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Instructions /Yazım Kuralları

Original Article

Use of natural herbal products in Kırıkkale, Turkey

Kırıkkale, Türkiye’de doğal bitkisel ürünlerin kullanımı

Selda Fatma BÜLBÜL¹, Gaye AŞIK¹, Nuray BAYAR MULUK^{2a}

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ABSTRACT

Aim: Although herbal products are widely used for different reasons in the community, knowledge on the diversity and side effects are not well known. In this study we evaluated the approaches and practices of adults for natural herbal products.

Material and Methods: The study group of this cross-sectional study was consisted of the mothers/fathers of the children admitted to the Kırıkkale University Pediatrics Department. The data was collected by the self-filled questionnaires consisting of 55 questions.

Results: A total of 409 persons, 108 (26.4%) male and 301 (73.6%) female were attended. The mean age of the participants was 35.35 (min 20, max 82) years and the average number of children they have was 2.29 and 70.7% had schooling for more than 8 years. Among all, 37.3% stated that they know at least one natural herbal product (herbal tea/natural drug). The most well-known among them were sideritis (55.1%) and green tea (29.7%). Over the last year 28.4% (14.3% more than one product) used herbals for themselves and 24% (8.7% more than one product) for their children. Cough was the most common complaint for herbal usage for themselves and their children. The usage of these products showed no difference according to sex, age and literacy levels ($P > 0.05$). Only a few of the participants stated that they had many benefits from these herbal products (21.2% for themselves and 22.4% for their children respectively).

Conclusion: Many of these applications, including the side effects, can change the effectiveness of traditional usage. We want to emphasize the importance of creating an awareness on potential benefits and/or harms of the herbal products not only for community but also among medical personnel.

Keywords: Children, parents, herbal medicine, health benefit

ÖZ

Amaç: Bitkisel ürünler toplumda farklı nedenlerle yaygın olarak kullanılmalarına rağmen, bu ürünlerin çeşitliliği ve yan etkileri bilgisi yeterli değildir. Bu çalışmada, erişkinlerin doğal bitkisel ürünlere yaklaşımları ve bu konudaki pratikleri değerlendirilmiştir.

Gereç ve Yöntemler: Bu kesitsel çalışmada, çalışma grubu, Kırıkkale Üniversitesi Çocuk Sağlığı ve Hastalıkları Bölümü’ne başvuran hastaların anne/babalardan (n=409) oluşmuştur. Veriler, kendilerinin doldurduğu ankette sorulan 55 sorudan elde edilmiştir.

Bulgular: Tümü içinde, %37,3’ü, en az bir bitkisel ürünü (bitkisel çay/doğal ilaç) bildiğini belirtmiştir. En iyi bilinen ürünler adaçayı (%55,1) ve yeşil çaydır (%29,7). Geçen yıl %28,4’ü kendileri için (%14,3’ü birden fazla ürün) ve %24’ü çocukları için (%8,7’si birden fazla ürün) bitkisel ürün kullanmıştır. Kendileri ve çocuklarında bitkisel ürün kullanımı için en yaygın nedenler öksürük idi. Bu ürünlerin kullanımı, cinsiyet, yaş ve okuryazarlık düzeylerine göre farklılık göstermemiştir ($P > 0,05$). Katılımcıların sadece bir kısmı, bu bitkisel ürünlerden çok fayda gördüklerini belirtmişlerdir (sırasıyla kendileri için %21,2 ve çocukları için %22,4).

Sonuçlar: Bu uygulamaların birçoğu, insanlara zarar vermek de dahil olmak üzere, geleneksel tedavinin etkinliğini değiştirebilir. Biz, bitkisel ürünlerin kullanımı, potansiyel yararları ve/veya zararları konusunda, sadece toplumda değil, aynı zamanda sağlık çalışanları arasında farkındalık yaratmanın önemini vurgulamak istiyoruz.

Anahtar kelimeler: Çocuklar, ebeveynler, bitkisel tıp, sağlık yararlılığı.

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Introduction

Herbal natural products are confronted as a part of complementary and alternative medicine (CAM). Herbal product is termed as the whole or components of (leaf, root, stem etc.) one herb or a product that forms from multiple herbs, meanwhile herbal drug is defined as medical product and ready-made drug that comprise of herbal drug extracts as the sovereign and produced via good manufacturing product rules [1].

Usage of phytotherapy was confronted as a part of medicine in ancient history, especially in shamanism. In reports, it was realized that the first western-style herbal products were being used in 3000 BC (Bronze age) and also bay leaf, cumin and thyme were used as a treatment material in Sumerians. First known medical herbs book was published in Chinese at 2700 BC and it could also be seen as early as 300 BC, on Hippocrates's suggestions about the necessity of the protection of health which was based on relaxation, proper diet and simple herbs [2,3]. Nowadays, herbal products help million people on protection and promotion of health all around the world. Moreover, in some countries they are the only source of the health system. Reports of World Health Organization (WHO) show that 70-80% of the world population, where developing countries and native societies (Africa) are especially included, use or benefit from this products of the primary health care applications [4-6]. Hospital-based studies conducted in Turkey showed that a considerable amount of these products were being used. For instance, a study held in Uludağ University revealed that 42.2% of the mothers whose kids were suffering from a kind of chronic diseases, used at least one CAM method and herbal products were on the first line [7]. Another study which is conducted in South-East Anatolia, showed that the rate of CAM usage was 58.6% (among all methods herbal product usage was 82.7%) [8].

Utilization of herbal products that have uncorroborated health effect/risks, may result in unsolicited status. In terms of pharmacognosy, proper collection of the herb, detection of an active substance, surveillance of heavy metal and microbes and proper information about to use are so important and if a failure to comply these procedure occurs, there will be loads of health risks, as notified. Because of having phytochemical substances, direct damage of herbal products are hypertension, prolonged bleeding time and potential drug/product interactions [9]. However, many families use these products in their children treatments just because they don't want to use medical drugs or they have beliefs that herbal products are useful than the medical drugs.

Utilization of these products are common in population, however population has no sufficient information about diversity, side effects and damages of these products. Therefore, the aim of this study was to evaluate the approaches and practices of adults for natural herbal products.

Material and Methods

This cross-sectional study was conducted between August 2013 and February 2014 according to the rules outlined in the Declaration of Helsinki. Participants of the study were mother/fathers and/or the person whom were accompanied with the children, those applied to the Kirikkale University Hospital, Pediatrics Policlinics. Data were collected by a self-filled questionnaire containing 55 questions. An information about this study was given to the parents, and those who accepted to participate, filled the form with the guidance of researchers. The questionnaire was consisted of 22 questions about the socio-demographic status, 12 questions about the vitamin usage and 21 questions about CAM. Data were evaluated in SPSS 16.0 programme. Descriptive statistics and chi-square tests were used for the analyses and limit of significance was accepted as $P < 0.05$.

Results

Demographic features

Four hundred and nine participants, 108 (26.4%) male and 301 (73.6%) female were attended to this study. Average age of the participants was 35.35 (range: 20-82) and the average number of children they had was 2.29 (Table 1). 82% of the group can satisfy their daily needs. Among all, 49.1% had 8 years and under schooling.

Table 1. Demographic characteristics of the study group

	n	Minimum	Maximum	Mean \pm SD
Age	409	20.00	82.00	35.35 \pm 9.21
Number of children	409	1.00	7.00	2.29 \pm 0.95
House members	409	1.00	13.00	4.11 \pm 1.39

69.2% of the group members indicate that they don't have any health problems, moreover, 68.2% of the group members also indicate that their children don't have any health problems.

Status of herbal products usage and influencing factors

62.5% of the group members were accepting themselves as normal weighted, 9.7% as thin and 27% as overweight/obese. Among all, 53.7% were satisfied with their body image. 6.2% of the members were using herbal products to lose weight. There was no significant difference between the parent's acceptance of their body image.



In the recent year, 28.4% of the research group members (14.3% for >1 product) used a herbal product for themselves and %24 (%8.7 for >1 product) for their children. Cough was the main cause for using herbal products both for themselves and their children (Table 2). There were no significant differences between the usage of herbal products and variables such as age group, sex and education level ($P > 0.05$). Mothers and/or mother in laws were the group who advised to use these products mostly (23.8% and 32.1% respectively). These products were recommended by the doctors in 16.4% of participants for their children and in 14.7% for themselves. Among those who used the herbal products for themselves only 29.3% mentioned this to their doctors. When only the health workers taken into account, 26.2 % of them used herbal products once or twice for themselves and 15.5% for their children. There was no significant relationship between the usages of herbal products and being a health worker or not (Table 3). Only a few of the participants stated that they had great benefit from these herbal products (21.2% for themselves and 22.4% for their children respectively) (Table 4).

Table 2. Reasons for using the herbal product in research group for

Reasons for using the product	For themselves n%	For their children n%
Cough	52.0	60.6
Constipation	13.2	11.5
Headache	6.2	0.6
Gas pains	1.8	6.1
Diarrhea	4.0	6.1
Stomachache	2.6	3.6
Dental problems	0.2	2.4
For reducing fever	0.0	2.4
For decreasing blood pressure	4.8	0.0

Table 3. Relationship between sex and profession with reason for using herbal products in the research group

	Treatment of health problem		Stress reliever / relaxant		Loss of weight / care		P
	n	%	n	%	n	%	
Sex							
Male	46	97.9	0	0.0	1	2.1	$\chi^2 = 5.282$ $P = 0.071$
Female	145	85.8	4	2.4	20	11.8	
Profession							
Doctor/nurse	42	93.3	0	0.0	3	6.7	$\chi^2 = 1.755$ $P = 0.416$
Other	155	87.1	4	2.2	19	10.7	

Table 4. Rates for using herbal products in research group and statement of benefit*

	For themselves		For children	
	n	%	n	%
I used herbal products	105	28.4	80	24.0
Not even beneficial	41	17.4	26	15.8
Yes, but limited benefit	134	56.8	97	58.8
Yes, very useful	50	21.2	37	22.4

*The missing values were not included

37.3% of research group indicated that there was a natural/herbal drug/product/tea that would be beneficial for health. The most known herbal products were sage (55.1%) and green tea (29.7%). However, majority of the study group answered the questions related to the knowledge as "I do not know" or mentioned the unexpected answers (Table 5). Among all, 53% stated that these products might have side-effects, whereas only 8.5% apprise that these products would have no side effects.

Table 5. Ideas about herbal products in the research group

	Yes		I don't know		No	
	n	%	n	%	n	%
Do the herbal products interfere with medical drugs?	101	26.1	225	58.1	59	15.8
Because of having a natural trait, it won't be a problem using these products	103	26.8	163	42.3	117	30.9
These herbal products may be harmful to health	205	53.0	149	38.5	33	8.5

Majority of the group (58.1%) answered the question "Do the herbal products interfere with medical drugs?" as "I don't know" 26.1% as yes and 15.8% as no.

Discussion

It has been thought that there is an increased tendency in using herbal products in recent years. Individual factors such as tendency in "individual problem solving" [10], increase in the perception that "the herbal products would not give harm to health as they are natural" [11] are the factors effecting the usage to these products. However, within the changing world the increase of investing in CAM area including herbal products, may have influence the growing use of these yields [12]. United States of America (USA) spends 60 billion dollars for this sector every year [13]. Herbal products are used as medicament (drug) and they are offered to the society by people and/or foundations which have no well-described "competence". As the mass-media found this topic very attractive and separate huge place for it, the interest of the community increases. Promotion and sale campaigning on the radios, exaggerated natural/harmless expression on the TVs and nearly "prescribed", articles which are published on the newspaper supplements may help people to use these products.

Frequencies of usage for these products may vary across populations. A study from Malaysia with 1601 subjects, showed that 33.9% of the participants were using these products [14]. In a research in Turkey among 120 cancer patient under-18 years of age, the rate of using a method of CAM at least once was 73.3% [15]. According to the WHO 2013-2014 strategy plan, there was no significant difference in utilization of traditional methods between the countries, where the reason for the usage differed [6]. For instance, traditional methods were the only health system option for African countries, whereas, countries like Singapore and South Korea that the western approach is well-established, 76-86% of the population were still using traditional methods [6].

Heuschkel, et al [16] showed that, 41% of the children and adolescents in USA and United Kingdom (UK) were using supplementary and alternative products which are mostly megavitamins, diet supplementary and herbal products. In Saudi Arabia, it was shown that, 65% of the women participants were using these products for themselves and 42% for their children [17]. Unlike from the others, consumption of herbal products in our study group was lower 28.4% (14.3% more than one product) for themselves and %24 (%8.7 more than one product) for their children, respectively.

In a study performed in USA, with 45,748 participants aged 50-75 years, found out that, most of the herbal product users were women in old ages, with higher state of education and with normal body mass index (BMI) compared to the others [18]. In our study, there was no significant differences between usage of herbal products and confounders like age group, sex and education level ($P > 0,05$).

A considerable amount of herbal products are being used in communities. The most common reasons to use these products in children were as follows; teething and colic problems of babies, menstrual and behavioral disorders in puberty, nutrition disorders such as obesity/anorexia, respiratory tract disorders, sleeping disorders, mood disorders such as depression and hyperactivity and allergic problems such as eczema and asthma [1]. A study from Italy conducted among 4 to 16 years old children demonstrated that for 76% of the children with head-ache alternative methods were used, especially herbal products (64%) [19]. Our results revealed that, 29.6% (%10.3 more than one product) of the group members used natural products for their children, where cough and constipation were the main causes both for adults and children (Table 2). Headache compromised only 0.6% of the reasons in our study. Unlikely our results, another study from Turkey revealed that 87% of the families from low socioeconomic areas use CAM for healing and the main cause for usage was constipation like our results [20].

Utilization of herbal products that have uncorroborated health effect/risks, may result in unsolicited status. Herbal products

can lead to toxicity, if it would interfere with the drugs used. It is declared that, approximately 100,000 deaths/year are caused because of this reason [21,22]. Clinical trials which is related with a well-known herbal product, St. John's Wort (*Hypericum perforatum* in Latin, named as tutsan, blood root, klammathweed in populations), emphasized the interference of this product with many drugs, such as alprazolam, amitriptyline, atorvastatine, chlorzoxazone, cyclosporine, debrisoquine, digoxin and erythromycin (could decrease the plasma concentration and/or increase the clearance). In accordance with this statement, a Taiwan study conducted with 424 patients who had renal disease showed the increased risk by chronic usage of herbal products [23].

Although side effects of herbal products are proven in various studies, people have no sufficient information about this topic. When the answers of the question "Do the herbal products interfere with medical drugs?" were analyzed, overwhelming majority of the research group (58.1%) gave the response of "I don't know"; where 15.8% answered as "No". These results led us to emphasize the importance of consulting an expert before using any of the herbal products to be protected its potentially harmful effects, and to raise awareness among community (health workers included) to restrain auto-treatment. Moreover, modern medicine performers should also take into consideration this situation while assessing their patient.

Although there are some reports about the herbal drugs' negative effect on health, there was no difference between health workers and the other study attendants in using these product (Table 2). 26.2 % of the health workers used them once or twice for themselves and 15.5% for their children in their life time. In accordance with our result a study in USA among doctors and nurses (HCP Impact Study), demonstrated the chronic usage of these products in 72% of the doctors and 59% of the nurses [24].

The increased usage of the herbal products that are believed to be therapeutic traditionally in the western world and putting them into the market as a drug preparation, has led the attention of professionals working in the field of preventive health care on this issue. Despite the potential benefits and toxic effects of these products, as a rapidly developing sector, their widely usage was highlighted by different authors not only in our country but also other parts of the world [25]. People from every walk of society use these products for their children or themselves, however, when they apply to a health center for any reason, they usually do not mention using them and moreover, health workers do not question it.

Limitations of the Study: Our study was performed in one of the cities of Turkey and a question may arise that just one city could not to reflect the whole Turkey. However, Kırıkkale city has the biggest oil refinery in Turkey, many factories and industrial centers so has receiving many immigrants from other cities in Anatolia for years, which might be an homogenous sample.



As consequences, majority of CAM practices are not investigated sufficiently and the amount of herbal products used for children are generally unknown. While the options of CAM increase, we have to know more information about these treatment methods for guiding properly both families and health workers.

