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TMSJ publishes original researches, interesting case reports and reviews regarding all fields of medicine. Correspondent authors of the articles should be medical students. All of the published articles are open-access and reachable on our website. The primary aim of the journal is to publish original articles with high scientific and ethical quality and serve as a good example of medical publications for stimulating students, doctors, researchers. Our mission is to feature quality publications that will contribute to the progress of medical sciences as well as encourage medical students to think critically and share their hypotheses and research results internationally.

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All original articles submitted to the TMSJ have to be approved by an ethical committee and include the name of ethics committee(s) or institutional review board(s), the number/ID of the approval(s). Additionally, informed consent documents obtained from patients involving case reports are required for the submission.

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The Journal publishes the following types of articles:

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- Results
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- Reference

Review Articles: The authors may be invited to write or may submit a review article. Reviews including the latest medical literature may be prepared on all medical topics.

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EDITORIAL

Dear readers,

I am proud to become the editor-in-chief of the Turkish Medical Student Journal which has taken a great part in my medical career for 4 years. With our hardworking editorial board which is composed of precious medical students from different universities, we prepared the second issue of 2019.

In this issue, you will find 3 original articles, 2 case reports and 1 letter to the editor. Kef et al. have put a great effort into their multicenter research and approached the relationship between acute exercise and visual reaction time from a different perspective. I am sure that science enthusiasts will find this research, which was conducted among medical students in 4 different universities, interesting to read. The second original article was written by Akay et al. and focuses on the risk factors in cardiovascular diseases by comparing two different surgical approaches: coronary bypass and valve replacement, which are commonly performed. Our last original research, written by Çifcibaşı et al., focuses on a very important subject. The researchers have conducted a questionnaire among family physicians, who are in the first step of our health system and tried to understand the level of awareness of spondyloarthritis. Since rheumatologic diseases do not usually come to mind easily, it is important to evaluate the patients' complaints and refer to a higher-level health care facility, if necessary. I believe, this article will shed light for us to become aware of this fact.

Mutlu et al. presented a case report regarding a newborn with esophageal atresia, tracheoesophageal fistula and feeding problems, whereas Göztepe et al. wrote a case report on torticollis secondary to a posterior fossa tumor. I think, both of them will attract your attention. Lastly, Zacharopoulou et al. shared their thoughts in a letter to the editor, about an article which was published in our journal's previous issue, ''Evaluation of malnutrition statuses in systolic heart failure patients".

I also would like to announce our partner, the European Science Conference which will take place in Charité, Berlin on 25-28th September. I think, it will be a great opportunity for us as medical students to be a part of this conference. Our editorial board has attended many conferences this year and we are also going to be there to meet medical students from all around Europe.

As I come to the end of my editorial, I would like to thank our former editor-in-chief Koray DEMİRCİ, who has taught a lot to all members of the editorial board. We are grateful to him. Throughout my duty as the editor-in-chief, I will try to take our journal's quality much further.

I hope, we were able to make a contribution to the scientific world with this issue of TMSJ, by providing a platform for all medical students to take their first steps in science. I wish to meet all of our readers in the next issue!

Nur Gülce İŞKAN
Editor-in-Chief

CONTENTS

TMSJ
ORIGINAL ARTICLE

EFFECTS OF ACUTE PHYSICAL EXERCISE AND ACUTE MENTAL EXERCISE ON SIMPLE VISUAL REACTION TIME

Berkay Kef[1], Alperen Elibol[2], Ece Şenyiğit[3], Hasan Orkun İpsalalı[4], Umutcan Gölbaşı[5], Fatih Erkan Akay[3], Arda Ulaş Mutlu[3], Ekin Altınbaş[2], Hüseyin Karaman[2], Ceylin Eylül Karakaş[1], Ezgi Güneş[1], Aybüke Nazlı Gültekin[1], Enes Taşçı[4], Salim Turan[4], Berk Toy[4], Oktay Kaya[6], Melike Şahiner[7] Güldal İnal Gültekin[8]

