected every other day with CCl_4 and melatonin for one month. At the end of the experiment, all animals were killed by decapitation and livers of the rats were removed. Some of the liver tissue specimens were used for determination of malondialdehyde (MDA), superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px) levels. The remaining tissue specimens were processed for immunohistochemical assessment, and the percentage rates of apoptotic liver cells stained with immunoreactive Bax were determined. Kruskal-Wallis and Mann Whitney U tests were used for statistics analysis. Chronic administration of CCl_4 significantly increased liver MDA contents, as an end product of lipid peroxidation, and also significantly decreased SOD and GSH-Px activities, emphasizing the generation of increased oxidative stress. Moreover, it caused an evident increase in apoptotic cells. Melatonin treatment significantly reduced

MDA levels and elevated SOD and GSH-Px activities in rats administrated with CCl4 plus melatonin. Furthermore, apoptotic changes caused by CCl4 were considerably decreased in these animals. The results of our study indicate that melatonin treatment substantially prevents CCl4-induced apoptosis and oxidative damage in the liver.

Key words: Experimental fibrosis, liver, apoptosis, oxidative stress, melatonin.

P-126

Effects of angiostatin on in vitro embryonic development

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In the recent years diseases were increased known as angiogenic disease and characterized by pathologic vascularization. The vascularization, which is essential for normal development in the living, starts early stage of embryo and named vasculogenesis. In the rats this period started to occur 9.5 day of gestation and than completed to majority of development approximately day 11th-12th days. Angiostatin have potent antiangiogenic effects on endothelial cells, influencing their proliferation, differentiation and other functions. In this study, in vitro effects of angiostatin on total embryonic growth were investigated in rat embryos. The rat embryos were explanted on day 9.5 and cultured in whole rat serum (WRS) (for control) and adding 0.5, 2.5 and 5 μg/ml angiostatin in WRS. After 48h culture period, the embryos from each group were harvested and analyzed morphologically. The results showed that the embryonic growth and development during organogenesis decreased in the presence of angiostatin when compared to embryos grown in WRS. Mean morphological scores for the embryos grown in WRS, in the presence of 0.5, 2.5 and 5 μg/ml angiostatin were 59.8, 34.8, 22.4 and 17.8, somite numbers were 24.3, 14.2, 13.6 and 12.6, yolk sac diameters were 6.0, 4.8, 4.5 and 4.2 mm, crown-rump lengths were 5.4, 4.4, 4.1 and 3.7mm respectively. As a result the angiostatin could cause developmental retardation of embryo because of its antiangiogenic effect.

Key words: Rat, embryo, culture, in vitro, angiostatin.

P-127

Experimental colon tumorigenesis induced by 1,2-dimethylhydrazine in Balb/C mice

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Colon cancer is one of the most common forms of cancer in the world. Experimental animal models of neoplastic diseases are important in understanding etiological and pathophysiological processes. 1,2-dimethylhydrazine (DMH) is a potent colon carcinogen that is commonly used as an initiator in studies of effects of diet on colon cancer. In this study, the relationship between 1,2-dimethylhydrazine and tumor development were investigated on 40 Balb/c mice. Eight weeks age mice were treated with subcutaneously DMH solution (20 mg/kg) once weekly throughout a period of 12 weeks. The animals were left to live different periods after completed DMH injection. The animals were sacrificed sixth (group A), twelfth (group B), fifteenth (group C) and eighteenth (group D) week after the last DMH injection. Group A didn't develop tumor. Group B, C, D showed tumor lessions % 71, %100 and % 100 of mice respectively. As a result, after the repeated doses of DMH, we obtained colonic tumors after a long period of latency in mice, thus producing an experimental model with characteristics similar to those found in humans.

Key words: 1,2- Dimethylhydrazine, colon, mouse, cancer, experimental study.

P-128

Evaluation of the morphometric growth in pups of the rats treated with mint tea during pregnancy through the neonatal-adult periods

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Objective: We aimed to investigate the effects of mint (M. spicata labiatae) tea consumption throughout gestation on morphometric growth during neonatal-adult periods after delivery.