Declaration of conflicting interests

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■ Original Article

Impact of childhood obesity on cardiac structure and functions*Çocukluk çağı obezitesinin kardiyak yapı ve fonksiyonlara etkisi*Fatih ATİK¹, Cihat ŞANLI², Ayça TÖREL ERGÜR³, Ayşegül ALPCAN^{4a}¹Türkiye Yüksek İhtisas Training and Resarch Hospital, Department of Pediatric Cardiology, Ankara²Kırıkkale University, Faculty of Medicine, Department of Pediatric Cardiology, Kırıkkale³Kırıkkale University, Faculty of Medicine, Department of Pediatric Endocrinology, Kırıkkale⁴Kırıkkale University, Faculty of Medicine, Department of Pediatrics, Kırıkkale, TURKEY**ABSTRACT****Aim:** The aim of this study was to compare the left ventricle structure and its functions in obese children without established complications and none obese children.**Material and Methods:** Anthropometric and conventional echocardiographic parameters of cardiac geometry and left ventricular function were obtained in 40 obese children without any other disease and complication of obesity like hypertension, hypercholesterolemia, and a control group of 40 healthy lean. Fasting plasma glucose, insulin levels were obtained and homeostatic model assessment of insulin resistance (HOMA-IR) were calculated.**Results:** Height, weight, body surface area and body mass index (BMI), were found significantly higher in the obese group ($P < 0.001$). Insulin and HOMA-IR scores were higher in obese group. No significant differences were observed for left ventricular systolic and diastolic diameter ($P > 0.05$). Left ventricular mass (LVM), LVM/ht, LVM/BMI and relative wall thickness (RWT) were significantly increased in obese children than the controls ($P < 0.001$) and most of them had eccentric left ventricular (LV) hypertrophy. Ejection fraction was significantly decreased seen obese group. A positive correlation was seen between BMI and LV posterior wall thickness and interventricular septal thickness ($R > 0.45$, $P < 0.05$). Both types of hypertrophy were seen in insulin resistant obese group.**Conclusion:** The known causes are altered homeostatic and neurohumoral mechanisms and compensation of higher metabolic demands and increased left ventricular mass, reduced myocardial performance due to hemodynamic load associated with higher cardiovascular morbidity and mortality rates.**Keywords:** Pediatric obesity, ventricular dysfunction, echocardiographyCorresponding Author^a: Ayşegül ALPCAN, MD, Kırıkkale Üniversitesi Tıp Fakültesi, Pediatri Anabilim Dalı, Kırıkkale, TURKEY.

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ÖZ

Amaç: Bu çalışmada nonkomplike obez ve obez olmayan çocuklarda sol ventrikül yapı ve fonksiyonların karşılaştırılması amaçlandı.

Gereç ve Yöntemler: 40 sağlıklı obez olmayan ve obezitenin komplikasyonu (hipertansiyon, hiperkolesterolemi vs) veya başka bir hastalığı olmayan 40 obez çocukta kardiyak geometrinin antropometrik ve konvansiyonel ekokardiyografik parametreleri ve sol ventrikül fonksiyonu elde edildi. Açlık plazma glukozu ve insülini bakılıp insülin direnç parametresi (HOMA-IR) hesaplandı.

Bulgular: Boy, ağırlık, vücut yüzey alanı, vücut kitle indeksi obez grupta anlamlı olarak yüksek tespit edildi ($P < 0,001$). İnsülin ve HOMA-IR obez grupta yüksekti. Sol ventrikül sistolik ve diyastolik çapları arasında fark tespit edilmedi ($P = 0,05$). Sol ventrikül kitlesi (LVM), LVM/ht, LVM/BMI, rölatif duvar kalınlığı (RWT), obez çocuklarda kontrol grubuna göre oldukça artmıştı ($P < 0,001$) ve bunların da en önemli olanı ekzantrik sol ventrikül hipertrofisiydi. Ejeksiyon fraksiyon belirgin olarak azalmıştı. BMI, LV posterior duvar kalınlığı ve interventriküler septal kalınlık arasında belirgin korelasyon görüldü ($R > 0,45$, $P < 0,05$). İnsülin rezistan obez grupta hipertrofinin her iki tipi de görüldü.

Sonuçlar: Değişen homeostatik ve nörohumoral mekanizmaların, yüksek metabolik ihtiyacın kompensasyonunun artmış sol ventrikül kitlesi, azalmış myokardiyal performans hemodinamik yük sebebi olduğu, bunun da yüksek kardiyovasküler morbidite ve mortalite oranları ile ilişkili olduğu biliniyor. Değişmiş homeostatik ve nörohumoral mekanizmalar, artmış metabolik gereksinimler, artmış ventriküler kitle, azalmış myokardiyal performans hemodinamik yol ile ilişkili olarak kardiyovasküler morbidite ve mortalite oranlarını artırmaktadır.

Anahtar kelimeler: Çocukluk çağı, ventriküler disfonksiyon, ekokardiyografi

Introduction

Childhood obesity is recognized as a global health care problem especially in developed countries [1,2]. The American Heart Association stresses the importance of obesity as an independent but modifiable risk factor for coronary artery disease, ventricular dysfunction, congestive heart failure and cardiac arrhythmias [3,4]. There is an increasing prevalence of childhood obesity which is in association with left ventricular dysfunction in adults [5-7].

Several studies revealed that obesity, when complicated with hypertension, hyperlipidemia and insulin resistance results in cardiac dysfunction due to ventricular hypertrophy and chamber enlargement increase cardiovascular mortality and morbidity [8-10].

The aim of this study is to investigate the impact of uncomplicated obesity on ventricular morphology and functions in pediatric age group.

Materials and Methods

Study Group

The investigation was performed on 40 obese children (19 females, 21 males, mean age 12.21 ± 1.14 years) and a control group of 40 healthy children (18 females, 22 males, age 11.67 ± 1.63 years). This prospective study was conducted in accordance with the principles of the Declaration of Helsinki (1975). Exclusion criteria included patients with congenital or acquired heart disease, obesity complicated with obvious hypertension, hyperlipidemia and obesity caused by secondary reasons. The study protocol was approved by the local research ethics committee and an informed consent was taken from all subjects.

Assesment

A wall mounted stadiometer and a mechanic scale used to measure heights and weights. Body mass index (BMI) was calculated using the formula; $BMI = \text{weight(kg)}/\text{height(m}^2\text{)}$. BMI

for age percentile charts for Turkish Children were used [11].

Children above %95 percentile for sex and age were accepted as obese according to the National Center for Health Statistics [12]. Serum fasting glucose and fasting plasma insulin were obtained from all objects. HOMA-IR was calculated for assessing the insulin resistance by the formula; $HOMA-IR = [\text{fasting insulin } (\mu\text{U/ml}) \times \text{fasting glucose (mmol/L)}] / 22,5$ [13].

Echocardiographic Examination

All subjects underwent two dimensional and M-mode echocardiographic examination using a VIVID 7 machine (GE, Vingmed, Norway) equipped with 3 and 5 Mhz Sector probes. The dimensions of left ventricle (LV) were obtained at end-diastole and systole, from M-mode traces, using the recommendations of the American Society of Echocardiography [14].

Measurements of LV dimensions and wall thicknesses were made on 2D parasternal long-axis views according to American Society of Echocardiography standards. LV mass was calculated using an autopsy-validated formula and indexed for height^{2.7} [2,15-17]. Left ventricular mass was calculated using the Devereux Formula as $LVM = 0.8 [1.04(IVSd + LVDD + LVPWd) + (LVDd)^3] + 0.6$ [15]. LVM was divided to body surface area (BSA) to obtain LVM index (LVMI) [16-18].

The relative wall thickness (RWT) was calculated as: $RWT = [2 \times LPWth] / [LVED]$ where PWth = posterior wall thickness at end diastole, LVED: LV end diastole diameter [18].

Statistical Analyses

Statistical analyses were performed using statistical package for social sciences software (SPSS inc., Chicago, Illinois, USA) for Microsoft Windows Operating system. Data are presented as mean \pm standart deviation (SD) for variables. A P value smaller than 0.05 was considered statistically significant. A pearson linear regression analysis was used to corralate multiple echo variables and independent variables.

Results

Forty obese children with a mean age of 12.21 ± 1.14 years and 40 healthy children with a mean age of 11.67 ± 1.63 years were recruited in the study. Body mass index in the obese group (24.87 ± 2.78) was evidently higher than the control group (15.41 ± 1.89). Furthermore, compared to the control group, height, weight, and body surface area were found significantly higher in the obese group ($p < 0.001$). Mean fasting plasma insulin was 18.32 ± 4.67 mIU/ml and mean HOMA-IR was 2.73 ± 1.25 in obese group (Table 1).

Variable	Obese subjects mean \pm SD	Non-obese subjects mean \pm SD	P value
Male/female	21/19	22/18	0.35
Age (years)	12.21 ± 1.14	11.67 ± 1.63	< 0.001
Height (cm)	143.8 ± 1.5	131.6 ± 1.7	< 0.001
Weight (kg)	56.45 ± 14.12	28.62 ± 11.22	< 0.001
BMI (kg/m ²)	24.87 ± 2.78	15.41 ± 1.89	< 0.001
BSA (m ²)	0.056 ± 0.008	0.0364 ± 0.005	0.026
Glucose, mg/dl	92.22 ± 9.86	84.117 ± 6.75	
Insulin, mIU/ml	18.32 ± 4.67		
HOMA-IR	2.73 ± 1.25		

S: Statistically significant ($P < 0.05$), NS: Statistically non significant ($P > 0.05$)

According to M-mode echocardiography results, the difference between systolic and diastolic thicknesses of IVS and LVID and LVPW diastolic thickness in the obese group was seen at an advanced level compared to the control group ($P < 0.001$).

No difference was observed between both groups for LVID systolic and diastolic diameter and LVPW systolic thickness ($P > 0.05$). LVM, LVM/ht2.7, LVM/BSA and RWT were significantly greater in obese children than the controls ($P < 0.001$) (Table 2).

Variable	Obese subjects mean \pm SD	Non-obese subjects mean \pm SD	P value
IVSd	1.33 ± 0.67	0.82 ± 0.31	< 0.001
IVSs	1.32 ± 0.43	0.93 ± 0.21	< 0.001
LVIDd	3.87 ± 0.66	3.81 ± 0.57	0.47
LVIDs	2.58 ± 0.31	2.23 ± 0.46	0.44
LVPWd	1.21 ± 0.45	0.66 ± 0.23	< 0.001
LVPWs	1.78 ± 0.65	1.23 ± 0.32	0.036
EDV	76.45 ± 23.67	61.47 ± 20.71	0.029
EF (%)	64.57 ± 6.24	70.66 ± 4.67	< 0.001
FS	32.24 ± 5.57	41.23 ± 4.43	< 0.001
LV mass (LVM) (g)	187.45 ± 62.21	87.43 ± 47.25	< 0.001
LVM/height(ht) index (g/m) (z)	128.34 ± 41.13	65.56 ± 25.54	< 0.001
LVM /height2.7 index (g/m ^{2.7})	127.23 ± 43.21	23.54 ± 11.43	< 0.001
LVM/BSA (g/ m ²) (k)	3546.32 ± 654.92	2278.45 ± 757.54	< 0.001
RWT	0.72 ± 0.45	0.43 ± 0.78	0.001

Fractional shortening (FS) value was 32.24 ± 5.57 in the obese group, and 41.23 ± 4.43 in the control group. The difference was found significant ($P < 0.001$). Ejection fraction in obese children was significantly decreased compared to the control group (Table 2). Only eighteen of 40 obese children had $RWT \geq 0.41$, thus most of them had eccentric LV hypertrophy. Although the RWT in obese subjects were higher than in the control group, it was below the critical level reported for concentric remodeling. LVM, LVM/ht2.7 and RWT were correlated with BMI ($R = 0.60$, $P < 0.001$, $R = 0.49$, $P < 0.01$, $R = 0.46$, $P < 0.01$, respectively). Also a positive correlation was seen between BMI and LVPWd, IVSs, and IVSd ($R > 0.45$, $P < 0.05$) (Table 2). There were no correlation found between the types of hypertrophy and insulin resistance in the obese group.

Discussion

Obesity is becoming a major metabolic health problem especially in industrialized and developing countries in last two decades (19). The excessive adipose tissue, the major determinant of obesity in which accepted as an endocrine tissue, alters hemodynamic balances and increases cardiovascular morbidity and mortality by disturbing systemic resistance was highlighted by several investigators [3,4,20-24].

In a recent study about childhood obesity, Zeybekal [5] showed that LVM and LVMI increase, eccentric type of ventricular hypertrophy and diastolic dysfunction which are the major sequela of altered hemodynamics caused by increased systemic resistance and preload pressure. Many metabolic disturbances like dyslipidemia and insulin resistance worsen the clinical outcome. Nearly a great majority population of investigations about obesity and cardiovascular changes include obese people complicated with hypertension and dyslipidemia. Some papers conclude that obesity itself alone is not a cause of cardiovascular changes either functional or geometric [2,5,10,21-24].

Obesity, increasing left ventricular filling pressure and volume, negatively impacts left ventricular functions, and causes to dilation of the ventricles. Left ventricular volume proportionally increases with the stress on the ventricle wall. Consequently, myocardium adapts to obesity by increasing its mass. The end of this procedure results in left ventricular hypertrophy.

Researches indicated that there was a significant correlation between obesity and left ventricular mass. After weight loss, they showed that left ventricular wall thickness and left ventricular mass decreased. They suggested that, independent from blood pressure, weight lost by mild exercise and low-calorie diet decreased left ventricular mass in obese people [5]. In the present study left ventricular mass



in obese patient group was evidently higher than control group despite the evidence of obesity complications such as obvious hypertension, dyslipidemia ($P < 0.001$) (Table 1, 2). The correlation between BMI, LVM and left ventricular mass index were significant. Moreover, the correlations between body mass index and left ventricular mass, and left ventricular mass corrected for height were determined to be significant.

As in our study, echocardiographic studies showed that left ventricular end diastole diameter and septal and posterior wall diameters were higher in obese people [3,17,18]. The adaptation of heart to obesity is concentric and eccentric type hypertrophies. When the blood pressure remains normal, obesity causes eccentric type hypertrophy in left ventricle [17,21,30]. As seen in literature, in our study, RWT of the obese group was detected significantly higher than the control group ($P = 0.001$). In addition, children with eccentric hypertrophy findings in left ventricle were seen in the obese group.

This may partially be explained by the effects of hemodynamic load which causes increase in ventricular wall thickness and diastolic dysfunction [22,25-27]. Some investigators showed that macrophage recruitment in the adipose tissue enhance the release of adipokins and further derangement of metabolic – neurohumoral homeostasis such as water and electrolyte imbalance, sodium retention, insulin resistance and growth stimulation of insulin resulting in cardiovascular geometric and functional remodeling [22,25-27].

In our study the obvious signs of pressure effects, metabolic changes like dyslipidemia and electrolyte imbalance was eliminated from the obese group. Thereby the geometric and functional alterations suggested us different mechanisms such as the oxidative stress triggering obesity related cardiovascular injury for these changes [25,27]. Insulin resistance, high insulin levels and growth stimulating effect may be the explanation but limited data showed that insulin resistance in normotensive and non – diabetic people was directly associated with an increase in left ventricular mass [13,20,25].

Obese hypertensive patients mostly have eccentric LV hypertrophy and the ventricular chamber sizes change in between high-normal to mild dilated. In normotensive obese patients, eccentric type of LV hypertrophy was the principal LV geometric abnormality and present findings are compatible with the presence of cardiac volume overload [22,27]. In contrast, concentric left ventricular hypertrophy, a result of increased afterload were more common in non-obese hypertensive patients (Table 2). In logistic analysis, body mass index (BMI) was the most potent predictor of increased LV mass/height 2.7 in both sexes exceeding the effect of blood pressure [22]. Our

findings in concordance to other investigations suggesting the relationship between obesity and abnormalities in cardiac structure, but we could not exactly clarify why some of the subject had concentric remodeling without hypertension. The explanation can be the misdiagnosis of hypertension or the effect of high plasma insulin levels.

Framingham Heart Study points out the risk of heart failure in obese individuals was increased approximately two fold. They follow-up a cohort of 13,643 patients for 19 years and found out that overweight is an independent risk factor for the heart failure [28]. In contrast of the previous knowledge, some recent studies reported no correlation between obesity and LV systolic dysfunction [29,30]. In our study the results related with LV systolic dysfunction in some obese patients are compatible with the studies identifying mild LV systolic dysfunction. This may be related with the echocardiographic assessment technique and more sensitive manners need to detect the LV functions [31].

In this study, obese children both have eccentric and concentric remodeling and decreased systolic and diastolic function. These abnormalities in LV structure and function may have important implications in explaining the myocardial dysfunction associated with obesity and increased cardiovascular sequela. In conclusion, childhood obesity is of great importance for its negative impacts extends to future ages and lays a ground for cardiovascular complications in future life.

Limitations of our study are no complete data for cytokines, leptin, sympathetic nervous system, renin–angiotensin–aldosterone system activity and long term blood pressure measurements.