[1]Okan University School of Medicine, İstanbul, TURKEY
[2]Acıbadem Mehmet Ali Aydınlar University School of Medicine, İstanbul, TURKEY
[3]Trakya University School of Medicine, Edirne, TURKEY
[4]Marmara University School of Medicine, İstanbul, TURKEY
[5]Stanford University School of Humanities and Sciences, Stanford, California, USA
[6]Department of Physiology, Trakya University School of Medicine, Edirne, TURKEY
[7]Department of Medical Education/Physiology, Acıbadem Mehmet Ali Aydınlar University School of Medicine, İstanbul, TURKEY
[8]Department of Physiology, Okan University School of Medicine, İstanbul, TURKEY

ABSTRACT

Aims: The aim of this study is to investigate the effects of acute physical exercise and acute mental exercise on visual reaction time in healthy medical students. ***Methods:*** We used a simple reaction time task software developed by the researchers to measure the visual reaction times of the subjects. Reaction times of subjects as well as pulse rates were measured on three different occasions: basal (resting), post acute mental exercise and post acute physical exercise. The acute physical exercise was constructed to last for 5 minutes in a way that would double the basal pulse rate of the participant. The acute mental exercise was induced by five minutes of ADD-3 arithmetics. All volunteered physically healthy medical students from four different medical schools in Turkey without red-green color deficiencies were included in the study. ***Results:*** A total of 232 (136 male, 96 female) individuals with a mean age of 20.79 ± 1.42 were included in the study. Differences between basal reaction time and post-physical exercise reaction time; the basal reaction time and post-mental exercise reaction time were found to be statistically significant. Basal reaction time of participants was found to be the key element deriving both post-mental and physical exercise reaction times. Also, one unit increase in the number of ADD-3 problems solved was associated with 0.21 units decrease in post-mental exercise reaction time. ***Conclusion:*** Both acute mental exercise and acute physical exercise can shorten visual reaction time. Our results also indicate that there might be a relationship between arithmetic capability (ADD-3 arithmetics performance) and visual reaction time. ***Keywords:*** Exercise, pulse, reaction time, software

INTRODUCTION

The time between the onset of a sensory stimulus and the consequent behavioral response is called reaction time (RT) (1-4). Since the late 1800s, numerous studies were conducted to have a better understanding of both physiological and psychological aspects of reaction time (1-5). The fundamental classification system was originated from Donders (3) in which he divided tasks into three as simple, recognition (go/no go) and choice response.

Simple reaction time (SRT) tasks consist of stimulus detection and motor execution whereas recognition reaction time tasks composed of stimulus detection, stimu-

Address for Correspondence: Berkay Kef, Okan University School of Medicine, Istanbul, TURKEY
e-mail: berkaykef@gmail.com ORCID: orcid.org/0000-0002-5970-7815
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lus discrimination, and motor execution. Choice reaction time tasks consist of stimulus detection, stimulus discrimination, response selection and motor execution (6). Among these three tasks, SRT tasks were considered as the fastest and simplest, while choice reaction time tasks were regarded as the slowest and the most complex (3).

While the effects of physical exercise whether on SRT or on more complex cognitive functions such as long-term memory are extensively studied, work on these concepts remains ambiguous (7-11). In addition, most of these studies focus on the long-term physical exercise rather than acute physical exercise (7-10). However, studies that focus on the effect of acute physical exercise on RTs either differ on when RT task was done (during or after physical exercise) or on outcomes (no effect, facilitation, U-shaped facilitation, impairment) (9). Thus, the need for further investigation arises.

Although certain studies used acute mental exercises such as simple arithmetic to evaluate cognitive functions of participants after or during exercise, there were not many studies that analyzed the effects of acute mental exercise on reaction times (8, 9).

We hypothesize that acute physical exercises that will not exhaust the participants will result in shortening the RT due to possible activation of the sympathetic system. Since SRT tasks are the simplest among other RT tasks physiologically, increased arousal will further shorten the duration of SRT compared to choice reaction time. In addition, participant compliance is expected to be high since they are easier to follow through than other methods which evaluate more complex cognitive functions such as choice, go/no go, memory tasks, etc. We also hypothesize that acute mental exercises that will not drain the attention span of participants will shorten the SRT, not due to sympathetic activation but due to an increase in attention. The aim of this study is to measure the parameters mentioned above in 232 medical students from 4 different universities in Turkey.