Materials and Methods: 12 female Wistar albino rats (200 ± 10g) were used in the study. Study group was given 4 ml

of mint tea (20 g/l) and control group was given 4 ml of consumption water (AysuTM) by gavage at 8 am everyday additionally regular feed diet and water ad libitum throughout the gestational period. Weights of the pregnant rats in study and control groups were measured three times a week through the gestation. The gestation durations and pup numbers were determined. Morphometric growth parameters related to cranium, thorax, body and extremities were measured for each pup at day 0 and 1st, 2nd, 3rd, 4th, 5th, 6th, 10th and 12th weeks through the neonatal-adult periods.

Results: Rats in the study group have gained less weight during their gestation, when compared with the controls. In measurement of the morphometric parameters of 66 pups from two groups (study 46 (15 males and 31 females), controls 20 (11 males and 9 females), it was found that study group has more decreased values ($p<0,05$). Morphometric parameters of the female pups in study group were less than the females in control group ($p<0,05$) while there was no difference between the males of two groups.

Conclusion: Consumption of mint tea during pregnancy, negatively effects maternal weight gaining and morphometric parameters especially in female pups. For this reason, one should take care of mint (M. spicata labiata) tea consumption through the gestational period.

Key words: Mint (Mentha spicata labiata) tea, developmental anatomy, morphometry, pregnancy, postnatal period.

P-129

The effects of chronic mild stress applied as prefertilization on morphometrical growth in fetal and postnatal periods

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Objective: In our study, researching the effects of chronic mild stress (CMS) applied as prefertilization on morphometrical growth between fetal-postnatal periods and adult period.

Material and Methods: In our study, 6 Wistar albino rats were used in prenatal stress group (PS) and control group. PS and also control groups were mated after 5 weeks (post-CMS: waiting period). The weights of animals in PS and control groups were measured during the gestational period. Besides, the lengths of gestation and the numbers of pups of pregnant animals were determined. After birth, the morphometrical growth parameters (weight of pup, head circumference, biparietal diameter, head length, face height, biorbital diameter, thorax circumference, thorax width, crown-rump length, naso-anal distance, forearm length, leg length, biacetabular distance, ano-genital distance) of the pups of PS and control groups were measured on the day of 0 and in 1st, 2nd, 3rd, 5th, 7th, 9th and 11th weeks.

Findings: The weights of PS group were increasing lesser than the weights of control group during the gestation. The mean values of morphometrical parameters of the pups of PS group were increasing lesser than the pups of control group from the day of 0 to 11th week ($p<0.05$). In addition, when the parameters in 7th-11th weeks were evaluated separately according to sexes, the morphometrical parameters of PS group were increasing lesser than control group in each sex ($p<0.05$).

Results: Chronic mild stress exposed as prefertilization effects negatively the morphometrical development of fetus and child during gestation and newborn-adult periods.

Key words: Chronic mild stress, morphometry, developmental anatomy, rat, pregnancy.

P-130

Morphology of uterine vessels after fertilisation

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It was known that structural changes occur in uterus after fertilisation and implantation. The aim of this study was to determine the alteration in uterine vessels at 7th day after insemination in rats. Eight female Wistar rats were enrolled in this study. The female rats left in the same cage with the male rat overnight and then following morning vaginal smear was done. The rats, which were fully with spermium in her smear, were accepted as inseminated. All the uteruses were removed at 7th day after insemination, fixed in 10 % formaldehyde, routinely processed and embedded in paraffin blocks.

After this, 5 μm sections were taken, stained with Hematoxylen-Eosin and examined under light microsope.

Arteriovenous anastomoses and arteriel passings were seen in abundant between the perimetrium and muscular layer in sections in that implantation was seen after insemination.

In spite of this, at the implantation moment embryo rejected uteruses were also seen and abundant vacuoled, hyperthropic uterine glands and after ischemia dilated vessels were seen in the uterus endometrium in these sections. Furthermore instead of arterial passings it was seen a lot of venous pasings between the perimetrium and muscular layer of the nonimplantated uterus.

In this study, these differences of the vessels alterations were shown histological feature and position to response for the requirement of the tissue whether acceptance or rejection of implantation.

Key words: Uterus, fertilisation, implantation, anastomose, vessel.