These data can give us useful information about the underlying causes of alterations related with obesity discussed above. Thus, further investigations designed with larger number of patients will be essential confirming and explaining the clinical implications of the findings in this study.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

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■ Orijinal Makale

The relationship between physical performance and oral and dental health in child athletes

Çocuk sporcularda fiziksel performans ile ağız ve diş sağlığı arasındaki ilişkinin değerlendirilmesi

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ABSTRACT

Aim: Poor oral hygenia status affects nutrition and sleep in children and it is reported to have a negative influence on growth and development. Therefore, similarly it may negatively affect young athletes' performance in sports activities. The aim of this study is to evaluate the relationship between oral hygenia and athletic performance in child athletes from the Sports Academy of Kırıkkale University.

Material and Methods: Decayed Missing Filled Teeth index (DMFT) scores were recorded for each subject and sports performance tests were performed.

Results: The agility (Tdrill, Zigzag, 505, LCDT) and short sprint (10m, 20m, 30m best) tests conducted in this research showed that athletes whose DMFT values were over 3 were more successful than athletes whose DMFT values were equal or more than 3 ($P < 0.01$). Moreover, the results from Bosco test revealed that athletes whose DMFT values less than 3 were significantly more successful ($P < 0.01$). Also a correlation between DMFT values and results of the performance tests were found.

Conclusion: These results highlight the importance of informing young athletes regarding oral health.

Keywords: Oral hygenia, DMFT index, child athletes, agility tests, physical performance

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ÖZ

Amaç: Kötü ağız hijyeninin çocuklarda beslenme ve uykuyu etkilediği ve büyüme-gelişim üzerinde olumsuz etkileri olduğu bildirilmiştir. Bu durum çocuk sporcuların sportif aktiviteler sırasındaki başarısını da olumsuz yönde etkileyebilir. Çalışmamızın amacı Kırıkkale Üniversitesi Spor Akademisindeki çocuk hastaların atletik performansları ile ağız sağlığı arasındaki bir ilişki olup olmadığının değerlendirilmesidir.

Gereç ve Yöntemler: Araştırmaya katılan tüm çocuklara ait "Decayed Missing Filled Teeth index" (DMFT) skorları kaydedilmiş ve spor performans testleri uygulanmıştır.

Bulgular: Uygulanan çeviklik (Tdrill, Zigzag, 505, LCDT) ve "short sprint" (10m, 20m, 30m best) testleri, DMFT değerleri 3'ten düşük olan sporcuların, DMFT değerleri 3 ve daha yüksek olan sporculara göre istatistiksel olarak daha başarılı olduğunu göstermiştir ($P < 0,01$). Bosco testi sonuçlarına göre de DMFT değeri 3'ten daha az olan sporcuların istatistiksel olarak daha başarılı olduğunu göstermiştir ($P < 0,01$). Ayrıca, DMFT skorları ve performans testi sonuçları arasında korelasyon varlığı tespit edilmiştir.

Sonuçlar: Bu sonuçlar çocuk sporcuların ağız sağlığı konusunda bilgilendirilmelerinin önemini ortaya koymaktadır.

Anahtar kelimeler: Ağız sağlığı, DMFT indeksi, çocuk sporcular, çeviklik testleri, fiziksel performans

Introduction

Muscle power and strength are of primary importance for athletes and proper nutrition as the source of energy is crucial, thus optimal dental health is necessary for these individuals [1-3]. In recent years, a negative relationship between nutritional status and oral health in children was reported by several studies [4-6]. It was reported that severe dental caries negatively affects the quality of life in children [7] and children with severely decayed teeth had lower weight and height, indicating malnutrition and growth retardation [5-6]. Pain caused by severe dental caries can affect eating in children and can cause inadequate nutrition while disturbed sleep due to pain may affect secretion of growth hormones [7-9].

Dental caries is a multifactorial chronic disease and it is strongly associated with consumption of fermentable carbohydrates [10-11], which is also recommended as an energy source for exercise [12-13], therefore the risk for dental caries increases in individuals that are engaged in sports activities. Moreover, sports drinks that are frequently consumed during these activities may increase the risk for caries due to their sugar and acid contents [14]. Considering that plaque accumulation and gingival inflammation is significantly higher in adolescents when compared to adults and age is an important factor for oral hygiene [15-16], it can be assumed that child athletes have a higher risk for dental caries.

Since poor oral health status affects growth and development in children, it may also negatively affect young athletes' performance in sports activities. Athletic performance is affected and can be measured by speed, power, strength, flexibility and agility. Performance tests such as Bosco, speed and agility tests are used to evaluate relationship between these factors and athletic performance [17-19].

The aim of this study is to evaluate the relationship between oral health and athletic performance in child athletes from the Sports Academy of Kırıkkale University.

Material and Methods

Eighty-six 12 year-old male child athletes from the School of Physical Education and Sports of Kırıkkale University in November during the 2011-2012 term were included in this study. The study protocol and method were approved by the Ethics Committee of the University of Kırıkkale (2012/08). The athletes and their parents were informed about the study and informed consents were obtained from each participant and parent. Oral examinations were conducted using diagnostic dental equipment and performed in accordance with the criteria of the World Health Organization (WHO). For the assessment of caries prevalence, the DMFT index was used [20-22]. In order to eliminate inter-examiner variability, all clinical examinations and interviews were carried out at the Kırıkkale University (Faculty of Dentistry, Clinics of Operative Dentistry) and were carried out by the same experienced dentist. Determination of the athletes' physical characteristics (age, height, weight, body fat, and years of experience in the sport) and the performance tests (the Bosco test and the speed and agility tests) [23] were performed in the Kırıkkale University gym. The calibration and linearity settings of the instruments used in the measurements were completed before the performance tests. Each test was performed three times with the best result recorded.

To prevent unnecessary fatigue, athletes were instructed to avoid intense exercise for the 24-hour period before the testing session. All athletes were familiarized with the testing procedures through practice in the gymnasium the week before the final tests. Height, weight and body composition measurements



were performed using a Tanita body composition analyzer (Tanita Body Composition Analyzer BC 418 professional model, USA) between morning and noon on the test day.

Statistical Analysis

The obtained data was analysed using version Statistical Package for the Social Sciences version 18.0 (SPSS; SPSS Inc. Chicago, USA). Data obtained from the performance tests presented as mean ± standard deviation. Also Shapiro-Wilk test was used for testing normality of these test results on groups DMFT < 3 and DMFT ≥ 3. Independent samples t-Test (for normal distributed variables) was used for comparison of the test results on groups DMFT<3 and DMFT≥3. Also to determine the relationship between DMFT and different performance tests, Pearson correlation test (r) was used. A p value of <0.05 considered statistically significant.

Results

For all athletes who participated in the survey the age was 12 years, mean body weight was 35.6 kg and the mean height was 147.4 cm. The participants had been active sportsmen for an average of 2.2 years and trained 3–4 times a week (for a total of 6–8 hours a week). Fifteen (17.4%) were regularly seen by dentists. Seventeen (19.7%) brushed their teeth two or more times a day. However, only six (6.9%) used dental floss or mouth rinses. The mean DMFT was 2.1 based on the following component measures: mean active caries (1.0), filled (0.7), and missing (0.3). The mean PI score was 0.9 ± 0.4. According to the results of Shapiro-Wilk tests the variables were normally distributed (P > 0.05).

Findings revealed that there was no significant difference between DMFT ≥ 3 and less than 3 regarding height and weight (P > 0.05), except sport years. Athletes having higher DMFT values had shorter sport years. Therefore, considering that all children were in the same age, it could be said that the groups were similar in terms of given variables except sport years (Table 1).

Table 1. Physical attributions of the sample whose DMFT values are ≥4 and < 4.00

	DMFT	n	Mean ± Std. Deviation	P
Height	< 3,00	49	1.47±0.07	0.61
	≥3,00	37	1.47±0.06	
Weight	< 3,00	49	35.59±5.53	0.98
	≥ 3,00	37	35.62±4.88	
Sport years	< 3,00	49	2.61±0.81	0.00*
	≥ 3,00	37	1.65±0.68	

* Based on t-Test

The agility (T-drill, Zigzag, 505, LCDT) and short sprint (10m, 20m, 30m best) tests conducted in this research showed that athletes whose DMFT values were over 3 were more successful than athletes whose DMFT values were equal or more than 3

(P < 0.01). Moreover, the results from Bosco test revealed that athletes whose DMFT values less than 3 were significantly more successful (P < 0.01) (Table 2).

Table 2. The comparison of the performance tests results according to DMFT

		n	Mean ± Std. deviation	P
T- Drill test agility	DMFT < 3	49	15.66±1.53	0.001*
	DMFT ≥3	37	19.64±2.4	
Zig zag agility	DMFT < 3	49	6.59±0.52	< 0.001*
	DMFT ≥ 3	37	7.46±0.46	
505 test agility	DMFT < 3	49	3.24±0.18	0.007*
	DMFT ≥3	37	3.62±0.22	
Lateral Change of Direction Test	DMFT < 3	49	6.60±0.64	< 0.001*
	DMFT ≥3	37	7.78±0.59	
10m run best	DMFT < 3	49	2.23±0.20	0.014*
	DMFT ≥ 3	37	2.37±0.18	
20m run best	DMFT < 3	49	3.69±0.33	< 0.001*
	DMFT ≥ 3	37	4.16± 0.31	
30m run best	DMFT < 3	49	5.92±0.38	0.004*
	DMFT ≥3	37	6.53±0.33	
Bosco	DMFT < 3	49	26.42±3.73	< 0.001*
	DMFT ≥ 3	37	21.76±1.66	

*All correlation is significant at the 0.05 level (2-tailed).

Table 3 shows Pearson correlations between DMFT and eight performance tests. The biggest correlation observed at Zig Zag Agility Test (r = 0.741, P < 0.01). Moreover The Pearson correlations analyses (r) yielded a significant negative correlation between the DMFT and Bosco Test (R = -0.449, P < 0.01) (Table 3).

Table 3. The relationship between DMFT and performance tests

DMFT	r	P
T- Drill Test Agility	0.648"	<0.001*
Zig Zag Test Agility	0.741"	<0.001*
505 Test Agility	0.718"	0.005*
Lateral Change of Direction Test Agility	0.697'	<0.001*
10m run best	0.695"	0.006*
20m run best	0.626"	0.002*
30m run best	0.695"	0.001*
Bosco	-0.656"	<0.001*

All correlation is significant at the 0.05 level (2-tailed).

Discussion

Proper nutrition is very important for child and adolescent athletes to maintain proper growth and show optimal performance in sports [24]. On the other hand, several studies have reported that children with high number of caries tend to show growth retardation and usually underweight. [4-6-25]. Since poor nutritional status may affect performance negatively, the present study evaluated the effect of oral health on the performance of child athletes.

According to the results of the present study, children with higher DMFT scores showed poorer performance in all of performance tests when compared to athletes that had lower DMFT scores. Also there was correlation between the DMFT scores and performance tests. These results indicate that not only growth is affected by oral health; but also performance of child athletes is negatively affected by severe caries status. A possible reason for this negative effect can be malnutrition that can be a result of poor oral hygiene. Van Gemert-Schriks et al [4] evaluated influence of dental caries on body growth in prepubertal children and reported that untreated caries and caries experience in children negatively effects body growth. Similarly, Ngoenwivatkul et al [26] observed a relationship between dental health status and body weight in children. They stated that dental caries is an important risk factor for malnutrition in children. Thus, poor performance in child athletes that had higher DMFT scores in our study may be a result of malnutrition. Another possible cause of poor performance in children with poor oral hygiene is the lack of adequate sleep. Dujister et al reported that one of the most important factors that influenced weight gain and growth in children was the impact of oral health on sleeping [27]. It was suggested that since chronic pain negatively affects sleeping, disturbance in production of growth hormones can lead to retardation of growth [9-27]. Therefore poor sleeping due to pain may have also affected performance of the athletes in the present study. A third reason may be the systemic effect of severe caries since it was theorized that growth can be suppressed by pulpally involved teeth by depressing erythrocyte production and reducing hemoglobin levels [28]. The literature regarding oral health status of child athletes is very limited and since there are no studies evaluating the relationship between oral health and performance for children, making a comparison of our results is impossible. The studies regarding oral health status of child athletes mainly focus on children with intellectual disabilities [29-32]. Thriandini et al [29] screened child athletes with a mean age of 13.4 and observed that almost 70% of the athletes had visible untreated caries. Oredugba et al [30] conducted a similar study in Nigeria and reported that 22.4% of the child athletes had untreated caries lesions. Bissar et al [31] evaluated child athletes between 12-17 years in the Special Olympics in Germany and observed a caries prevalence of 58% and a mean DMFT of 2.3. In a study where Puerto Rican athletes were included [32], it was reported that almost 45% of the athletes had untreated dental caries. Although these results are from a special group of children they are concordant with our results showing high DMFT scores. Published studies regarding nutritional habits of

child athletes show that, there is a tendency of consumption of soft drinks and refined sugars [33, 34] that can result with poorer oral health condition in these individuals.

There are a few studies investigating the effect of oral health on performance that were carried out in adults. In a study evaluating the relationship between dental condition and hand strength and maximum bite force, it was reported that carries and missing teeth negatively affected bite force [35]. This result is in line with our study since it can be assumed that muscle strength can be lower by severe decay conditions where nutrition is adversely affected. Also, inadequate bite force can result with difficulty in chewing function and influence nutrition.

The present study hypothesized that the oral health status of child athletes affects performance. Our results showed that athletes with DMFT < 3 performed significantly better than those with DMFT ≥ 3 and there was a correlation between DMFT scores and results of the performance tests. Further clinical research on the subject may confirm and reveal possible reasons behind this difference. Also these results highlight the importance of informing young athletes regarding oral health.

Declaration of conflicting interests

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■ Original Article

The evaluation of general knowledge of emergency care providers about child abuse and neglect

Acil sağlık çalışanlarının çocuk istismarı ve ihmali hakkında genel bilgilerinin değerlendirilmesi

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ABSTRACT

Aim: Child abuse and neglect is a public healthcare problem with medical, legal, developmental and psychosocial comprehension, having complex causes and tragic consequences. The incidence of it in societies is not fully detected. We aimed to measure the knowledge levels of doctors and allied healthcare personnel in emergency departments (ED) about child maltreatment, compare with non-healthcare control group and find out the altering factors.

Material and Methods: In our study, a group of 400 consisted of ED doctors, pediatricians and other healthcare providers who were working in Teaching, University and General Hospital ED in Ankara and 105 subjects as a control group were included. A survey consisting of the demographic questions which also had myth part about child abuse and neglect was configured.

Results: Among the demographics and myth beliefs, it was found that the institutions where the doctors and allied staff work affect their belief in myths, the experience duration is a variable between healthcare staff, receiving training about child abuse is an altering factor for success rate and having children of own doesn't affect the accuracy significantly ($P > 0.05$). The success rates of the control group showed similarity with allied personnel to each myth ($P > 0.05$). However, the control group had low accuracy on myths 7, 18, 19, 22, 25, 27, 30, and 35 than doctors.

Conclusion: All the healthcare providers who work in pediatric and emergency medicine clinics where pediatric patients are encountered mostly should know signs and symptoms of child abuse and neglect, in addition have responsibilities for reporting them to the legal departments. Furthermore, regular training programs should be applied both to community and healthcare system to disprove the myths on this topic.

Keywords: Child abuse, neglect, sexual abuse

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ÖZ

Amaç: Çocuk istismarı ve ihmali, karmaşık nedenleri ve trajik sonuçları sebebiyle tıbbi, yasal, gelişimsel ve psikososyal bir halk sağlığı sorunudur. Toplum içindeki gerçek insidansı tam olarak bilinmemektedir. Çalışmamızda acil servislerde çalışan hekimler ve yardımcı sağlık personelinin çocuk istismarı ve ihmali hakkında bilgi düzeylerini ölçmeyi; elde edilen sonuçları sağlık çalışanı olmayan kontrol grubuyla karşılaştırmayı amaçladık.

Gereç ve Yöntemler: Çalışmamıza Ankara İlindeki Eğitim Araştırma, Üniversite ve Devlet hastanelerinde çalışan acil doktorları, pediatri hekimleri ve diğer sağlık çalışanlarından oluşan 400 kişilik bir çalışma grubu ve 105 katılımcıdan oluşan kontrol grubu dahil edilerek yapılmıştır. Katılımcılara hem demografik sorulardan oluşan hem de çocuk istismarı ve ihmali konusunda genel olarak inanılan mitleri içeren birer anket uygulanmıştır.

Bulgular: Demografik sorular ve mitler içeren ankette, doktorlar ve yardımcı sağlık çalışanlarının çalıştıkları kurumların mitlere bakış açısını etkilediği, deneyim süresinin sağlık çalışanları için bir değişken olduğu, çocuk istismarı konusunda eğitim almış olmanın belirleyici olduğu fakat çocuk sahibi olmanın cevaplardaki doğruluğu anlamlı şekilde etkilemediği tespit edilmiştir ($p>0,05$). Kontrol grubunun başarı oranları her mit için yardımcı sağlık personeli ile benzerlik göstermiştir ($p> 0,05$). Ancak kontrol grubunun 7, 18, 19, 22, 25, 27, 30 ve 35 numaralı mitlerde doktorlara göre düşük doğruluk oranları tespit edilmiştir.