MATERIAL AND METHODS

This prospective study was approved by the Scientific Research Ethics Committee of Trakya University School of Medicine (Protocol Code: TÜTF-BAEK 2018/466). Power analysis was conducted prior to ethics approval and the total number of participants needed was calculated as 230.

Measuring Reaction Time

A simple reaction time task software was developed by the researchers to measure the reaction times of subjects. The program starts as a full red screen and when the "start" button is clicked screen turns into green randomly, but at least five seconds after the click. The participant is expected to press "stop" as soon as the screen turns green.

Acute Physical Exercise

The acute physical exercise was designed to last for 5 minutes in a way that would double the basal pulse rate of the participant by using a stationary bicycle or treadmill. All participants were monitored with a pulse oximeter throughout the process and basal and post-exercise pulse rates were recorded.

Acute Mental Exercise

The acute mental exercise was induced by five minutes of ADD-3 arithmetics (12). Basal and post-exercise pulse rates, as well as the number of questions each subject solved, were recorded.

Forms and Tests Prior to Data Collection

All participants were informed about the study and signed informed consent forms. Participants were asked to fill out a physical condition evaluation form to evaluate the safety of acute physical exercise. Ishihara test was also performed by subjects to evaluate for red-green color deficiencies.

Inclusion and Exclusion Criteria

All volunteered physically healthy medical students without red-green color deficiencies were included in the study. Students with Body Mass Index (BMI) of 30kg/m2 or above and students who have any chronic cardiovascular diseases were excluded from the study.

Procedure

Participants were recruited from four different medical schools in Turkey: Trakya University School of Medicine, Okan University School of Medicine, Marmara University School of Medicine and Acıbadem Mehmet Ali Aydınlar School of Medicine. Basal pulse rates and basal reaction times of each subject were recorded. Following this initial step, participants were subjected to acute mental exercise as mentioned above. Acute physical exercise step was done as mentioned above, but on a different day to eliminate the possible effects of acute mental exercise on acute physical exercise or vice versa. Reaction time measurements were repeated for five times for each stage to increase the reliability of measurements. Among pulse rates and reaction times mentioned above, participants' age and gender were also recorded for further evaluation in statistical analysis.

Statistical Analysis

Data was analyzed using R version 3.5.0 (13, 14). Quantile-quantile plots were drawn, and Shapiro-Wilk Normality Test was conducted to check for normal distribution of variables. Normal distribution of pulse

rates was observed and differences between each pulse rate group (basal, post-mental and post-physical) were analyzed by Two-Sample T-Test. Non-normal distributions of reaction times were observed and differences between each reaction group (basal, post-mental and post-physical) were analyzed by Wilcoxon Rank Sum Test. Normally distributed continuous variables are presented as minimum, mean, maximum and standard deviation whereas non-normally distributed continuous variables are presented as 1st quartile, median and 3rd quartile. Categorical variables are presented as numbers and percentages. For a detailed analysis of variables that might affect outcomes (variables: age, gender, basal pulse rate, post-physical exercise pulse rate, post-mental exercise pulse rate, number of ADD-3 problems solved; outcomes: post- physical exercise reaction time and post-mental exercise reaction time), linear regression models were built. Residuals of each model were tested for normality and homogeneity. Heavy-tailed distribution on Quantile-Quantile plots was observed and each linear regression model was rebuilt with the assumption of t-distribution of residuals instead of normal distribution. A confidence interval of 95% and p-values less than 0.05 were assumed statistically significant throughout the analysis.