P-131

The effect of lavender oil on serum testosterone levels and epididymal sperm characteristics of formaldehyde treated male rats

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In this study, the harmful effects of formaldehyde (FA) on serum testosterone levels and epididymal sperm characteristics were investigated. In addition, possible protective effect of lavender oil was evaluated. For this purpose, 21 adult male Wistar-Albino rats were used. The rats of group I was used as control group. The rats of group II were exposed FA (10 ppm/ 1 hour) for 35 days. The rats of group III inhaleted lavender oil (1 ml/1 hour) with FA. While the testosterone levels, the epididymal sperm concentration and the progressive sperm motility were significantly decreased, the abnormal sperm rate was significantly increased in FA treated group when compared to control group. However, in group III, the epididymal sperm concentration and the progressive sperm motility were significantly increased, the abnormal sperm rate was significantly decreased compare with the FA treated group. In conclusion, harmful effects of FA on urinary system's parameters were prevented by treatment of lavender oil.

Key words: Formaldehyde, epididymis, lavender oil, testosterone, rat.

P-132

Immunohistochemical examination of the apoptotic effects of ritalin on heart tissue

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Ritalin (MPH, methylphenidate) is a dose dependent physiological agent that stimulates the motor activity and used for the therapy of hyperactivity disease. High dose use of the Ritalin increases the cardiac rhythm and ultrastructural lesions were observed also in myocardium. The purpose of this study is to determine dose dependent apoptotic changes of to cardiac muscle due to Ritalin administration with immunohistochemical methods.

In this study, 27 female Whistar albino rats, divided into three different dose groups (5 mg/kg, 10 mg/kg, 20 mg/kg) and their control groups, were used. Prepubertal (35 days) rats, as indicated in the literature, were treated orally with MPH dissolved in saline solution for 5 days per week during three months. At the end of the third month, after perfusion fixation, left ventricle of cardiac tissue was removed. After routine light microscopic follow up, indirect immunohistochemical staining was performed for Caspase 3, Caspase 9 antibodies and sections were evaluated in photo light microscope.

In control group, we observed a weak Caspase 9 immunoreactivity of the cardiac muscle fiber in some location and no reactivity in a group of cardiac fiber besides Caspase 3 reactivity of this group was less than the other antibody with a group of non reactive fiber. In a low dose Ritalin group, there was a little reactivity of Caspase 9 of the tissue overall and in cardiac muscle while Caspase 3 reactivity was less than the previous group. In the therapeutic Ritalin dose group, Caspase 9 immunoreactivity increased evidently then the previous group. We found diffuse immunoreactivity in cardiac muscle cell cytoplasm and strong reactivity increase in the connective tissue around the coroner arteries. Caspase 3 reactivity increase was similar to Caspase 9 reactivity of the same group. Also, there was no reactivity in some muscle fibers and in positive cells; reactivity was denser around the nucleus with increased reactivity of the sarcolemma. In high dose group, Caspase 9 immunoreactivity was observed in the majority of the cardiac muscle fibers. In

few fibers, the reactivity was dispersed and weak. Caspase 3 reactivity was similar to Caspase 9 reactivity in this group.

We found that the apoptotic changes in cardiac muscle fibers and connective tissue of coroner artery in rats increased with the dose dependently use of Ritalin. We believe that the high dose use of the Ritalin may cause to degenerative changes in cardiac muscle fibers and can negatively affect blood supply of the cardiac muscle.

Key words: Methylphenidate, ritalin, cardiac muscle, mitochondrion, immunohistochemistry.

P-133

Investigation of the effects of the dramamine and zofran used during gestation on the prenatal and postnatal morphometric development

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In our study, it was aimed to investigate the effects of the dramamine and zofran which are used on pregnant rats with an antiemetic purpose on the prenatal and postnatal morphometric development.

30 female Wistar albino rats were used in the study. Three groups were formed; group 1 (control, n:10), group 2 (dramamine, n:10), and group 3 (zofran, n:10). They were made pregnant, and right after the fertilization, the pregnant rats were administered dramamine at a dose of 115 mg/kg/day, intramuscularly (group 2) and zofran at a dose of 10 mg/kg/day, intraperitoneally (group 3) for a period of one week. No action was taken against the control group (group 1). Their weight and gestation periods were followed during the gestation. The number of newborn rat pups was determined. Cranium, thorax, skeleton, and extremity related morphometric growth parameters were measured on each newborn rats on the day of 0 and in the weeks of 1, 2, 3, 5, 7, 9, and 11 during the periods of neonatal and adolescence.