Sonuçlar: Acil servislerinde ve çoğunlukla çocuk yaş grubunun bakıldığı pediatrik acil servislerinde çalışan tüm sağlık çalışanlarının çocuk istismarı ve ihmaliine dair belirti ve bulgularını bilmeleri gerekmektedir. Ayrıca yasal birimlere bildirmeye yönelik sorumlulukları mevcuttur. Bu konudaki mitleri çürütmeye yönelik düzenli eğitim programları hem sağlık sisteminde hem de toplum düzeyinde uygulanmalıdır.

Anahtar kelimeler: Çocuk istismarı, ihmal, cinsel istismar

Introduction

Child abuse and neglect is a public healthcare problem with medical, legal, developmental and psychosocial comprehension, having complex causes and tragic consequences. The incidence in societies is not fully detected. The description of child abuses and neglect (sometimes referred to as child maltreatment) by the World Health Organization (WHO) includes all forms of physical and emotional ill-treatment, sexual abuse, neglect and exploitation that results in actual or potential harm to the child's health, development or dignity [1]. According to WHO, it's estimated that 57 thousand children suffered death because of child abuse and neglect in the year 2000. However, it's believed that the data on mortality are incomplete and the true numbers are estimated to be higher than the calculated figures [2].

From the time that human beings came into existence, cases of child abuse have occurred in every different society and culture. Some groups have worked for the prevention of violence against children from the very ancient times. However, for a long time these studies didn't take attention of the public until finally in 1962, the violence and abuse against children gained importance after the publication of "Battered Child", an article by Kempe et al [3]. Since then, the literature dealing with child abuse and neglect has been increasing with high quality work being done and reported on the many dimensions related to the epidemiology, mechanism, treatment, and prognosis of child maltreatment. Efforts are being directed toward developing an evidence-based approach to the prevention of child abuse and neglect but

it's still a fact that the number of abused children is increasing although the efforts to prevent child abuse all over the world with each passing day. Child maltreatment is underreported in all countries mostly despite mandatory reporting policies. Several studies indicated that the main causes are unawareness of legal written protocols regarding reporting of child maltreatment, incorrect reporting knowledge, recognizing deficiency of abuse and interviewing techniques [4-7]. Therefore, there has been lots of studies regarding the level of knowledge and perspectives of different health provider groups to identify and to spot the problematic steps (prehospital providers, physicians, nurses, allied health workers, team directors) [6-13].

In the society in which it is told, a "myth" is a way of mysterious storytelling usually regarded as a true account of the remote past. It consists of excerpt thoughts and stories that are not certain to be true. Although the definition of child maltreatment is constant, still it is considered to be exploited by the socio-cultural beliefs, and myths vary according to the conditions in the affected communities [14]. The real incidence of child abuse is still controversial due to differing social beliefs. The role of health care providers in the detection, treatment and prevention of child abuse is undeniable. They should not be affected by cultural myths and should work toward using scientific definitions to disprove these myths. Emergency medicine physicians, nurses, allied health care staff and social workers have an important role as much as pediatricians in this regard.

In our study, we aimed to investigate the myths and the level of knowledge of the physicians and the other health care staff working in the emergency department regarding child abuse.

Material and Methods

This multicenter and descriptive study was based on a questionnaire distributed in our capital city, Ankara, between April and June 2012. Volunteer physicians and allied health staff working in the emergency departments of our city (nurses and health technicians) were included. The study was carried out with both pediatric and adult emergency department staff due to the management of pediatric trauma patients in many centers by emergency medicine specialist and residents in our country.

The questionnaire forms were sent to 3 universities, 5 teaching and 3 state hospitals. All the filled-in forms were randomly evaluated by 200 physicians and 200 allied healthcare staff. In the control group, a total of 105 people were selected

randomly among at least college graduated non-healthcare professionals with similar demographic status of study group. The questionnaire form consists of 2 parts. In the first section, demographic information of the participants was collected; in the second section, the myths about child abuse were explored using questions about 37 common but incorrect beliefs. Information on previous training of child abuse was also collected. The myths in the form were a collection of the most frequent child abuse and neglect issues and wrong beliefs which confront the medical and health professionals which are investigated and discussed by many national and international organizations like ASCA (Adult Surviving Child Abuse) and UNICEF [15-25]. The participants were asked to answer "right" or "wrong" to the myths (Table 1).

Table 1. The right and wrong survey questions regarding commonly believed myths about child abuse and neglect

1.	Child abuse is rare.
2.	It is only abuse if it is violent.
3.	It is not possible that any nuclear family member abuses his/her own child.
4.	Only bad people abuse their children.
5.	Child abuse doesn't happen in "good" families.
6.	Most child abusers are strangers.
7.	Abused children always grow up to be abusers.
8.	Anyone who would molest a child is seedy-looking or looks suspicious. I'd know them by looking at them.
9.	Child molesters are unsociable and isolated. If I knew any, I'm sure I naturally wouldn't like them.
10.	Married men don't molest children—they have their wives. Besides, a married man would only molest a child if he wasn't getting sex from his wife.
11.	Many child abusers have problems on their sexual life.
12.	He's a pastor (or teacher, or elder, or highly respected businessman) – he would never do that.
13.	He has a Ph.D., she's president of the company—too smart to be doing something that depraved and disgusting.
14.	A real child molester would never talk about the subject.
15.	Children always react to their abusers.
16.	Abusers cannot be the ones who abused children don't resist against hugging or touching them.
17.	Women do not sexually abuse children.
18.	Some cultures believe that child abuse is acceptable.
19.	Children often lie about abuse.
20.	Children are always safe in groups.
21.	Disabled children are less likely to become victims of abuse.
22.	Child abusers have deprived backgrounds and are of below average intelligence.
23.	I do not think abusers have a high level of intelligence.
24.	People lie about child abuse for attention and sympathy.
25.	Many so-called survivors suffer from False Memory Syndrome.
26.	People do not "forget" child abuse, therefore "recovered memories" are false.
27.	People who sexually abuse children are mentally ill.
28.	Sexual abuse victims are "damaged goods" and their lives are ruined forever.
29.	People who sexually abuse children have been sexually abused themselves.
30.	Men and women sexually abuse children equally.
31.	All offenders are male, all victims are female.
32.	Children are very suggestible and they can easy "make up" stories of abuse.
33.	Children can fabricate sexual abuse stories because of their huge imaginations.
34.	Cute and attractive girls, runaway children and neglected children are potential victims of sexual abuse.
35.	Parks, public toilets, deserted streets, dark places, leisure areas and construction sites are the places where abuse often occurs.
36.	Sexual abusers are violent, aggressive, senile or mentally ill.
37.	Children who are being abused would immediately tell their parents.



Results were based on descriptive statistics. During the second part of the survey, an exploration of 37 myth belief items, if the participant chose "right", it was interpreted labeled as "1". Likewise, indication of "wrong" labeled as "2". We chose to calculate a "success score" for each group according to this labeling based on the number of correct answers. The number of groups forming the data among physicians and allied healthcare staff were equal. Therefore, in order to accurately compare success scores, the contribution of the number of data to obtained score was projected. In this way, the contribution of each participant was emphasized in the calculation of the success score. The aim was to be able to have comparable obtained data results with (0, 1) interval.

In the case of all myths being believed by the study group, the lowest obtained group score is equal to data number of the group and this score is referred to as base score. For example, when evaluating a group of 104 male doctors, if a single myth is found to be believed by the whole group, they receive a base score of 104, indicating the worst scenario for this item of evaluation. When the obtained score of a group is greater than the base score, it indicates well-informed disbelief as success using the same ratio. For example, if the male doctor group has obtained a total score of 174, 104 of this score will be the base score. We find the success score by subtracting the base score from the total score; for this example, the success score is 70 (174-104=70). When we are projecting the sample number to the success score, we can formalize it in the way of myth = (Total score-base score)/sample number (m=success score of a group, n=myth score of the group). For example, for the first myth in the male physician group, the success score is calculated by: Myth 1 Male Physician = (174-104) / 104 = 0.67. We have used Microsoft Excel 2010 throughout the study.

Results

Of the 200 participant physicians in our study, 146 (73%) are emergency medicine specialists, 42 (21%) are emergency medicine residents and 12 (6%) general practitioners. The figure of 200 allied healthcare staff includes 162 (81%) adult emergency department nurses and 38 (19%) pediatric emergency department nurses. In the control group, 68 (64.7%) subjects have a university license, 32 (30.4%) have a master license and 5 (4.7%) just have a college education. The professional fields of the control group include university faculty, police, teachers and engineers.

The overall mean age of the participants was 29.54 (min: 18, max 58), the overall mean age of physicians was 30.92 (min

24, max 51) and the average age of allied health staff was 26.85 (min 18, max 58). The control group had an average age of 32.05 (min 19, max 50). Gender subgroups were equally distributed in physician and control group (male/female ratio; 104/96, 48/57) but significant female intention in allied health staff were noticed (46/154). Experience durations were equally distributed for physician and allied staff in year base. Physician reported receiving more professional educational opportunities than and allied staff (Training programs + congress / symposium; 93+20, 85+6). For control group, these numbers were quite low (4+2). All three groups were mainly parents (Having child of own/no child; 133/67 for physicians, 149/51 for allied staff and 68/37 for control group). The demographic data of 200 physicians, 200 allied health staff and 105 control group subjects is summarized in Table 2.

Table 2. Demographic summary of the participants

		Doctor	Nurse	Control
Gender	Male	104	46	48
	Female	96	154	57
Marital status	Married	115	64	49
	Single	85	136	56
Age	≤20	0	30	3
	21-30	129	125	44
	≥31	71	45	58
Child status	Has	133	149	68
	Has Not	67	51	37
Education Source	Education program	93	85	4
	Congress	20	6	2
	Independent Research	27	39	8
	Media	65	78	92
Education about child abuse	Received	93	85	4
	Not received	107	115	101
Work institution	Teaching Hospital	122	124	-
	State Hospital	26	42	-
	University Hospital	52	34	-
	Special	0	0	-
Working duration at emergency department	1 Year	55	58	-
	2 Years	53	46	-
	3 Years	45	31	-
	4 Years or more	47	65	-

A total of 505 participants were asked to complete the questionnaire about child abuse. The questionnaire included 37 myths. The beliefs on these myths were evaluated. The correct answer rates between 80-100% were considered successful. The myths which the physicians, staff and control groups all answered successfully were numbers 3, 5, 8, 10, 12, 13, 16 and 31. In general, all groups failed in number 2, 18, 25, 34, and 35 (Figure 1), widely believing the myths.

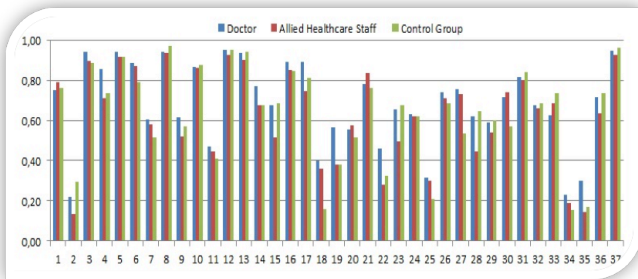


Figure 1: The rates of beliefs in myths by all groups

It is investigated whether the institutions where physicians work affect their belief in myths or not. The results from physicians practicing in Teaching Hospitals and University Hospitals showed similar rates of accuracy, but the results collected from State Hospitals showed the lowest rate of accuracy ($P < 0.05$) (Figure 2). In the results collected from the allied medical staff, the results from State and Teaching hospitals showed similar rates of accuracy but they showed lower success rate compared to University hospitals colleagues ($P < 0.05$) (Figure 3).

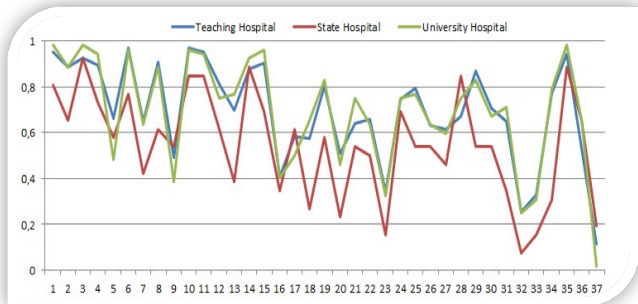


Figure 2: The rates of beliefs among doctors according to their institutions

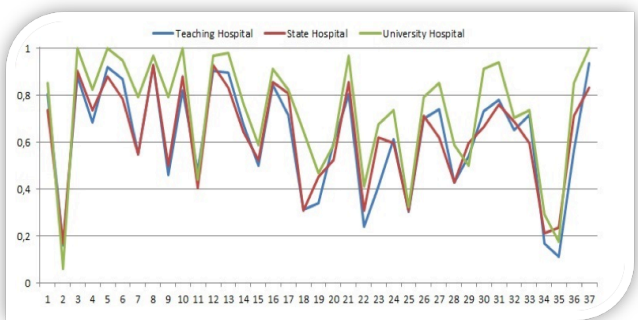


Figure 3: The rates of beliefs among allied healthcare staff according to their institutions

It was evaluated during the study that if the duration of work in emergency departments by participating physicians and allied health staff is a variable factor in beliefs on myths about child abuse. Physicians with less than three years of experience had lower accuracy rate identifying myths about child abuse compared to physicians with more than three years of experience ($P < 0.05$) (Figures 4,5).

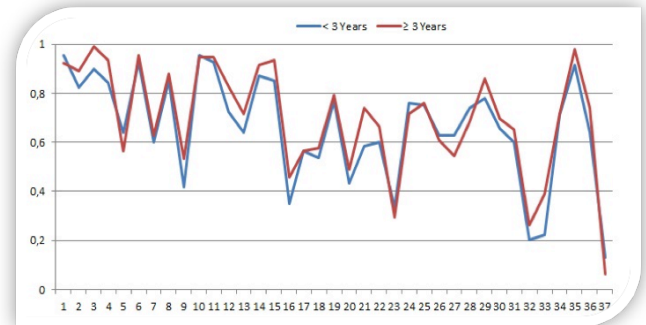


Figure 4: The rates of beliefs among doctors according to their working durations

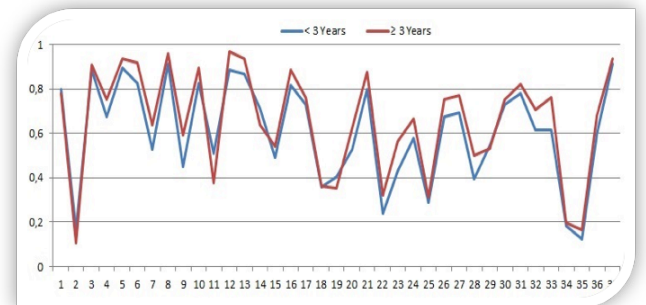


Figure 5: The rates of beliefs among allied healthcare staff according to their working durations

It is also assessed by enquiring about the education history of physicians and allied staff that whether receiving training about child abuse is altering belief in myths or not. It was found that the educated physicians and allied health staff group had higher rates of accuracy to the queried myths ($P < 0.05$).

No significant difference on myth beliefs was detected between physicians and other healthcare staff with children of their own and those without any children ($P > 0.05$). In our study, the difference in beliefs among emergency department medical staff and the control group was examined. The success rates of the control group who were not members of healthcare showed similarity with allied health staff to each myth ($P > 0.05$). However, the control group had higher belief rates on myths 7, 18, 19, 22, 25, 27, 30, and 35 than emergency physicians. It was noticed that the control group had a particularly significant high belief in the wrong myth of “The concept of child abuse varies according to the culture”. The most widely wrong beliefs for each of the three occupational groups were myths number 2, 34 and 35. In our study, more than 90% in all groups stated that they do not believe in 5, 8, 12, 13 and 37 numbered myths (Figure 1).



Discussion

The high rates of incorrect belief in the description of abuse as “physical violence against children” may be explained by incomplete and inadequate information on the true definition. Physical violence is more prevalent than other kinds of abuse, so sexual abuse and neglect are often forgotten when identifying child maltreatment. In terms of knowledge among the participants in our study and all over world, emotional abuse of children is underestimated or disregarded.