RESULTS

Descriptive Statistics and Hypothesis Testing

A total of 232 (136 male, 96 female) individuals with a mean age of 20.79±1.42 were included in the study. The mean basal pulse rate (BasalPR), post-physical exercise pulse rate (PPhysPR) and post-mental exercise pulse rate (PMentalPR) were calculated as 77.03 ± 9.84, 144.75 ± 19.84 and 80.48 ±10.92, respectively. Differences between mean BasalPR and PPyhsPR, mean BasalPR and PMentalPR, and mean PMentalPR and PPyhsPR were found to be statistically significant ($p<0.01$, $p<0.01$ and $p<0.01$, respectively). Median basal reaction time (BasalRT), median post-physical exercise reaction time (PPhysRT) and median post-mental exercise reaction time (PMentalRT) were calculated as 380.50, 360.80 and 367.70, respectively. Differences between BasalRT and PPhysRT, BasalRT and PMentalRT were found to be statistically significant ($p=0.04$ and $p<0.01$, respectively) whereas differences between PMentalRT and PPhysRT were not statistically significant ($p=0.17$) (Table 1).

Table 1: Descriptive statistics of variables.

	Mean ± SD (min-max)
BasalPR *(bpm)*	77.03 ± 9.84 (50-116)
PPhysPR *(bpm)*	144.75 ± 19.84 (90-200)
PMentalPR *(bpm)*	80.48 ± 10.92 (53-119)
Age *(years)*	20.79 ± 1.42 (17.35-24.77)
BasalRT *(msec)**	380.50 (348.50-423.20)
PMentalRT *(msec)**	360.80 (333.40-401.95)
PPhysRT *(msec)**	367.7 (337.00-404.95)
Gender *[number (%)]*	Male = 136 (58.62) Female = 96 (41.38)

BasalPR *= Basal pulse rate,* ***PPyhsPR*** *= Post-physical exercise pulse rate,* ***PMentalPR*** *= Post-mental exercise pulse rate,* ***BasalRT*** *= Basal reaction time,* ***PPhysRT*** *= Post-physical exercise reaction time,* ***PMentalRT*** *= Post-mental exercise reaction time, SD = standard deviation*

**non-normally distributed variables are presented as median (1st quartile – 3rd quartile)*

Linear Regression Models

Effects of other variables on PMentalRT and PPhysRT was evaluated by linear regression models. One unit increase in BasalRT was associated with 0.90 units increase in PMentalRT and one unit increase in the number of ADD-3 problems solved was associated with 0.21 units decrease in PMentalRT. Both associations were found to be statistically significant ($p<0.01$, $p<0.01$; respectively). Effects of age, gender, BasalPR and PMentalPR on PMentalRT were not statistically significant ($p=0.91$, $p=0.31$, $p=0.43$, $p=0.73$; respectively) (Table 2).

Table 2: Linear regression analysis results for PMentalRT.

	Estimate	***Std.Error***	***p-value***
(Intercept)	267.12	6.37	<0.01
BasalRT - 262.20	0.90	0.03	<0.01
Age - 17.35	0.12	1.08	0.91
Gender (Female = 1)	-3.22	3.18	0.31
BasalPR - 50	-0.18	0.23	0.43
PMentalPR - 53	0.07	0.21	0.74
NofADD3 - 35	-0.21	0.07	<0.01

PMentalRT *= Post-mental exercise reaction time,* ***BasalRT*** *= Basal reaction time,* ***BasalPR*** *= Basal pulse rate,* ***PMentalPR*** *= Post-mental exercise pulse rate,* ***NofADD3*** *= number of ADD-3 problems solved*

Minimum values of all continuous variables were subtracted from each value to have a meaningful intercept (eg. Age – 17.35 denotes that minimum age was 17.35, thus 17.35 was subtracted from all participants ages).

One unit increase in BasalRT was associated with 0.78 units increase in PPhysRT and this association was found to be statistically significant (p<0.01). Effects of age, gender, BasalPR and PPyhsPR on PPhysRT were not statistically significant (p=0.72, p=0.27, p=0.81, p=0.22; respectively) (Table 3).

Table 3: Linear regression analysis results for PPhysRT.