The weight of the rats in the dramamine and zofran groups were determined to increase less in proportion to the control group during the gestation period. Compared to the control group, morphometric parameter average of the rat pups was established to increase less in the dramamine group but more in the zofran group ($p<0,05$) from the day 0 to the week 11. In addition, when the data obtained in the weeks 7 and 11 were evaluated separately according to the groups, morphometric parameters were found to increase less in the dramamine group bur more in the zofran group compared to the control group ($p<0,05$).

Dramamine and zofran which are used during gestation were concluded to affect the morphometric development of fetus and neonates during gestation, neonatal and adolescence periods.

Key words: Development anatomy, pregnancy, antiemetic, fetal development, rat.

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Microscopic changes in the lung tissues of newborn rats whose mothers are exposed to methidathion during their pregnancy: the preventive effect of caffeic acid phenethyl ester

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Methidathion (MD) is an organophosphate insecticide used against pests of fruit trees, grapes, hazelnuts, olives, and rose fields. Previous studies determined that organophosphates pass through placenta and harm pregnants. Caffeic Acid Phenethyl Ester (CAPE) is an active component of honeybee propolis and its antiinflammatuar, antimicrobial, and antioxidant properties are widely known. This study examined microscopic changes in the lungs of newborn rats whose mothers somehow exposed to MD during their pregnancy, and the effects of CAPE on these changes.

Fifty Wistar albino rats were used in this study. Rats were divided into 5 groups as follows; Group 1: control group, Group 2: MD in the first 7 days of pregnancy, Group 3: MD + CAPE in the first 7 days of pregnancy, Group 4: MD in the last 7 days of pregnancy, Group 5: MD + CAPE in the last 7 days of pregnancy. MD 5 mg/kg/day is given with oral gavage while CAPE 10 micromole/kg/day is given by intraperitoneal injection. Newborn rats were decapitated on the third day after end of pregnancy and their lungs were dissected and put in formaldehyde 10%. Routine histological tissue examinations were then performed and preparats were examined by an optical microscope.

Microscopic examinations revealed peribronchiole inflammation, alveolar and bronchiole hemorrhage, intraparenchymal vascular congestion and thrombosis, alveolar destruction, and intraparenchymal infiltration in the

lungs of newborn rats whose mothers exposed to MD during their first and last period of pregnancy. It is observed that above pathologies were significantly reduced in experiment groups in which MD is given with CAPE in their first and last period of pregnancy.

This study revealed that various histopathological changes occurred in the lungs of newborn rats whose mothers are exposed to MD and, administration of CAPE has considerably ameliorated these pathologies.

Key words: Lung, rat, methidation, CAPE, histopathology.

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Formaldehyde alters E-cadherine density on nasoepithelium of rat; an immunohistochemical TEM study

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The irritable properties of formaldehyde inhalation for the nasal mucosa has been well - known. But its ultrastructural features has not been understood clearly. E-cadherine is a special protein for the desmosomes. In this study, we aimed to examine if formaldehyde inhalation causes deformation on the desmosomes of the nasal mucosa from immunohistochemical point of view. A total number of 20 adult female rats were used in this study. Rats were divided into two groups, experimental (n=10) and control (n=10). Experimental group was exposed to 15 ppm formaldehyde for 6h/day, 5days/week for 12 weeks. In both groups, at the end of experimental procedure, the animals sacrificed and nasal mucosa samples were taken for immunohistochemical procedures. Our examinations revealed that E-cadherine density was decreased in the experimental group compared to the control group. We think that, the decrease in the E-Cadherine density should be caused a desmosomal separation and finally to the death of the cell

Key words: Nasoepithelium, desmosome, E-cadherine, immunohistochemistry, rat.