In our study, we have investigated physicians from different institutions if the beliefs in the myths about child abuse are changing. The results from the physicians practicing in Teaching Hospitals and University Hospitals showed similar rates of accuracy, but the results collected from State Hospitals showed the lowest rate of accuracy. In the results collected from the allied staff, the results from State and Teaching hospitals showed similarly low rates of accuracy compared to the results of high accuracy collected from University hospitals. It was detected in our study that physicians and allied health staff who had received an education in child maltreatment more frequently answered questions correctly. The difference in the rates of accuracy may come as a result of academic healthcare staff’s opportunity to access more scientific publications, to participate in scientific meetings and the extra attention given to post-graduate education by University and Teaching hospitals.

It was found that among the participant physicians and allied health staff, physicians with less than three years of experience had a lower success score compared to physicians with more than three years of experience. This finding confirms that obtaining education and experience contribute to altering belief in myths.

In our study, the ratios of belief in myths of both men and women in the physicians and allied medical staff were almost parallel with each other, but women had a slightly higher accuracy rate.

It is also detected that physicians and allied staff with children of their own had more accurate answers but it is not statistically significant. In the same way, in a study of Akçay et al conducted in İstanbul University; factors of expertise, gender, state of having kids and duration of training of the physicians do not cause statistically significant difference in approaches to child abuse [26]. The most correct answers were given from the Departments of Emergency Surgery and Trauma and Pediatrics. Physicians with female gender and specialty education duration with more than four years were more successful than most. In the study of Al-Moosa et al, young female physicians were more successful in recognizing child abuse compared to other demographics [7]. Also there was no difference in results due to having children [8-9].

In our study we searched for any difference between healthcare providers and the control group. The ratio of accuracy for the myths in the control group was similar to that of allied healthcare staff, but the control group had more belief in myths than emergency medicine physicians. The control group had a high belief in the myth “the concept of child abuse may vary between cultures”. At the same time, the control group had less belief than physicians and allied staff in the myth that “Abuse is defined as physical violence against children”.

In both diagnosis and treatment of child abuse and neglect, a multidisciplinary approach is necessary. Physicians, especially those in pediatric and emergency care who are commonly faced with cases of abuse, have an unavoidable ethical, moral and legal responsibility to recognize signs and symptoms of child maltreatment and notify legal units. Child abuse has a specific definition and should no longer be tolerated due to outdated cultural mentalities [14]. Regular community education programs should be applied in our society to correct the wrong belief in myths regarding child maltreatment as many studies suggest [27-30].

Limitations of the study: This study may not generalize to all emergency health providers in Turkey, especially considering that most of the centers in Ankara, pediatricians have a more active role on these patients in emergency departments. Probably, pediatricians may have better knowledge about child abuse and better results than the other health allied staff and control group.

As a conclusion, our study shows significant deficiencies in several critical knowledge areas, including identification of child maltreatment. These findings highlight the need for increased education in the realm of emergency care. National legal protocols regarding reporting suspected cases of maltreatment must be well designed and more applicable. Therefore, the inclusion of programs in child abuse mythology in periodic post-graduate training programs and the curriculum of medical and nursing schools should be considered.

More extensive studies to examine child abuse and neglect are needed in our country. Further studies are vital not only for the collection of medical statistical data, but also for the awareness and prevention of child abuse in Turkey.

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■ Derleme

Vertigonun medikal tedavisi

Medical treatment of vertigo

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ÖZ

Vertigo (baş dönmesi), sadece kulak burun boğaz değil, aile hekimliği pratiğinde de sık rastlanan bir hastalık grubunu oluşturmaktadır. Etiyolojisinde çok çeşitli hastalıkların bulunduğu bu patolojinin kesin tanısı her zaman mümkün olamamaktadır. Tedavide öncelikli amaç, akut vertigo atağı ile gelen hastanın semptomlarının azaltılması olmalıdır. Vertigonun medikal tedavisinin anlatılacağı bu bölümde ülkemizdeki mevcut ilaçlar ve tedavi dozlarından da bahsedilecektir.

Anahtar kelimeler:Vertigo, medikal tedavi

ABSTRACT

UVertigo (dizziness), constitutes a common group of diseases not only in the practice of otolaryngology, also in the practice of family physicians. There are various diseases in the etiology of this pathology and definitive diagnosis is not always possible. The primary objective in the treatment should be reduction of symptoms in the patients with acute attacks of vertigo. In this section, medical treatment of vertigo will be described with mentioning of the current medications and their therapeutic doses available dosage in our country.

Keywords: : Vertigo, medical therapy

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Giriş

Vertigo (baş dönmesi), kısaca hareket illüzyonu veya halüsinasyonu olarak tarif edilir. Vertigonun etyolojisinde periferik veya santral vestibüler patolojiler, vizüel bozukluklar, serebellar, piramidal, kardiyak veya metabolik hastalıklar rol oynayabilir [1]. Bu nedenle vertigolu hastaların çok dikkatle incelenmesi gerekmektedir.

Anamnez vertigolu hastalarda çok önemlidir. Vertigonun özellikleri, birlikte bulunan diğer semptomlar, özgeçmiş araştırılmalıdır. Daha sonraki aşamada kulak burun boğaz muayenesini de içeren fizik muayene yapılmalıdır. Hastada aktif bir kulak enfeksiyonu varsa ya da nöroşirujik ameliyat, kaza ya da aminoglikozid kullanımına bağlı otolojik travma öyküsü mevcutsa vertigonun nedeni anlaşılabilir [1]. Tümör ya da infarkt gibi santral bir patoloji varsa, beraberinde görülen nörolojik bulgular ve radyolojik yöntemlerle tanı konulması mümkün olur. Kronik orta kulak iltihabına bağlı uzun süredir akan kulaklarda ani başlangıçlı vertigo, perilenfatik fistül gibi ciddi bir komplikasyonun geliştiğini düşündürür ve bu durum acil girişim gerektirdiğinden ilgili uzmanlık alanına sevki önerilir.

Vertigo otitis media, serebellum tümörü gibi bilinen bir etiyolojik faktöre bağlı ise tanı konulan hastalığın tedavisi yapılır [1]. Ancak genellikle vertigoya neden olan hastalıklar kolay ve kesin olarak teşhis edilemez. Vertigonun kesin tanı koyulabilen bir hastalığa bağlı olmadığı ve spesifik tedavi imkanının mümkün olmadığı bu gibi durumlarda ampirik tedavi uygulanır.

Vertigo nedeniyle hekime başvuran hastalarda en önemli aşamalardan biri de var olan rahatsızlığın baş dönmesi mi yoksa dengesizlik mi olduğunu anlamaktır [2]. Eğer sorun dengesizlik ise medikal tedavide yeni bir ilaç vermektense uygun tanı ve tedaviyi belirlemek için alınan tüm ilaçları kesmek ve hastayı ilaçsız bir süre gözlemek daha doğru bir yaklaşım olacaktır. Yine, vertigo ve dengesizlik yakınmaları en çok ileri yaşlı hastalarda görülür. Bu yaş popülasyonunda dengesizlik periferik kaynaklı olmaktan çok yaşlanma ile oluşan santral nedenlerle gelişir. Ayrıca bu hastalar çok çeşitli ve farklı ilaç kullanmaktadırlar. Bu ilaçlar dengesizliği ortadan kaldıracı değil, ortaya çıkaran özellikler gösterir. Çoklu ilaç kullanan hastalarda kullanılan ilaç sayısı ile artan ve kontrolü güçleşen yan etki ve komplikasyonların başında vertigo ve benzeri şikayetler yer almaktadır. Bu durum da zaten yaşa bağlı denge sistemi disfonksiyonu olan hastalarda klinik tabloyu ağırlaştırmaktadır. Bu sebeple özellikle yaşlılara yeni ilaç reçete etmek yerine alınan ilaç sayısını azaltmak daha isabetli bir yaklaşım olacaktır. Vertigo beraberinde eşlik eden belirtiler sıklıkla bulantı ve kusmadır. Tedavide kullanılan ilaçlar şunlardır [3]:

- 1- Vestibüler supresanlar ,
- 2- Antiemetik ilaçlar,
- 3- Diğer ilaçlar

Vestibüler supresanlar antihistaminikler, antikolinerjikler ve benzodiazepinler olmak üzere 3 gruptur. Vestibüler supresanlar vestibüler uyarılabilirliği azaltmak yanında bulantı ve kusmada etkilidirler. Antiemetikler ise daha seçici olup bulantı ve kusmayı engellerler. Bunlar dışında üzerinde hala çalışmalar yapılan ve gelecek vadeden değişik ilaçlar mevcuttur. Aşağıda vertigo tedavisinde kullanılan ilaçlar etki mekanizması, yan etkiler, doz, pozoloji ve ülkemizde kullanılan jenerik isimleri ile ele alınacaktır.

1. Vestibüler Supresanlar

1.1. Antihistaminikler: Histaminin santral vestibüler iletideki rolü çokaçık olmamakla beraber hareket hastalığı ve baş dönmesi şiddetini semptomların başlamasından sonra bile başarı ile azalttığı saptanmıştır [4]. Vertigo tedavisinde kullanılan tüm antihistaminiklerin aynı zamanda antikolinerjik yan etkileri (ağız kuruluğu, pupil dilatasyonu, sedasyon gibi) de bulunmaktadır. Astemizol dışındaki tüm antihistaminikler kan beyin bariyerini geçerek baş dönmesini hafifletirler. Antihistaminiklerin etkisinin başlaması için geçen süre 20-30 dakikadır. Tepe plazma düzeyleri 1-2 saatte oluşur ve yarı ömürleri yaklaşık 8 saattir. Bu nedenle sıklıkla 2x1 pozolojide kullanılırlar [5].

1.1.1. Dimenhidrinat (Dramamine®, Anti-em®): Akut atak sırasında ilk tercih edilecek ilaç bir antihistaminik olan dimenhidrinattır. Bulantı ve kusmalar üstüne de oldukça etkilidir. Hafif derecede karıncalanma ve uyku hali meydana getirir. Ülkemizde 50 mg'lık ampul ve tablet formları bulunmaktadır. Tablet olan formlar: Anti-em 12 tablet®, Anti-em 20 tb®, Dramamine 12 tablettir®. Ampul formu ise Dramamine ampul® olarak mevcuttur. Akut atak sırasında hızlı rehabilitasyon ihtiyacından parenteral kullanım tercih edilir. Dramamine ampul®, parenteral uygulanır. İdame tedavide ağız yolu ile 50 mg'lık tabletlerinden üç ve-ya dört tane alınır [5]. Ancak vestibüler kompanzasyona fırsat vermek için 1 haftadan fazla kullanımı önerilmez. Profilaksiste aylarca kullanım kompanzasyonu baskıladığından tavsiye edilmez. Vertigo atağı sonrası uzun süre dimenhidrinat kullanan ve hala şikayetleri olan hastaların ilk olarak ilacı kesilmelidir.

1.1.2. Difenhidramin (Benison®, Allenik®, Metorfan®): Antihistaminik grubunda yer alan bir ilaçtır ancak vertigonun spesifik ilacı değildir. Ancak profilaksiste, taşıt tutmasında, bulantı ve kusmalarda kullanılmaktadır. Etkisi 4-6 saat sürer ve tedavi dozlarında uyuklama çok sık görülür. Günlük doz başlangıçta 50 mg'dır [5].

1.1.3. Meklizin (Antivert®): Vestibüler kaynaklı baş dönmeleri ile birlikte olan bulantı ve kusmalara karşı etkili bir antihistaminik ajandır. Yavaş etki yapar fakat etkisi uzundur ve 24 saat sürer. Uyuklama, görmede bulanıklık, ağız kuruluğu ve yorgunluk önemli yan etkileridir. Günlük doz hastalığın şiddetine göre 25-100 mg arasında değişir [5].

1.1.4. Prometazin: Diğer aynı grup fenotiazinlere göre çok kuvvetli antihistaminik etki gösterir ve ayrıca kuvvetli santral

kolinerjik etkiye sahiptir. Bu yüzden taşıt tutmalarında ve baş dönmele-rinde tercih edilen bir ilaçtır. Bulantı ve kusmalarda başlangıç dozu 25 mg'dır ve her 6 saatte bu dozun yarısı klinik tabloya göre verilebilir. Rektal yolla da etkilidir. Tedavi dozlarında yan et-kileri çok azdır [4]. Ülkemizde tek başına bulunmamaktadır.

1.2.Antikolinerjikler (Skopolamin®, Buscopan®, Butopan®, Spazmol®): Antikolinerjikler muskarinik reseptörleri etkiler ve harekete bağlı hassasiyet ve dengesizliği azaltırlar [6]. Vestibüler kompanzasyon sağlandıktan sonra uygulandıklarında geriye döndürülebilir bir aşırı kompanzasyon haline neden olabilir [5]. Bu durumdaki hastalar dengelerini koruyabilmek için görsel ve proprioseptif uyarılara normalden fazla bağımlıdırlar. Vertigo tedavisinde santral etkili antikolinerjikler kullanılır. Kan beyin bariyerini geçemeyen ilaçların vertigo tedavisinde yeri yoktur. Hepsinin ortak yan etkileri ağızda kuruluk, görme bozuklukları ve sedasyondur. Prostat hipertrofisi veya glokoma olan hastalarda kullanılmaz. Bu amaçla kullanılan Skopolamin® ve Buscopan® mevcuttur. Özellikle Transdermal Skopolamin® yavaş da olsa da etkilidir [7]. Yetişkin dozu: 0,5 mg PO/IM/SC [5]. Zaman içinde muskarinik reseptörlere spesifik ajanların geliştirilmesi ile yan etkisi minimal, etki profili maksimal antivertiginöz ajanların kullanımı gündeme gelebilir.

1.3.Benzodiazepinler: Bu ilaçlar vestibülo-depresan etki gösterir. Gama amino butirik asit (GABA) sistemin etkisini arttırdığı sanılmaktadır. Bu şekilde beyin sapının vestibüler çekirdekler üstüne yaptığı inhibisyon etkisi kuvvetlenir [8]. Bu ilaçlar düşük dozlarda baş dönmesi kontrolünde çok etkili olmasına rağmen bağımlılık yapıcı etkileri nedeniyle hasta tarafından suistimal edilebilir. Bunun yanında hafıza kayıpları, düşme ve yaralanma riski, vestibüler kompanzasyonda gecikme diğer yan etkilerdir. Lorazepam, klonazepam ve diazepam düşük dozlarda kullanılabilir ancak çok kuvvetli bir çekilme sendromuna neden olduğu için bu gruptan alprazolam vertigo tedavisinde tercih edilmez.

1.3.1.Diazepam (Diazem®, Diapam®, Lizan®, Nervium®): Genel sedatif etkisi vertigoya bağlı oluşan anksiyete ve stres oluşumuna engel olarak vertigoyu arttıran kısır döngüyü kırar. Bunun yanında antivertiginöz etkisi de olması bu ajani özellikle akut vertigo atağında yararlı hale getirmektedir [9]. Vertigo nöbetlerinde erişkinlerde başlangıç dozu olarak 5 mg'la başlanır. Hastada bulantı ve kusma varsa bu miktar parenteral olarak da verilir. Her üç saatte bir 5 mg'lık doz ağız yolu ile tekrarlanır. Bu şekilde tüm güne yayılan bir sedasyon elde edilir. Parenteral kullanım sırasında solunum sistemini deprese edici etki gösterir. Bu yüzden KOAH (kronik obstrüktif akciğer hastalıkları)lı hastalarda kullanılması kontraendikedir. Ayrıca uyku apnesi olan hastalarda da apne süresi ve sıklığını arttırılabilirliğinden önerilmez. Hipotansif etkisi nedeniyle ilaç uygulaması öncesi tansiyon kontrolü yapılması önerilir.

Yukarıda bahsedilen tüm vestibüler supresanlar vestibüler kompanzasyon sürecini geciktirir. Akut vertigo atağında sonraki ilk günlerde hastanın şikayetleri çok yoğunudur ve bu dönemde vestibüler supresanların kullanımı gereklidir. Ancak ilaçlar en kısa sürede (ortalama 1 hafta) azaltılarak kesilmeli ve kompanzasyon gelişimine fırsat tanınmalıdır. Hastanın atak sonrası baş dönmesi şikayeti yoksa uzun süre antivertiginöz tedavi almasına da gerek yoktur.

2.Antiemetikler

Bulantı ve kusmanın baskılanmasında kullanılan ajanlardır [8]. Beyinde emezise neden olan ana bölgeler area postrema lokalize kemoreseptör trigger zon ve beyin sapındaki retiküler formasyondur. Antiemetiklerin büyük çoğunluğu bu bölgeler üzerinden etki eder. Vestibüler supresan grubundaki ajanların hepsi aynı zamanda antiemetik özelliklere de sahiptir. Bu grupta antidopaminerjik ilaçlar yer almaktadırlar. Droperidol, metoklopramid, ondansetron, proklorperazin, trimetobenzamid antidopaminerjik ajanların başında gelir [10].