	Estimate	*Std.Error*	*p-value*
(Intercept)	288.34	8.45	<0.01
BasalRT - 262.20	0.78	0.03	<0.01
BasalPR - 50	-0.06	0.23	0.81
PPhysPR - 90	-0.14	0.12	0.22
Age - 17.35	-0.49	1.38	0.72
Gender (Female = 1)	4.60	4.16	0.27

BasalRT = *Basal reaction time,* ***BasalPR*** = *Basal pulse rate,* ***PPhysPR*** = *Post-mental exercise pulse rate*

Minimum values of all continuous variables were subtracted from each value to have a meaningful intercept (eg. Age – 17.35 denotes that minimum age was 17.35, thus 17.35 was subtracted from all participants ages).

DISCUSSION

In this study, a total of 232 medical students from Acıbadem University, Marmara University, Okan University, and Trakya University were included. We found out that differences between mean BasalPR and PPyhsPR, mean BasalPR and PMentalPR, and mean PMentalPR and PPyhsPR are significantly different, but there is no effect of PMentalPR and PPyhsPR on VR time. However, participants who have higher BasalRT, also have higher PMentalRT and PPhysRT.

Red and green colors (stop and go respectively) were used for the simple reaction time task software developed by the researchers. The modern model of color vision states that the first stage of seeing color, the receptor stage, includes the blue, green and red cones (15). Since this stage is the earliest and does not include any cognitive processing, it is thought to be the best approach for measuring simple reaction time. The reason for choosing the color change to be from red to green is because the sensitivity of the red cones is up to 40 times less than the green cones (16). The increase in the sensitivity from red to green allows for more precise measurements. Although studies have shown red color to have shorter reaction times, Blizzard et al. (17) explain that it is caused by "Color Hierarchy" which is due to higher level attentional networks rather than simple reaction time.

We have found the median BasalRT to be 380.50 ms. The average BasalRT varies between 230–295 ms in the literature depending on the participant performing regular exercise, profession, gender and age (18-22). In this research, we have found that gender and age were insignificant in the BasalRT. This might be due to similarities in age groups and exercise habits of participants. Longer median BasalRT can be due to the computers that the developed software was ran on. We aimed to minimize the error by using the same computer for each test for a participant.

It is extensively accepted that regular physical exercise improves RT (10, 22-24). However, the effects of acute physical exercise on RT is studied less. Yerkes et al. (25) discuss that acute physical stress has an inverted U effect when performing cognitive tasks. As the central nervous system is stimulated thus aroused, one's attention narrows and improvements on the cognitive tasks are observed, if the tasks to stimulate the central nervous system are not simple. On the other hand, Duffy et al. (26) stated that overshooting a particular level of stimulation causes the deterioration of psychomotor abilities validating the inverted U relationship.

Literature has defined the optimum exercise as increasing participants heartrates up to 115 beats per minute (27, 28). The participants in our study were asked to run in order to double their BasalPR which had a mean of 77.03 ± 9.84. The mean PPyhsPR was 144.75 ± 19.84. The gap between the exercise and reaction test has also a crucial effect on reaction time. Exercise and high heart rate affect the result only 8 minutes after the exercise has been done (29). The high mean PPyhsPR in the tests indicates that there is no delay of our measurements after the physical exercise which allowed the physical exercise's effects to be reflected on the PPhysRT. We have calculated the median PPhysRT to be 367.70 ms. The visual reaction time of our subjects decreased significantly after acute physical exercise when compared to BasalRT as we have hypothesized.

It has been observed that the body's "fight or flight" response resulted in elevated mental stress (30). Apoorvagiri et al. (31) found that mental stress (not acute) caused a decrease in the VRT whereas mental distress caused an increase. However, we did not come across any studies linking acute mental stress to RT in the literature. In our study, acute mental exercise was induced by five minutes of ADD-3 arithmetics. The median PMentalRT was calculated to be 360.80 ms. The visual reaction time of our subjects decreased significantly af-

ter acute mental exercise when compared to BasalRT. This shows that simple repetitive addition process might be enough to cause mental stress, but the relatively short duration of 5 minutes did not cause distress. The mean PMentalPR was calculated to be 80.48 ± 10.92 bpm. The increase was significant compared to BasalPR. This increase in the pulse rate supports the idea of mental stress since the higher pulse rate is achieved without any physical demand. An interesting finding of our study was the relationship between the PMentalRT and the amount of ADD-3 arithmetics performed by the participant. The more problems an individual solved in ADD-3 arithmetics the faster his/her PMentalRT was compared to his/her BasalRT. One unit increase in the number of ADD-3 problems solved was associated with 0.21 units decrease in MentalRT which was found to be statistically significant.