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Ultrastructural examination of the effects of methylphenidate on heart tissue

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Methylphenidate hydrochloride (MPH, Ritalin) is a dose dependent physiological agent that stimulates the perception in healthy people and used for the therapy of hyperactivity disease. Ritalin has many reported side effects, including cardiac pathologies. Especially, researchers reported that the overdose of MPH affects the diastolic and systolic blood pressure. In addition, ultrastructural studies showed membranous changes and lesions in myocardium. The aim of this study is to determine the possible dose-dependent ultrastructural effects of MPH to the cardiac muscle.

In this study, 27 female Whistar albino rats, divided into three different dose groups (5 mg/kg, 10 mg/kg, 20 mg/kg) and their control groups, were used. Prepubertal (35 days) rats, as indicated in the literature, were treated orally with MPH dissolved in saline solution for 5 days per week during three months. At the end of the third month, after perfusion fixation, left ventricle of cardiac tissue was removed. Thin sections were collected and stained with uranyl acetate and lead citrate to photograph with Carl Zeiss 900 Electron microscope.

In control group, the cardiac muscle ultrastructural results showed that the myofibrils, nucleus, other organelles and intercalate discs were normal. In MPH applied group, dose-dependent loss of myoflaman, mitochondrial swelling and fusion were distinctive. In addition, mitochondrion shape disorder was significant. Increased number of mitochondrion, especially with high dose group, damaged the regularity of the myofibril and seemed to be placed between the myofilaments. The capillary basal membrane thickening was significant in high dose group

We observed evident dose-dependent structural changes of the cardiac muscle fibers especially in energy metabolism due to MPH administration. For this reason, we believe that the therapeutic doses of MPH must be kept in minimal.

Key words: Methylphenidate, cardiac muscle, mitochondrion, electron microscope.

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The effect of melatonin on experimental skin cold injuries

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Skin is an organ, which contacts mostly with the outer environment. In this respect, it is exposed to the cold excessively. The effects of the frostbite on the skin have been studied and many drugs for treatment have been tested for long years. The effects of the melatonin for the treatment of the tissue injuries have also been investigated in the recent years. The present study is performed to examine the effects of the melatonin on the frostbite of the skin.

4000-5000 gr. in weight 5 rabbit ears was used and the animals were investigated in three groups. 1/ Control group: The biopsy materials taken from the rabbit ears without any practice. 2/ Trauma group: The biopsy materials taken from the cold injured ears. 3/ Treatment Group: The biopsy materials taken from the rabbit ears, which were treated by melatonin after cold injury. The biopsy specimens of the second and third groups were taken from the center of the injury and they were evaluated by transmission electron microscope.

Key words: Skin, cold injury, melatonin, electron, microscopy.

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Changes in volumetric features of the kidney

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Obesity is a strong risk factor for renal failure especially in patients with diabetes and hypertension. Even lean persons with central body fat distribution are at risk of having a lower rate of glomerular filtration. An obesity-related glomerulopathy has been described. The etiology may be ascribed to the fact that adipose tissue is a source of hormones including angiotensinogen, renin and leptin that may well influence renal function and blood pressure. But possible mechanism of this failure is not known. In the current study, we aimed to effect of high fat diet induced obesity on kidney.

Within scope of this aim, the obesity model is performed on animals of the study group, (Sprague Dawley rats), by feeding them with a diet comprised highly of fat (30%), for a duration of 3 months. After kidneys are removed from all sacrificed rats, paraffin sections were prepared according to conventional histological process. Quantitative features of kidney were analyzed with Cavalieri method applied to serial paraffin sections.

BMI of the control group and the treatment group was 4.536 ± 0.221 kg/m^2 in the control group and 5.581 ± 0.42 kg/m^2, respectively. The statistical difference between BMI's of both groups was significant ($p<0.01$, Mann Whitney-U), suggesting that the animals fed a high fat diet may be overweight. Stereological examination of kidney showed differences in kidney weight, total kidney volume, volume of Cortex and volume of medulla.

Finally, a possible direct link exists between fat tissue metabolism and renal function which would be suggested to be able to reflect to quantitative anatomy of kidneys. Also this study indicates that diet induced obesity changes quantitative features of kidneys.

Key words: Obesity, high fat diet, kidney, stereology, Cavalieri method.