2.1.Droperidol (Dehidrobenzperidol): Bulantı ve kusmayı önlemek için ağız yolu ile 2,5-10 mg dozunda kullanılır. Parenteral olarak 5 mg dozunda kullanılır. Ancak hipotansiyon, sedasyon gibi ekstrapiramidal yan etkilerine dikkat etmek gerekir [5].

2.2.Proklorperazin: Antiemetik, analjezik ve sedatif etkileri vardır. Dozu ağız yoluyla ya da parenteral olarak her 6 saatte 10 mg'dır. Antiemetik etkisi kuvvetlidir. Hipotansiyon ve karıncalanma gibi yan etkiler sık görülür. Tedavi dozlarında bile ekstrapiramidal belirtiler ortaya çıkabilir. Bunlar Parkinson benzeri titremeler, yüzde ve ensede spazmodik kontraksiyonlar, karpopedal spazm ve motor zayıflık olabilir. EKG 'de QRS uzaması ve ventriküler aritmi gibi bazı bozukluklar ortaya çıkarabilir [5]. Vestibüler supresan ve antiemetiklerin temel kullanım endikasyonlarını özetlemek gerekirse:

- Akut periferik vestibulopati: bulantı için ilk 1 hafta.
- Akut beyin sapı ya da serebellar lezyonlar: eşlik eden baş dönmesi ve bulantı için
- Sık tekrarlayan vertigo atakları
- Taşıt tutması

3.Vertigo tedavisinde kullanılan diğer ilaçlar

3.1.Betahistin (Betaserc®, Vasoserç®, Vestibo®, Rotastin®): Vertigo tedavisinde sıklıkla kullanılan santral etkili bir histamin analogudur. Merkezi sinir sisteminde postsinaptik H1 agonisti, presinaptik H3 antagonistidir. Hem histamin analogunun hem de antagonistinin denge sistemi üzerinde etkili olması tam olarak aydınlatılamamıştır ancak son etkinin histaminerjik uyarının artması olduğu düşünülmektedir [11]. İç kulakta vazodilatasyon yaparak mikro dolaşımı artırır ayrıca beyin sapında vestibüler çekirdekler üzerinde düzenleyici etkisi mevcuttur. Uzun süre kullanımında dahi yan etki profili açısından oldukça güvenlidir. Bu özelliği nedeni ile Meniere

hastalığında uzun zamandır yaygın olarak kullanılmaktadır. Yakın zamanda yapılan bir meta-analizde Meniere hastalığında ve vestibüler vertigo tedavisinde betahistin, plaseboya iki kat üstün etkinlikte olduğu saptanmıştır [12]. Ayrıca kulak cerrahisi sonrası betahistin postoperatif bulantı, kusma ve baş dönmesi şikayetlerini azalttığı bildirilmiştir [13].

Feokromasitomada kullanımı sakıncalıdır. Astım ve peptik ülserde dikkatli kullanılmalıdır. Etkisi az sayıda da olsa kaliteli bilimsel çalışmalarla gösterilmiş nadir ilaçlardır. Sıklıkla hatalı olarak düşük dozlarda kullanılır ve bu dozlarda etkisi görülmeyebilir. Başlangıç dozu günde en az 2 sefere bölünecek şekilde 48 mg olmalıdır. Ülkemizde 8, 16 ve 24 mg'lık formları mevcuttur [5].

3.2.Pirasetam (Nootropil®): Demans ya da bilişsel bozukluğu olan hastalarda klinik iyileşme sağlayan nootropik ajanlardan biridir. Vasküler etkisi ile yaygın olarak serebral mikrosirkülasyonu arttırmak amacı ile kullanılan pirasetamın beyinde nörotransmisyonu ve hücresel enerji miktarını düzenleyerek santral sistemdeki dengesizlikleri giderici etkisi vardır. Özellikle membran iletiminde kolinerjik ve eksitatör amin (NMDA) reseptörlerinin sayısını ve fonksiyonunu düzenler. Kafa travması, vertebrobasiler yetmezlik gibi santral nedenlerde ve periferik hastalıklarda vertigonun şiddetini azalttığı, tekrarlayıcı hastalıklarda hem vertigo şiddetini azalttığı hem de atak sıklığını düşürdüğü bildirilmiştir [14]. Pirasetam ayrıca trombosit agregasyonunu azaltarak, antitrombotik etki göstermektedir. Yaşlı hastalarda özellikle etkili olduğu rapore edilmiştir. Gebelikte ve ağır renal yetmezlikte kullanılmamalıdır. Antioksidan etkileri de mevcuttur ancak bu etki terapötik dozlarda değil, bu dozun 10 kat fazlasında ortaya çıkmaktadır [14]. Ülkemizde pirasetam Nootropil ampul® ve tablet® formlarında bulunmaktadır. Özellikle akut vertigo atağı sırasında Nootropil ampul; hafıza sorunları yaşayan yaşlı hastalardaki vertigonun idame tedavisinde ise Nootropil tablet® formu 3x1 pozolojide kullanılabilir [5].

3.3.Trimetazidine (Vastarel®, Vasofix®, Triplus®, Sitorel®, Picadil®):Etki mekanizması tam olarak aydınlatılamamış olsa da antioksidan özelliği ile serbest oksijen radikallerinin üretimini inhibe eder. Sitoprotektif bir ajan olup vazodilatasyon etkisi ile kanlanmayı artırır. Özellikle iskemik ve toksik stres ortamında kokleovestibüler sistemi nöronal hasardan korur. Etkisini gösteren klinik çalışmalar vardır. Vertigo ve tinnitus üzerinde plaseboya göre daha etkili bulunmuştur [15]. Trimetazidine ve betahistin periferik vertigolu hastalarda karşılaştırıldığında eşdeğer derecede etkili bulunmuş, Meniere hastalığında ise etkinliğinin biraz daha fazla olduğu gözlenmiştir [16]. Gebe ve çocuklarda kullanılmaz. Monoamin oksidaz (MAO) inhibitörleri ile kullanılmamalıdır. Ülkemizde 3x1 pozolojide kullanılan 20mg tablet formu ile 2x1 pozolojide kullanılan 35mg modifiye salımlı tablet formları bulunmaktadır [5].

3.4.Sinnerazin: Bir antihistaminik olan sinnerazin zayıf sedatif

ve antikolinerjik etki yanında antiemetik etkisi vardır. Klasik antihistaminiklere ait uyku, sersemlik hali, dikkatsizlik, kilo artışı gibi yan etkileri vardır. Taşıt tutmasında özellikle tercih edilir ancak araba kullanmak gibi dikkat gerektiren işlerde çalışanlarda kullanılması sakıncalı olabilir. Günlük doz 50-225 mg'dır [5].

3.5.Fluarizin: Merkezi sinir sistemine etkilili bir kalsiyum antagonistidir. Sinnerazine benzeyen ancak daha kuvvetli etki ve yan etkileri vardır. Uzun süreli kullanımında ekstrapiramidal etkileri de ortaya çıkabilir. Fonksiyonel vertigo hastalarında özellikle tercih edilir [17]. Günlük doz 5 mg'dır [5].

3.6.Gingo glikozidleri: Gingo biloba ağacının yapraklarının kuru ekstresinden elde edilen ekstre, hem antioksidan hem de platelet aktive edici faktör (PAF) antagonisti olarak etki gösterir. Bitki yapısında doğal olarak bulunan antioksidanlar serbest radikalleri bağlar. Ayrıca ilacın serebrovasküler düzenleyici etkisi, vertigo kontrolü ve iskemik nöron hasarını önleme gibi etkileri olduğunu gösteren çalışmalar vardır. Yapılan karşılaştırmalı çalışmalarda semptomlar üzerine betahistin kadar etkili olduğu saptanmıştır [18]. Daha çok vasküler yetmezlik, algısal bozukluk ve santral denge bozukluklarında etkili olabileceği düşünülmeyle beraber, periferik vertigolu hastalarda rehabilitasyona eklendiğinde kompanzasyonu hızlandırdığı bildirilmiştir [19]. Vasküler vestibüler hastalıklarda betahistin vestibüloöklüler refleksi baskılamakta Ginkgo bilobanın düzeltiltiği görülmüştür [18]. Hayvan çalışmalarında Ginkgo biloba ekstresinin tek taraflı vestibüler hasar sonrası kompanzasyonda etkili olduğu, spontan oküler nistagmus gibi belirtilerin düzelmesini hızlandırdığı bildirilmiştir [20].

Pozoloji 3x1 şeklinde ve günlük doz 120-240mg kadardır. Kanama diyezeti olan hastaların kullanması önerilmez [5].

3.7.Steroidler: Yapılan epidemiyolojik, histopatolojik ve hayvan çalışmalarda vetigonun sık nedenlerinden biri olan vestibüler nöritin viral inflamasyon nedeniyle oluştuğuna dair güçlü kanıtlar mevcuttur [21-23]. Sadece vestibüler nöritde değil, henüz tanısı konulmamış "akut vestibüler vertigo"da da steroidlerin etkinliği belirtilmiştir. Arıyasu ve ark.'nın yaptığı çalışmada metilprednizolon 16mg 2x1 pozolojide 3 gün kullanılan hastalarda vertigo ve nistagmus semptomlarında erken dönemde azalma saptanmıştır [24]. Steroidlerin bir etkisi de vertigoda tek taraflı vestibüler hasar sonrası ortaya çıkan stres yanıtlarını etkilemesi ve vestibüler kompanzasyonu hızlandırmasıdır [25].

Pediyatrik vertigoda tedavi

Pediyatrik vakalarda görülen vertigo, oldukça çeşitli etyolojik faktörlere dayanır. Hastalığın nadir görülmesi ve anamnez almadaki zorluklar nedeniyle tedavide standart protokoller bulunmamaktadır [26]. Pediyatrik vertigonun altında yatan nedenin aydınlatılması ve buna yönelik tedavi uygulanması esastır. Vertigo çocukluk çağında en sık siklik kusma ve migren ile karışır [27]. Bu sebeple kusma şikayeti ile

başvuran hastalarda altta vertigo hastalığının yatabileceği unutulmamalıdır. Pediatrik vertigo tedavisinde semptomatik tedaviden ayrı olarak diüretikler, özellikle pediatrik Meniere hastalığında ilk seçilecek ilaçtır [28]. Dihidroergotamin, izosorbit uygulanabilecek diğer tedavi seçenekleridir [29]. Tedaviye dirençli vertigo vakalarında, sistemik yan etkilerden kaçınmak için intratimpanik gentamisin tedavisini öneren yayınlar bulunmaktadır [30].

Sonuç olarak vertigo medikal tedavisinde kullanılan ilaçlar çeşitlilik göstermektedir. Hastanın öncelikle klinik ve tanı testleri ile olarak değerlendirilmesi, daha sonra gerek görüldüğü takdirde uygun medikal tedavinin başlanması gerekmektedir.

Maddi Destek ve Çıkar İlişkisi

Çalışmayı maddi olarak destekleyen kişi/kuruluş yoktur ve yazarların çıkarıya dayalı bir ilişkisi yoktur.

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■ Case Report

Diagnosis and treatment of keratocystic odontogenic tumor mimicking a dentigerous cyst in panoramic radiography

Panoramik radyografide dentigeröz kiste benzeyen keratokistik odontojenik tümörün teşhis ve tedavisi

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ABSTRACT

Keratocystic odontogenic tumor (KCOT) is a cystic lesion of odontogenic origin, which is classified as a developmental tumor derived from the dental lamina. KCOT may occur in any part of both maxillaries, most commonly in the angle and the ramus region of the mandible. It has an aggressive behavior and high recurrence rate. Radiographically, lesions may appear as round or ovoid in shape, often with a scalloped, multilocular appearance that may involve an impacted tooth. In this case report, a unilocular radiolucent large lesion with relatively well-circumscribed margins involving the left mandibular impacted third molar was detected incidentally on panoramic radiographic examination. Cone beam computed tomography (CBCT) was used for advanced imaging. The radiographic appearance of the lesion resembled a dentigerous cyst. Patient was consulted to Oral and Maxillofacial Surgery Department for possible treatment options. Initially an intraoral surgical operation with marsupialization was made under local anesthesia. After four months, the dimension of the lesion was reduced, previous marsupialization followed by surgical enucleation. The histopathological report revealed a parakeratinized epitel surrounding the lesion that means a KCOT.

Key words: Keratocyst, dentigerous cyst, cone-beam computed tomography.

ÖZ

Keratistik odontojenik tümör (KKOT) odontojenik kaynaklı, dental laminadan gelişen ve tümör olarak sınıflandırılan kistik bir lezyondur. KKOT orofasiyal bölgede maxilla ve mandibulada, sıklıkla da mandibulanın ramus ve angulus bölgelerinde görülür. Agresif davranış gösteren ve nüksetme oranı yüksek benign bir neoplazmdir. Radyografik olarak lezyonlar yuvarlak veya oval şekilli, bazen de tarak şeklinde multiloküler görüntü sergiler ve gömülü bir diş ile ilişkili olabilir. Bu vaka raporunda, sol alt gömülü üçüncü molar diş ile ilişkili, iyi sınırlı ve geniş uniloküler radyolüsent bir lezyon rutin panoramik radyografik incelemede tesadüfen tespit edildi. İleri görüntüleme amacıyla bölgeden konik ışınli bilgisayarlı tomografi (KİBT) görüntüleri alındı. Lezyonun radyografik özelliklerine göre dentigeröz kist ön tanısı kondu. Hasta olası tedavi seçenekleri için Ağız Diş ve Çene Cerrahisi Anabilim Dalı'na konsülte edildi. Tedavide ilk olarak lokal anestezi altında marsupializasyon işlemi gerçekleştirildi. İlk operasyondan 4 ay sonra lezyon boyutları küçüldüğünde, cerrahi olarak enükleasyon yapıldı. Histopatolojik incelemede lezyonun parakeratinize epitel ile çevrili olmasından dolayı kesin teşhis olarak KKOT olduğu rapor edildi.

Anahtar kelimeler: Keratokist, dentigeröz kist, konik ışınli bilgisayarlı tomografi.

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Introduction

The odontogenic keratocyst is a cystic lesion of odontogenic origin, derived from the dental lamina [1]. The World Health Organization (WHO) recent classification of head and neck tumors reclassified the keratocyst as a benign neoplasm recommending the term keratocystic odontogenic tumor (KCOT) [2]. The incidence of keratocysts varied from 3%-12% (mean 7%) of all odontogenic cysts [3]. KCOT may occur in any part of both maxillaries, most commonly in the angle and the ramus region of the mandible [4]. It has an aggressive behavior and high recurrence rate. Clinical features includes swelling and/or pain. Even though some asymptomatic cases have also been reported [5].

Radiographic evaluation is important in the diagnosis to detect the size of the lesion and define its anatomical relationships. It is also useful in assessing the borders to ascertain the aggressiveness of the lesion. These lesions may appear as round or ovoid in shape, often with a scalloped, multilocular appearance that may involve an impacted tooth. Multiple keratocysts are typically associated with basal cell nevus syndrome (Gorlin Syndrome) [4]. The treatment options remains controversial and includes enucleation, marsupialization, chemical curettage with Carnoy's solution, and resection [5].

In this case report, incidental diagnosis and treatment of a large KCOT involving the left mandibular impacted left third molar tooth was presented.

Case Report

A 23-year old female patient referred to our Maxillofacial Radiology Department with toothache. On routine panoramic radiographic examination, a large unilocular radiolucent lesion with relatively well-circumscribed margins involving the left mandibular impacted third molar tooth was detected incidentally (Figure 1). On clinical examination, there was no extraoral and intraoral findings including swelling or pus drainage related to lesion (Figure 2), additionally no root resorption and teeth replacement were observed. All teeth were vital related the lesion area. For advanced imaging of the area; PaxUni 3D was used to capture Cone-beam computed tomography (CBCT) images at the following settings: 50-90 kVp, 4-10 mA, and 10 seconds exposure time, and a 50×50 mm field of view (FOV) size. Due to the radiographic appearance and clinical findings of the lesion; a preliminary diagnosis of dentigerous cyst was thought. The patient was consulted to Maxillofacial Surgery Department for possible treatment options. Before surgical operation, signed informed consent form was taken from patient. An initial surgical intervention performed with marsupialization followed by decompression. The aim of this approach is to protect the bone and other vital structures, as well as to reduce pathologic fracture risk. During this procedure specimen was taken for histopathologic examination. First histopathologic report suggested a dentigerous cyst. However, four months after the first surgery, when the dimension of the lesion was reduced (Figures 3,4), the cyst was totally excised and secondary histopathological report revealed a parakeratinized epithelial lining surrounding the lesion that means a KCOT.