Though we have proved our hypothesis, there are some limitations that should be noted. We used digital software for the measurement of VRT. The performance of the software was dependent on the specifications of the computer it was running on. With four different medical schools and multiple researchers, the standardization was not possible. However, we used the same computer for each test for a participant to minimize the error.

The pulse oximeters were another limitation, they have an expected error of 4% (32). More reliable measurement method such as ECGs used in cardiac stress tests could be used, but it would be inconvenient. We aimed to minimize this error by continuously measuring the pulse and using the same device for each test for a participant. One of the concerns was the repetitive task of measuring the VRT. As Apoorvagiri et al. (31) conclude in their study, reaction time tests are well performed with practice. Thus, we used the mean values of five measurements for each of the BasalRT, PPhysRT, and PMentalRT to eliminate the possible influence of repetition.

As a conclusion, both acute mental stress and acute physical stress can decrease VRT as we have hypothesized. In addition to acquiring results that support our hypothesis, we also discovered that there might be a relationship between arithmetic capability (ADD-3 arithmetics performance), acute mental stress and VRT. Further experiments with various methods are needed to better explain the relationship between acute mental stress and VRT.

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Ethics Committee Approval: This study was approved by the Scientific Research Ethics Committee of Trakya University School of Medicine (Protocol Code: TÜTF-BAEK 2018/466).

Informed Consent: Written informed consent was obtained from the participants of this study.

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TMSJ
ORIGINAL ARTICLE

ANALYSIS OF RISK FACTORS IN PATIENTS WHO HAVE UNDERGONE CORONARY ARTERY BYPASS GRAFTING SURGERY AND VALVE REPLACEMENT SURGERY

Fatih Erkan Akay[1], Begüm Soyleyici[1], Alperen Elibol[2], Pelinsu Elif Hünkar[1], Berfin Tan[1], Volkan Yüksel[3]

[1] Trakya University School of Medicine, Edirne, TURKEY
[2] Acıbadem Mehmet Ali Aydınlar University School of Medicine, Istanbul, TURKEY
[3] Department of Cardiovascular Surgery, Trakya University School of Medicine, Edirne, TURKEY

ABSTRACT

Aims: The aim of the study is to investigate differences in usual cardiovascular risk factors' and comorbidities between the patients who had undergone coronary artery bypass grafting surgery and valve replacement surgery at Cardiovascular Surgery Department of Trakya University School of Medicine. ***Methods:*** In this study, patients who had coronary artery bypass grafting surgery and valve replacement surgery at Cardiovascular Surgery Department of Trakya University School of Medicine between 01.01.2018 and 31.12.2018 were analyzed retrospectively. All data regarding the type of cardiovascular operation, habits of smoking, alcohol consumption, family history, chronic diseases and laboratory findings were analyzed using R version 3.5.0. ***Results:*** The total number of patients in the study was 130. There were 106 patients who had coronary bypass grafting surgery, 90 (95.4%) of them were male and 16 (4.6%) of them were female. The number of the patients who had valve replacement surgery was 24 where 15 (62.5%) of them were female and 9 (37.5%) were male. Differences in patients' high-density lipoprotein levels, fasting blood glucose levels along with gender, habits of smoking, diabetes mellitus status and alcohol consumption between coronary artery bypass grafting surgery and valve replacement surgery groups were found statistically significant. ***Conclusion:*** Risk factors for cardiovascular disease are very dynamic and multifactorial. In our analysis, there was a significant difference between risk factors for coronary artery bypass and valve replacement surgeries including high-density lipoprotein levels, fasting blood glucose levels, diabetes mellitus, gender and smoking status. The variability may alter according to the living standards, culture, educational status among patients. ***Keywords:*** Coronary disease, coronary artery, surgery, risk factors