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Protective effects of the vitamin E on urinary bladder apoptosis in streptozotocin-induced diabetic rats

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Urinary bladder dysfunction is a recognized complication of diabetes mellitus (DM). This is thought to be partly related to altered bladder morphology as DM is associated with increased bladder weight. In DM, increased cellular proliferation is well established. However, there is evidence that in other pathological states affecting the urinary tract, altered apoptosis may also play a role. Therefore, we were used a rats model to investigate whether there are any changes in bladder apoptosis with DM.

Male Wistar albino rats were made diabetic using a single intraperitoneal injection of 65 mg/kg STZ. Rats were divided into four groups. The bladders were excised and weighed. Group A (n:8): Control, Group B (n:8): Diabetic control, Group C (n:8): Control + VE, Group D (n:8): Diabetic + VE. VE was injected 40 mg/kg/every other day intraperitoneally for 2 weeks. The TUNEL technique was used to detect and quantify apoptosis in all groups.

Diabetes was confirmed as this group had significantly ($P<0.001$) elevated serum glucose-compared to controls. The bladder weights were also significantly ($P<0.001$)

greater in the DM rats. There was no change at the control group rats. Apoptosis was significantly (P<0.001) decreased in the urothelial cells of the DM bladders. Structural changes in STZ-induced rats included increased apoptosis. The histopathological changes in the diabetic control groups were more significant compared to the control + VE and diabetic + VE groups. These results obtained with the antioxidant VE suggest that decreasing apopitosis in the diabetic bladder urethelial cells. VE treatment may be protective in diabetic bladder urethelial cells.

Our results show that DM is associated with increased bladder weight. Although this is associated with increased cellular proliferation, we have demonstrated that decreased apoptosis in diabetic rats bladder with using VE.

Key words: Vitamin E, urinary bladder, apoptosis, diabetes mellitus.

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Medicine and medical education in Mamelukes

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The mamelukes statehood was a Turkish statehood, which has dominated around Egypt and Syria on the years between 1250-1517, and it was established by Turkish originated slaves who captured management. So many scientists sheltered to their safeguard because of Mongol invasion and the crusiades and Kahire and Dimask cities have become to important cultures centers at the time. Qala'un hospital as one of the most important hospital in the world of it's own time many medrese were established and many doctors and veterians like İbn'un-Nefis, İbnü'l Kuf, İbn Ebi Usaybi'a have worked there. These scientists questioned Galen, Hippocrate, Avicenna and produced many writings on many subjects like anatomy, surgery, and eye diseases. It is clear from their writings that these scientists have played important role for the development of modern medicine.

Key words: Egypt, competency-based education, adolescent medicine, hospitals, scientist.

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An analysis of the urinary system chapter in our first modern anatomy book pressed

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Sanizade Mehmet Ataullah (1771-1826) learned the western medicine from foreign physicians of his time. He compiled his knowledge on anatomy in the book 'Miratü'l Ebdan fi Teşrih-i Azaü'l-insan'. This is the first modern anatomy book pressed. Urinary system is treated in the chapters of kidney (kilye), capsule (muhafazat el-sevda) and urinary bladder (mesane). Ureter is discussed in the kidney chapter. The external appearances and the internal structures of the organs are explained after their locations in the body. One striking feature of the book is the thorough treatise on the vasculature and the microstructure of the kidney.

We analyzed the similarities and the differences between the urinary system chapters between this book and the contemporary ones in this study.

Key words: Anatomy, urinary tract, kidney, urinary bladder, Sanizade.

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Analysis of the Turkish terms of foreign origin proposed as equivalents of anatomical terms

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The specific words that are used in science, arts and professions are called terms. From a historical perspective the origins of the scientific terms used in our country were from Arabic and Persian languages until 19th country, while they were of French descent after the Reform in 1839 and finally there were the efforts of generating terms based on Turkish etymon and affixes after the constitution of the Republic. But the deficiency of the proposed Turkish terms for the ones of eastern origin which are excluded from our vocabulary, the new concepts that emerged in western science and the tendency of some of the scientist to utilize foreign terms in order to compensate for this deficiency cause a situation hard to deal with.