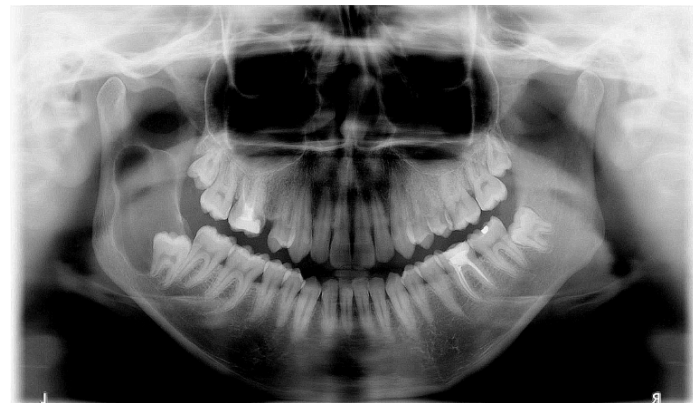


Figure 1. Preoperative panoramic radiograph showing a large unilocular radiolucent lesion with relatively well-circumscribed margins.



Figure 2. Preoperative intraoral picture of the lesion area. There was no intraoral findings including swelling or pus drainage.

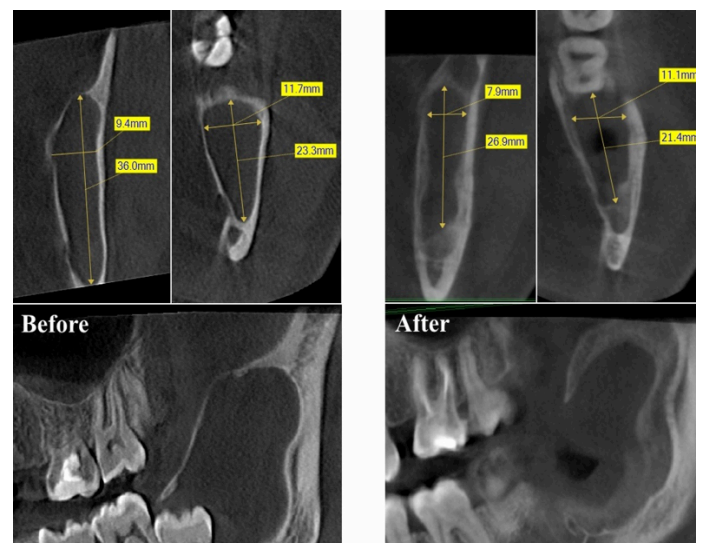


Figure 3. Showing the reduction of lesion dimensions four months after marsupialization followed by decompression. Preoperative and postoperative CBCT scans.



Figure 4. Panoramic radiograph of the patient four months after marsupialization.

Discussion

KCOT, formerly known as the odontogenic keratocyst, is a benign developmental odontogenic tumor with many unique clinical and histological features [4]. KCOT has wide age range, but mainly seen in the 2nd and 4th decades of life [6]. The lesions are more common in males [7]. Above 70 percent of cases involve the mandible, especially in the molar, angle and ramus regions. Other locations such as the anterior portion of the maxilla, the maxillary sinus and the maxillary third molar area have also been reported [3]. Approximately 20-40% of KCOTs are associated with impacted teeth. On the other hand, this feature is also identical for dentigerous cysts. The main difference between keratocysts and other jaw cysts is insidious growth of the KCOT into the medullary bone, causing no clinical symptoms [8]. Additionally KCOT has an aggressive behavior and higher recurrence rate than other type of jaw cysts [3].

Clinically symptoms may be present, especially with larger lesions [8]. Occasional pain, swelling, and drainage which is suggestive of a secondary infection of the cyst [4]. KCOTs are usually detected incidentally during routine radiographic examinations. Radiographically lesions are identified as unilocular radiolucencies with well-demarcated thin corticated margins. Larger lesions may become multilocular with scalloped borders. Root resorption is relatively uncommon [6].

Although panoramic and periapical radiography plays a fundamental role, as they are the most frequently employed dental radiographic methods, spatial information in all 3 dimensions was critical in establishing a diagnosis [5]. The serial images provided by a computed tomography (CT) scan make it possible to identify the relationship between the lesion and the surrounding anatomical structures. CT has lower space resolution but is more sensitive in revealing bone shape than plain radiographs which can display trabecular bone pattern clearly. Magnetic resonance (MR) images provides good contrast

between different tissues and more detailed information than CT images, especially for the soft tissues. However, MRI is inferior to CT in demonstrating early bone changes, therefore, CT scan may be considered in some cases when bone changes was suspected [9]. Recently, CBCT with high-level spatial resolution has been used for diagnostic imaging of the oral and maxillofacial regions and various anatomical structures. Owing to its lower radiation exposure, low cost and higher speed relative to conventional CT and MRI has made CBCT a valuable tool for diagnosis of various bone lesions [10].

Histopathologically, diagnostic findings involve a uniform cyst lining, hyperchromatic and palisaded basal cells, wavy parakeratin production and a flat interface between the epithelium and connective tissue wall [8,11]. Importantly, these classic histopathologic features are often lost if the cyst is inflamed, which can guide to an incorrect diagnosis [8].

Treatment approaches in different cases have varied from marsupialization and enucleation, which may be combined with adjuvant therapy, such as cryotherapy and Carnoy's solution, to marginal or radical resection [7,12]. Many authors agree that simple enucleation is sufficient, provided that patients are closely followed up both clinical and radiologically for several years. On the other hand, many authors recommend the application of Carnoy's solution, a tissue fixative to bony cavity following enucleation and curettage [3].

The present study concentrated on clinical imaging and histological diagnosis, as well as on the therapy of the KCOT. We support the notion that marsupialization is significant in preserving bone and other vital structures, as well as reducing of pathologic fracture risk in large cystic lesions.

Declaration of conflicting interests

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■ Case Report

Metronidazol tedavisine bağlı olarak lökopeni ve trombositopeni gelişen akut gastroenterit olgusu

Leukopenia and thrombocytopenia due to metronidazole treatment in a case with acute gastroenteritis

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ÖZ

Akut gastroenteritlerde tedavinin esası sıvı-elektrolit replasmanıdır. Bakteriyel veya paraziter etken düşünülen olgularda ise antibiyotik veya antiparaziter tedavi uygulanabilir. Gaitanın parazitolojik yönden incelemesi yapılmadan ampirik olarak metronidazol tedavisi başlanmamalıdır. Metronidazol antianaerobik ve antiprotozoal etkili bir ilaçtır, iyi tolere edilmesine rağmen bazı hastalarda hematolojik ve nörolojik yan etkilere neden olabilmektedir.

Bu yazıda akut gastroenterit tanısıyla metronidazol tedavisi başlanan ve metronidazole bağlı yan etki olarak lökopeni ve trombositopeni gelişen 84 yaşında bir olgu sunulmuştur. Metronidazol tedavisi sırasında veya sonrasında lökopeni, trombositopeni gibi ilaca bağlı hematolojik yan etkilerin gelişebileceği akılda tutulmalı ve yan etki gelişen hastalar yakından takip edilmelidir.

Anahtar kelimeler: Akut gastroenterit, metronidazol, yan etki, lökopeni, trombositopeni

ABSTRACT

In cases with gastroenteritis, the treatment is based on fluid and electrolyte replacement. Antibacterial or antiparasite therapy could be given in cases where bacterial or parasite microorganism is possible. However metronidazole therapy should not be initiated empirically without parasitological evaluation of the feces. Metronidazole is an antianaerobic and antiprotozoal effective drug and although it is well tolerated, it can cause hematological and neurological adverse effects in some patients. Herein, we report an 84 years old male who has given metronidazole therapy with the diagnosis of acute gastroenteritis and developed leukopenia and thrombocytopenia as side effects of the therapy. It must be kept in mind that hematologic side effects such as neutropenia and thrombocytopenia could occur during or after the metronidazole therapy and those patients should be followed closely.

Key words: Acute gastroenteritis, metronidazole, adverse effect, leukopenia, thrombocytopenia

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Giriş

Akut gastroenteritler özellikle yaz aylarında en sık karşılaşılan infeksiyon hastalıklarının başında gelmektedir. Akut gastroenteritler inflamatuvar (invaziv) ve noninflamatuvar (noninvaziv) ishaller olarak iki gruba ayrılabilir. Akut gastroenterite neden olan başlıca etkenler bakteriler, parazitler ve virüslerdir. İnflamatuvar ishallerde dışkıda lökosit ve eritrosit saptanırken, noninflamatuvar ishallerde ise saptanmaz [1].

Entamoeba histolytica'nın neden olduğu amipli dizanteri inflamatuvar bir ishal tablosu olup tanısı dışkı mikroskopisinde direkt bakıda veya dışkının trikrom boyamasında trofozoid formların görülmesi ile konmaktadır. Amipli dizanteri tedavisinde tercih edilen antiprotozoal ilaçlar 5-nitroimidazol türevi olan metronidazol, ornidazol veya seknidazoldür. Metronidazole bağlı olarak sık bildirilen yan etkilerin başlıcaları bulantı, diyare, kuru ağız, dilde metalik tat, stomatit, periferik nöropati ve alkole birlikte alındığında disülfiram benzeri yan etkidir [2-5]. Bu yan etkiler olguların %2-10'unda görülür [4]. Metronidazole bağlı olarak hematolojik yan etkiler ise lökopeni, nötropeni, trombositopeni, pansitopeni ve Hemolitik Üremik Sendromu içerir [6-12]. Nadir görülen yan etkileri içerisinde ise Stevens-Johnson Sendromu, pankreatit, oftalmik toksisite ve ototoksisite yer alır [4].

Bu yazıda akut gastroenterit tanısıyla acil servise başvuran ve ampirik olarak başlanan metronidazol tedavisi sonrasında lökopeni ve trombositopeni gelişen 84 yaşında bir erkek hasta sunulmuştur.

Olgu Sunumu

Seksen dört yaşında erkek hasta ateş, karın ağrısı, ishal şikayeti ile acil servise başvurmuş ve akut gastroenterit tanısı ile metronidazol tedavisi 3x500 mg dozda başlanmıştı. Beş gün metronidazol tedavisi alan, ancak ateş, ishal yakınmaları devam eden ve oral alım bozukluğu olan hasta kliniğimize yatırıldı. Fizik muayenesinde ateşi: 36,5°C, TA: 100/60 mm/Hg, nabız: 74/dk idi, dilde hafif kuruluk mevcuttu. Diğer sistem muayeneleri normaldi. Laboratuvar incelemesinde Hb: 11,5 g/dL, PLT: 65.000/µL, lökosit sayısı: 2400/µL, C-reaktif protein: 2,4 mg/dL, kreatinin: 1,3 mg/dL saptandı. Gaita mikroskopisinde nadir lökosit görüldü, eritrosit ve parazit saptanmadı. Gaita kültüründe salmonella ve shigella türleri üremedi.

Hastanın metronidazol dışında aldığı başka bir ilaç tedavisi, lökopeni ve trombositopeniye neden olabilecek başka bir hastalığı ve infeksiyonu yoktu. Hastanın metronidazol tedavisi öncesindeki lökosit, trombosit değerleri normal sınırlarda iken, hemoglobin değeri düşüktü (Hb:11,8 gr/dL). Bu nedenle hastada saptanan lökopeni ve trombositopeni metronidazole bağlandı ve metronidazol tedavisi kesildi. İshal yakınması devam eden hastaya ringer laktat ile sıvı-elektrolit replasmanı

yapıldı. Lökosit ve trombosit değerleri takip edildi. Yatışının üçüncü gününde PLT: 100.000/µL, lökosit sayısı: 5400/µL'e yükseldi, kreatin değeri ise 1,08 mg/dL'e geriledi. Hastanın yattığı sürece ateşi olmadı, ishal şikayeti ve oral alımı düzelen hasta yatışının 5. gününde taburcu edildi.

Tartışma

Metronidazol 5-imidazol türevi kemoterapötik bir ilaçtır. En sık kullanıldığı endikasyonlar; anaerobik infeksiyonlar, Entamoeba histolytica'nın neden olduğu amipli dizanteri, karaciğer amip absesi ve diğer protozoon infeksiyonlarıdır [3,4].

Metronidazole bağlı olarak tedavi sırasında veya tedavi sonrasında çeşitli yan etkiler görülebilir. Metronidazole bağlı olarak en sık görülen yan etkiler; bulantı, diyare, kuru ağız ve dilde metalik tat gelişimidir. Alkole birlikte alındığında disülfiram benzeri reaksiyona (yüzde kızarıklık, taşikardi, dispne) neden olur. Yüksek dozda ve uzun süre kullanımda periferik ve optik nöropatiye neden olabilir. Aseptik menenjit, ensefalopati, nöbet gelişimi, reversibl serebral sendrom diğer yan etkileridir [2-5].

Metronidazole bağlı olarak gelişen hematolojik yan etkiler nispeten nadir olup, lökopeni, trombositopeni, pansitopeni ve Hemolitik Üremik Sendromu içerir [4,6-12]. Metronidazol, normal tedavi edici dozda kullanılırken yan etkilere neden olabilir. Bu yan etkilerden nötropenin sıklığı %2-4 arasında değişir [8].

Metronidazolün hematolojik yan etkilerini irdeleyen pek çok yayın mevcuttur. Yirmi üç gün süreyle subakut barsak obstrüksiyonu ve amibiyozis tanılılarıyla oral ve intravenöz yolla yüksek dozda metronidazol tedavisi alan 53 yaşında bir kadın hastada metronidazole bağlı olarak gelişen nötropeni bildirilmiştir. Olguda metronidazol tedavisi kesildikten sonra aşamalı olarak nötropeni düzelmiştir [8].

Martin ve ark. [9] 43 yaşında Guillain-Barré sendromu olan bir hastada aspirasyon pnömonisi nedeniyle tedaviye eklenen metronidazol tedavisi sonrasında agranülositoz geliştiğini ve metronidazol kesildikten 3 gün sonra agranülositozun düzeldiğini rapor etmişlerdir.

White ve ark. [10] sağ kolon kanseri nedeniyle hemikolektomi uygulanan 74 yaşında kadın hastaya ameliyattan 7 gün önce ve ameliyattan 10 gün sonra metronidazol tedavisi uygulandığını, ameliyattan sonraki 16. günde lökopeni geliştiğini bildirmişlerdir. Hastanın yapılan kemik iliği incelemesinde granülositopoez ve eritropoez saptandığı, hastada nötropeniye neden olabilecek metronidazol dışında bir ilaç veya viral infeksiyon olmadığı rapor edilmiştir.

McKendrick ve Geddes [11] 66 yaşında bir erkek hastada anaerobik cilt infeksiyonu tanısıyla başlanan metronidazol tedavisinden iki hafta sonra lökopeni geliştiğini bildirmişlerdir.

Gutiérrez ve ark. [12] tedavi edici dozda intravenöz metronidazol tedavisi bir olguda ilaca bağlı olarak nötropeni bildirmişlerdir.

Sunduğumuz olguda lökopeni ve trombositopeniyi açıklayacak metronidazol dışında bir ilaç kullanımı ya da hematolojik veya enfeksiyöz bir hastalık mevcut değildi. Olgumuz metronidazole bağlı olarak gelişen lökopeni ve trombositopeni olarak değerlendirildi ve izleme alındı. Metronidazol tedavisi kesildikten 3 gün sonra lökopeni ve trombositopenisi kendiliğinden düzeldi. Olgumuzda metronidazol tedavisine bağlı olarak lökopeni ile birlikte trombositopeninin görülmesi dikkat çekiciydi. Literatürde sıklıkla metronidazole bağlı olarak lökopeni veya nötropeni olguları bildirilmiştir [8,10-12]. Nadiren metronidazole bağlı ilaca bağlı antikolar aracılığı ile gelişen reversibl trombositopeni görülebilir. İlaça bağlı antikolar aracılığı ile gelişen trombositopenide temel mekanizma çözünebilir ilaç varlığında ilaç membran proteinlerine bağlanan antikoları indükleyerek trombositopeniye neden olur. İlaça bağlı antikolar aracılığı ile gelişen trombositopeniye enden olan başlıca antibiyotikler; beta-laktam antibiyotikler (ampisilin, amoksisislin, sefazolin, sefadroksil, sefepim, sefpodoksim, seftazidim, seftizoksim, cefazolin, cefadroxil, cefepime, cefpodoxime, ceftazidime, piperasilin-tazobaktam, lorakarbef vb.), metronidazol, siprofloksasin, nitrofurantoin, etambutoldür [13]. Sunduğumuz olguda trombositopeniye neden olabilecek başka bir ilaç kullanımı ve hastalık yoktu, bu nedenle trombositopeni de metronidazol tedavisine bağlandı. Metronidazol tedavisi kesildikten sonra hastanın trombositopenisi düzeldi.