INTRODUCTION

Cardiovascular diseases (CVD) are considerable public health issues worldwide. It is estimated that 17.5 million people die from CVD each year (1). Coronary heart disease (CHD) is the building block of CVD and the frequent cause of death in developed countries. Approximately 1.8 million people die from CHD in Europe each year (1, 2). Risk factors for ischemic heart disease (IHD) are composed of acute coronary disease, and ischemic stroke according to Global Burden of Disease Study (3). Data from WHO Global Health Observatory were also used to define the prevalence of different cardiometabolic risk factors (3). High levels of body mass index (BMI), glucose, blood pressure, and cholesterol have different effects of death on income group over the time; high-income countries were able to degrade the effects of these risk factors during the past 20 years, whereas lower/middle-income countries have a higher data of an increase in mortality related to high BMI and glucose (4).

Valve diseases are the extensive clinical manifestations of the heart. Yet until this day, their mechanisms are inadequately understood. Diagnosis commonly requires the advancement in disease and virtually no acceptable medical options are available in the majority of the cases (5). The active cause is age-related valve degeneration and related developments leading to aortic stenosis and mitral regurgitation (6, 7).

The atherosclerotic coronary disease has a multifactorial etiological background with non-modifiable risk factors like age, being a male and genetic predispositi-

Address for Correspondence: Fatih Erkan Akay, Trakya University School of Medicine, Edirne, TURKEY
e-mail: erkanfatih48@gmail.com ORCID: orcid.org/0000-0001-7598-1016
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on, numerous other risk factors are changeable depending on individuals lifestyle and/or pharmacotherapy. More than 200 risk factors were defined in Hopkins et al. (8) study in 1981, of which the most relevant ones are held to be high plasma cholesterol level, diabetes mellitus, hypertension, smoking and overweight/ obesity. These risk factors were originally evaluated decades ago based on the data attained from the Framingham study by Dawber et al. (9).

The aim of the study is to investigate differences in usual cardiovascular risk factors' and comorbidities between the patients who had undergone coronary artery bypass crafting surgery (CABGS) and valve replacement surgery (VRS) at Cardiovascular Surgery Department of Trakya University School of Medicine.

MATERIAL AND METHODS

This retrospective study was approved by the Scientific Research Ethics Committee of Trakya University School of Medicine (TUTF-BAEK2019/224). Informed consent was obtained from all participants. In this study, the data of all patients over 18 years old who had a cardiovascular operation in Trakya University School of Medicine between 1st of January 2018- 31st of December 2018 were analyzed retrospectively. Patients who had multiple surgeries (both CABGS and VRS), patients with missing data and patients operated with procedures other than CABGS and VRS (atrial septal defect repair, pericardiectomy, etc.) were excluded from the study.

Patients' age, gender, habit of smoking, alcohol usage, family history of cardiovascular disease, chronic diseases – if any [hypertension (HTN), diabetes mellitus (DM), chronic obstructive pulmonary disease (COPD), goiter, chronic kidney disease (CKD)], laboratory findings [fasting blood glucose (FBG), low-density lipoprotein (LDL), high-density lipoprotein (HDL), total cholesterol, triglyceride (TG), urea, c-reactive protein (CRP)] and the history of peripheral arterial disease were recorded from the archives of Trakya University School of Medicine.

Data was analyzed using R version 3.5.0. A p-value <0.05 was set for the statistical significance. Continuous variables (age, HDL levels, LDL levels, total cholesterol, FBG, TG levels, CRP and urea levels) were tested for normal distribution with Shapiro-Wilk Test. Non-normal distribution was observed for all continuous variables thus descriptive statistics for those are presented as median and inter-quartile range (IQR). Categorical data (gender, smoking status, alcohol consumption, family history of cardiovascular disease, DM, goiter, COPD, PAD, CRF, HTN) are presented as numbers and percentages. Mann-Whitney U Test was conducted on continuous and Pearson Chi-Squared Test (x^2) was conducted on categorical variables.