We determined 19 Turkish anatomical and medical dictionaries as references in this study. Then we made a list of 1658 terms in Latin from Terminologia Anatomica to search for their equivalents 28.1% of the terms proposed in the dictionaries were of foreign origin as we analyzed them using the 'Contemporary Turkish Dictionary' of Turkish Language Foundation. Of these terms 44.8% were

from Arabic, 27.7% were from Persian, 19.3% were from French, 4.1% were from Greek, 1.7% were from Latin, 0.9% were from Mongolian, 0.6% were from Italian, 0.6% were from Armenian and 0.2% were from English languages. We claim that the efforts of generating Turkish equivalents for the anatomical terms must be expedited.

Key words: Anatomy, terminology, etymology, Turkish term, foreign term.

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Anatomy in seventeenth century

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A new philosophical science intellect had been started with Renaissance (15-16th century) and its impressions had continued in seventeenth (17th) century. In anatomy laboratories, important development had been advanced in macro (gross) anatomy by the coming out the importance of the dissection and by starting the examination of human body in certain organization. In this presentation, contributions to Anatomy Science in Europe, in 17th century and Anatomy Science in Ottoman Empire in 17th century had been investigated. Many basic data about the structure and system in human body had been discovered in 17th century. Basic microanatomy had founded by using microscope for tissue examination in first time in this century. It is predicted that Ottoman Empire physicians had been aware of the dissection studies and anatomy books from Europe in 17th century. Itaki had written first handwriting anatomy book in 1632 and Emir Celebi had emphasized the importance of the dissection. Seventeenth Century might be assessed as a century that macro (gross) anatomy had developed rapidly and microanatomy studies had already started.

Key words: Seventeenth century, macro anatomy, Renaissance, dissection, anatomy in Ottoman Empire.

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Eponym terms that used in eye anatomy

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Eponym terms are that used for referring to investigators who light the way for positive science by their investigations. Even if an international agreement in Paris Nomina Anatomica that ban the using of eponym terms, many scientist has continued the terms in today. Within the many diseases, many anatomical structures have been named by their eponyms. Ophthalmology is one of the sciences that eponyms have been used widely. The aim of this presentation is to name the eye structures according to anatomic terminology instead of eponyms. Determined 46 eponyms from the classic anatomy book about the eye were translated to the anatomic terminology. Furthermore, individual information was given about the investigators whose name is used very commonly as eponyms. To know the equivalent of the eponyms will be useful for the clinicians and anatomist who are interested in Eye anatomy.

Key words: Eponym, eye anatomy, ophthalmology, terminology, anatomic terminology.

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Anatomy in El-Kanun Fi't Tibb by İbn-i Sina

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El-Kanun Fi't Tıbb is the most important work of art in medicine of philosopher and physician İbn-i Sina. İbn-i Sina who is called Avicenna by European was born in Afsena near the Buhara in 980 AC. When he was sixteen years old, he had already learned almost all science of his period and he had became authority of medicine. He had acquired fame by treating the illness of sovereign of Samani; Nuh bin Mansur and he had continued his studies in rich library of palace. He had to move from Buhara after sovereign died. He had worked as a physician, counseling and vizier. He had commissions as an administrator, sometimes, he had gained enemy and he was imprisoned. He died in 1037 in Hamedan.

El-Kanun fi't Tıbb is a medical encyclopedia, consists of 1 million words. It was written by İbn-i Sina connecting the ancient Greek medical knowledge until his period and his own experience. Book was translated to Latin in 12. century as a name of Canon. Canon had 35 editions pressed and lectured as a medical book in medical faculty between the 15 and 17. century. "this book is consist of minimum data of a doctor must know" is written in preface of book

El-Kanun fi't Tıbb is consist of 5 books (main parts). Anatomy is in this part, in chapter five under the head of "nature and kind of organs". First part is named "basic of medicine". Organs are told under five subheadlines. 30 passages are about bones, 30 passages are about muscles, 6 passages are about nerves, 5 passages are effort arteries and 5 passages are effort veins.

The aim of this study is to investigate the anatomy data in El-Kanun fi't Tıbb, and to compare it by today's anatomy data.

Key words: El-Kanun fi't Tıbb, İbn-i Sina, anatomy, medicine, history.