Sonuç olarak, akut gastroenterit ile başvuran olgulara dışkıda parazitolojik inceleme yapılmadan metronidazol tedavisi başlanılmamalı, metronidazole bağlı olarak lökopeni ve trombositopeni gibi ciddi yan etkilerin görülebileceği unutulmamalıdır.

Maddi Destek ve Çıkar İlişkisi

Çalışmayı maddi olarak destekleyen kişi/kuruluş yoktur ve yazarların çıkara dayalı bir ilişkisi yoktur.

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Yazım Kuralları

Tip dergilerine gönderilecek makalelerin standart gereksinimleri ile ilgili tüm bilgileri www.icmje.org internet adresinde bulabilirsiniz.

Amaç ve kapsam: "Turkish Journal of Clinics and Laboratory", hakemli, açık erişimli ve periyodik olarak çıkan, **DNT Ortadoğu Yayıncılık A.Ş.** ye ait bir dergidir. Hedefimiz uluslararası bir tabanda hastalıkların teşhis ve tedavisinde yenilikler içeren yüksek kalitede bilimsel makaleler yayınlamaktır. Yılda dört kez çıkmakta olup, ULAKBİM-TR, Index copernicus, DOAJ, Google Scholar, Cite Factor, DRJI, InfoBase Index, ISI, Türk Medline, Türkiye Atif Dizininde erişilebilir ve makalelere doi numarası verilen bilimsel bir tıp dergisidir. Hakemli bir dergi olarak gelen yazılar konsültanlar tarafından, öncelikle, biyomedikal makalelere ait Uluslararası Tıp Dergileri Editörleri Komitesi (www.icmje.org adresinden ulaşılabilir) tarafından tanımlanan standart gereksinimler ile ilgili ortak kurallara uygunluğu açısından değerlendirilir.

Derginin yayın dili Türkçe ve İngilizcedir. Tıbbın her dalı ile ilgili retrospektif/prospektif klinik ve laboratuvar çalışmaları, ilginç olgu sunumları, davet üzerine yazılan derlemeler, editöre mektuplar, orijinal görüntüler, kısa raporlar ve cerrahi teknik yazılarını yayımlayan bilimsel, uluslararası hakemli bir dergidir. Başka bir dergide yayımlanmış veya değerlendirilmek üzere gönderilmiş yazılar veya dergi kurallarına göre hazırlanmamış yazılar değerlendirme için kabul edilmez. Yazıların değerlendirme işlemi sadece <http://www.dergipark.ulakbim.gov.tr/tjclinlab> adresi üzerinden online olarak yapılmakta ve yayın hakları devir formu gönderilmelidir. Makalelerin "full-text" pdf formuna <http://www.dergipark.ulakbim.gov.tr/tjclinlab> linkinden ulaşılabilir.

Açık erişim politikası: Turkish Journal of Clinics and Laboratory açık erişimi olan bir dergidir. Kullanıcılar yazıların tam metnine ulaşabilir, kaynak gösterilerek tüm makaleler bilimsel çalışmalarda kullanılabilir.

Aşağıdaki rehber dergiye gönderilen makalelerde aranan standartları göstermektedir. Bu uluslararası format, makale değerlendirme ve basım aşamalarının hızla yapılmasını sağlayacaktır.

Yazarlara bilgi: Yazıların tüm bilimsel sorumluluğunu yazar (lar) a aittir. Editör, yardımcı editör ve yayıncı dergide yayınlanan yazılar için herhangi bir sorumluluk kabul etmez.

Dergi adının kısaltması: Turk J Clin Lab

Yazışma adresi: Yazılar e-mail yoluyla sorumlu yazar tarafından, <http://www.dergipark.ulakbim.gov.tr/tjclinlab> linkini üzerinden gönderilmelidir.

Makale dili: Makale dili Türkçe ve İngilizcedir. İngilizce makaleler gönderilmeden önce profesyonel bir dil uzmanı tarafından kontrol edilmelidir. Yazıdaki yazım ve gramer hataları içerik değişmeyecek şekilde İngilizce dil danışmanı tarafından düzeltilebilir.

Makalenin başka bir yerde yayımlanmamıştır ibaresi: Her yazar makalenin bir bölümünün veya tamamının başka bir yerde yayımlanmadığını ve aynı anda bir diğer dergide değerlendirilme sürecinde olmadığını, editöre sunum sayfasında belirtmelidirler. 400 kelimedenden az özetler kapsam dışıdır. Kongrelerde sunulan sözlü veya poster bildirilerin, başlık sayfasında kongre adı, yer ve tarih verilerek belirtilmesi gereklidir.

Değerlendirme: Dergiye gönderilen yazılar format ve plagiarizm açısından değerlendirilir. Formata uygun olmayan yazılar değerlendirilmeden sorumlu yazara geri gönderilir. Bu tarz bir zaman kaybının olmaması için yazım kuralları gözden geçirilmelidir. Basım için gönderilen tüm yazılar iki veya daha fazla yerli/yabancı hakem tarafından değerlendirilir. Makalelerin değerlendirilmesi, bilimsel önemi, orijinalliği göz önüne alınarak yapılır. Yayına kabul edilen yazılar editörler kurulu tarafından içerik değiştirilmeden yazarlara haber verilerek yeniden düzenlenebilir. Makalenin dergiye gönderilmesi veya basıma kabul edilmesi sonrası isim sırası değiştirilemez, yazar ismi eklenip çıkartılamaz.

Basıma kabul edilmesi: Editör ve hakemlerin uygunluk vermesi sonrası makalenin gönderim tarihi esas alınarak basım sırasına alınır. Her yazı için bir doi numarası alınır.

Yayın hakları devri: <http://www.dergipark.ulakbim.gov.tr/tjclinlab> adresi üzerinden online olarak gönderilmelidir. 1976 Copyright Act'e göre, yayımlanmak üzere kabul edilen yazıların her türlü yayın hakkı yayıncıya aittir.

Makale genel yazım kuralları: Yazılar Microsoft Word programı (7.0 ve üst versiyon) ile çift satır aralıklı ve 12 punto olarak, her sayfanın iki yanında ve alt ve üst kısmında 2,5 cm boşluk bırakılarak yazılmalıdır. Yazı stili Times New roman olmalıdır. "System International" (SI) unitler kullanılmalıdır. Şekil tablo ve grafikler metin içinde referans edilmelidir. Kısaltmalar, kelimenin ilk geçtiği yerde parantez içinde verilmelidir. Türkçe makalelerde %50 bitişik yazılmalı, aynı şekilde İngilizcelerde de %50 bitişik olmalıdır. Türkçede ondalık sayılarda virgül kullanılmalı (55,78) İngilizce yazılarda nokta (55.78) kullanılmalıdır. Derleme 4000, orijinal çalışma 2500, olgu sunumu 1200, editöre mektup 500 kelimeyi geçmemelidir. Özet sayfasından sonraki sayfalar numaralandırılmalıdır.

Yazının bölümleri

1. Sunum sayfası: Yazının Turkish Journal of Clinics and Laboratory'de yayınlanmak üzere değerlendirilmesi isteğinin belirtildiği, makalenin sorumlu yazarı tarafından dergi editörüne hitaben gönderdiği yazıdır. Bu kısımda makalenin bir bölümünün veya tamamının başka bir yerde yayımlanmadığını ve aynı anda bir diğer dergide değerlendirilme sürecinde olmadığını, maddi destek ve çıkar ilişkisi durumu belirtmelidir.

2. Başlık sayfası: Sayfa başında gönderilen makalenin kategorisi belirtilmelidir (Klinik analiz, orijinal çalışma, deneysel çalışma, olgu sunumu, vs).

Başlık: Kısa ve net bir başlık olmalıdır. Kısaltma içermemelidir. Türkçe ve İngilizce yazılmalı ve kısa başlık (runing title) Türkçe ve İngilizce olarak eklenmelidir. Tüm yazarların ad ve soyadları yazıldıktan sonra üst simge ile 1'den itibaren numaralandırılıp, unvanları, çalıştıkları kurum, klinik ve şehir yazar isimleri altına eklenmelidir.

Bu sayfada "sorumlu yazar" belirtilmeli isim, açık adres, telefon ve e-posta bilgileri eklenmelidir.

Kongrelerde sunulan sözlü veya poster bildirilerin, başlık sayfasında kongre adı, yer ve tarih verilerek belirtilmesi gereklidir.

3. Makale dosyası: (Yazar ve kurum isimleri bu dosyada bulunmamalıdır)

Başlık: Kısa ve net bir başlık olmalıdır. Kısaltma içermemelidir. Türkçe ve İngilizce yazılmalı ve kısa başlık (runing title) Türkçe ve İngilizce olarak eklenmelidir.

Özet: Türkçe ve İngilizce yazılmalıdır.

Orijinal çalışmalarda özetler, Amaç (Aim), Gereç ve Yöntemler (Material and Methods), Bulgular (Results) ve Sonuçlar (Conclusion) bölümlerine ayrılmalı ve 250 sözcüğü geçmemelidir. Olgu sunumları ve benzerlerinde özetler, kısa ve tek paragraflık olmalıdır (150 kelime), Derlemelerde 300 kelimeyi geçmemelidir.

Anahtar kelimeler: Türkçe ve İngilizce özetlerin sonlarında bulunmalıdır. En az 3 en fazla 6 adet yazılmalıdır. Kelimeler birbirlerinden noktalı virgül ile ayrılmalıdır. İngilizce anahtar kelimeler "Medical Subject Headings (MESH)" e uygun olarak verilmelidir. (www.nlm.nih.gov/mesh/MBrowser.html). Türkçe anahtar kelimeler "Türkiye Bilim Terimleri" ne uygun olarak verilmelidir (www.bilimterimleri.com). Bulunmaması durumunda birebir Türkçe tercümesi verilmelidir.



Metin bölümleri: Orijinal makaleler; Giriş (Introduction), Gereç ve Yöntemler (Material and Methods), Bulgular (Results), Tartışma (Discussion), Kaynaklar (References) olarak düzenlenmelidir. Olgu sunumları; Giriş (Introduction), Olgu sunumu (Case Report), Tartışma (Discussion), Kaynaklar (References) olarak düzenlenmelidir. Şekil, fotoğraf, tablo ve grafiklerin metin içinde geçtiği yerler ilgili cümlelerin sonunda belirtilmeli metin içine yerleştirilmemelidir. Kullanılan kısaltmalar altındaki açıklamada belirtilmelidir. Daha önce basılmış şekil, resim, tablo ve grafik kullanılmış ise yazılı izin alınmalıdır ve bu izin açıklama olarak şekil, resim, tablo ve grafik açıklamasında belirtilmelidir. Tablolar metin sonuna eklenmelidir. Resimler/fotoğraf kalitesi en az 300dpi olmalıdır.

Etik kurallar: Klinik araştırmaların protokolü etik komitesi tarafından onaylanmış olmalıdır. İnsanlar üzerinde yapılan tüm çalışmalarda, "Yöntem ve Gereçler" bölümünde çalışmanın ilgili komite tarafından onaylandığı veya çalışmanın Helsinki İlkeler Deklerasyonuna (www.wma.net/e/policy/b3.htm) uyularak gerçekleştirildiğine dair bir cümle yer almalıdır. Çalışmaya dahil edilen tüm insanların bilgilendirilmiş onam formunu imzaladığı metin içinde belirtilmelidir.

Çalışmada "Hayvan" ögesi kullanılmış ise yazarlar, makalenin Gereç ve Yöntemler bölümünde Guide for the Care and Use of Laboratory Animals (www.nap.edu/catalog/5140.html) prensipleri doğrultusunda çalışmalarında hayvan haklarını koruduklarını ve kurumlarının etik kurullarından onay aldıklarını belirtmek zorundadır.

Teşekkür yazısı: Varsa kaynaklardan önce yazılmalıdır.

Maddi destek ve çıkar ilişkisi: Makale sonunda varsa çalışmayı maddi olarak destekleyen kişi ve kuruluşlar ve varsa bu kuruluşların yazarlarla olan çıkar ilişkileri belirtilmelidir. (Olmaması durumu da "Çalışmayı maddi olarak destekleyen kişi/kuruluş yoktur ve yazarların herhangi bir çıkar dayalı ilişkisi yoktur" şeklinde yazılmalıdır.

Kaynaklar: Kaynaklar makalede geliş sırasına göre yazılmalıdır. Kaynaktaki yazar sayısı 6 veya daha az ise tüm yazarlar belirtilmeli, 7 veya daha fazla ise ilk 3 isim yazılıp ve ark. ("et al") eklenmelidir. Kaynak yazımı için kullanılan format Index Medicus'ta belirtilen şekilde olmalıdır (www.icmje.org). Kaynak listesinde yalnızca yayınlanmış ya da yayınlanması kabul edilmiş veya DOI numarası almış çalışmalar yer almalıdır. Dergi kısaltmaları "Cumulated Index Medicus" ta kullanılan stile uymalıdır. Kaynak sayısının araştırmalarda 25 ve derlemelerde 60, olgu sunumlarında 10, editöre mektupta 5 ile sınırlandırılmasına özen gösterilmelidir. **Kaynaklar metinde cümle sonunda nokta işaretinden hemen önce köşeli parantez kullanılarak belirtilmelidir. Örneğin [4,5].** Kaynakların doğruluğundan yazar(lar) sorumludur. Yerli ve yabancı kaynakların sentezine önem verilmelidir.

Şekil ve tablo başlıkları: Başlıklar kaynaklardan sonra yazılmalıdır.

4. Şekiller: Her biri ayrı bir görüntü dosyası (jpg) olarak yüklenerek gönderilmelidir.

Makalenin basıma kabulünden sonra "Dizginin ilk düzeltme nüshası" sorumlu yazara e-mail yoluyla gönderilecektir. Bu metinde sadece yazım hataları düzeltilecek, ekleme çıkartma yapılmayacaktır. Sorumlu yazar düzeltmeleri 2 gün içinde bir dosya halinde e-mail ile yayın idare merkezine bildirecektir.

Kaynak yazım örnekleri

Dergilerden yapılan alıntı;

Özpolat B, Gürpınar ÖA, Ayva EŞ, Gazyağcı S, Niyaz M. The effect of Basic Fibroblast Growth Factor and adipose tissue derived mesenchymal stem cells on wound healing, epithelization and angiogenesis in a tracheal resection and end to end anastomosis rat model. Turk Gogus Kalp Dama 2013; 21: 1010-19.

Kitaptan yapılan alıntı;

Tos M. Cartilage tympanoplasty. 1st ed. Stuttgart-New York: Georg Thieme Verlag; 2009.

Tek yazar ve editörü olan kitaptan alıntı;

Neinstein LS. The office visit, interview techniques, and recommendations to parents. In: Neinstein LS (ed). Adolescent Health Care. A practical guide. 3rd ed. Baltimore: Williams&Wilkins; 1996: 46-60.

Çoklu yazar ve editörü olan kitaptan alıntı;

Schulz JE, Parran T Jr: Principles of identification and intervention. In: Principles of Addiction Medicine, Graham AW, Shultz TK (eds). American Society of Addiction Medicine, 3rd ed. Baltimore: Williams&Wilkins; 1998:1-10.

Eğer editör aynı zamanda kitap içinde bölüm yazarı ise;

Diener HC, Wilkinson M (editors). Drug-induced headache. In: Headache. First ed., New York: Springer-Verlag; 1988:45-67.

Doktora/Lisans Tezinden alıntı;

Kılıç C. General Health Survey: A Study of Reliability and Validity. PhD Thesis, Hacettepe University Faculty of Medicine, Department of Psychiatrics, Ankara; 1992.

Bir internet sitesinden alıntı;

Sitenin adı, URL adresi, yazar adları, ulaşım tarihi detaylı olarak verilmelidir.

DOI numarası vermek;

Joos S, Musselmann B, Szecsenyi J. Integration of Complementary and Alternative Medicine into Family Practice in Germany: Result of National Survey. Evid Based Complement Alternat Med 2011 (doi: 10.1093/ecam/nep019).

Diğer referans stilleri için "ICMJE Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Sample References" sayfasını ziyaret ediniz.

Kontrol listesi:

1. Editöre sunum sayfası (Sorumlu yazar tarafından yazılmış olmalıdır).
2. Başlık sayfası (Makale başlığı/kısa başlık Türkçe ve İngilizce, Yazarlar, kurumları, sorumlu yazar posta adresi, tüm yazarların e-mail adresleri, sorumlu yazarın telefon numarası).
3. Makalenin metin sayfası (Makale başlığı/kısa başlık Türkçe ve İngilizce, Özet/anahtar kelimeler, Summary/keywords, makale metni, kaynaklar, tablo ve şekil başlıkları, tablolar, şekiller).
4. Tablo ve grafikler metin içinde olmalıdır.
5. Şekiller (En az 300 dpi çözünürlükte olmalıdır) ayrı bir veya daha fazla dosya halinde gönderilmelidir.

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