RESULTS

In this retrospective study 130 patients (31 female, 99 male) who were operated either with CABGS or VRS at Trakya University Department of Cardiovascular Surgery were included.

Median ages of participants were calculated as 63 (IQR = 13), and 64.5 (IQR = 15) for CABGS and VRS groups, respectively. Differences in median values were not statistically significant (p = 0.787). Median HDL levels of participants were calculated as 36 (IQR = 9) and 46.5 (IQR = 13.125) for GABGS and VRS groups, respectively, and this difference was found to be statistically significant (p<0.001). Median FBG levels of participants was calculated as 111.5 (IQR = 51.25) and 98.5 (IQR = 18.25) for GABGS and VRS groups, respectively. This difference was found to be statistically significant (p = 0.007). Median levels of LDL, total cholesterol, triglyceride, CRP and urea between CABGS and VRS groups were not statistically significant (p =0.365, p =0.082, p =0.470, p =0.535, p =0.517, respectively). Summary statistics of continuous variables and Mann-Whitney U Test results presented in Table 1.

Statistically significant interactions between surgery type and gender, smoking status, DM status and alcohol consumption were found (x^2 = 21.677, p<0.001; x^2 =5.386, p = 0.020; x^2 = 4.534, p = 0.033; x^2 = 4.548, p = 0.033; respectively). Males (90.909%) were more likely to have CABGS than females (51.613%), and females (48.387%) were more likely to have VRS than males (9.091%). Smokers (90.476%) were more likely to have CABGS than non-smokers (74.667%). Patients with DM (90.909%) were more likely to have CABGS than patients without DM (74.667%). Patients who consume alcohol (93.023%) were more likely to have CABGS than patients who do not consume alcohol (80.342%). %). Association between surgery type and family history of cardiac diseases, goiter, COPD, CRF, PAD, and HTN was not statistically significant (x^2 = 0.460, p = 0.498; x^2 = 0.666, p = 0.414; x2 = 0.994, p = 0.319; x^2 = 1.500, p = 0.221; $x^2 \sim 0$, p ~ 1; x2 = 0.002, p = 0.969; respectively). Summary statistics of categorical variables and Pearson Chi-Squared Test results are presented in Table 2.

Table 1: Summary statistics of continuous variables and Mann-Whitney-U Test results.

	CABGS [median (IQR)]	VRS [median (IQR)]	p value
Age (years)	63 (13)	64.5 (15)	0.787
HDL (mg/dL)	36 (9)	46.5 (13.125)	<0.001
LDL (mg/dL)	108 (51.75)	109 (43.075)	0.365
Total Cholesterol (mg/dL)	169 (64.5)	191.5 (58.5)	0.082
FBG (mg/dL)	111.5 (51.25)	98.5 (18.25)	0.007
Triglyceride (mg/dL)	136 (59.5)	133 (53.5)	0.470
CRP (mg/dL)	1.17 (4.093)	1.29 (2.342)	0.535
Urea (mg/dL)	33 (14)	36.5 (44.75)	0.517

CABGS: *Coronary Artery Bypass Surgery,* ***VRS:*** *Valve Replacement Surgery,* ***IQR:*** *Inter-quartile Range,* ***HDL:*** *High-Density Lipoprotein,* ***LDL:*** *Low-Density Lipoprotein,* ***FBG:*** *Fasting Blood Glucose,* ***CRP:*** *C-reactive protein*

Table 2: Summary statistics of categorical variables and Pearson Chi-Squared Test results.

		CABGS [n (%)]	VRS [n (%)]	x^2	p value
Gender	Female	16 (51.613)	15 (48.387)	21.677	<0.001
	Male	90 (90.909)	9 (9.091)		
Smoking Status	Smoker	57 (90.476)	6 (9.524)	5.386	0.020
	Non-smoker	49 (73.134)	18 (26.866)		
DM	Present	50 (90.909)	5 (9.091)	4.534	0.033
	Absent	56 (74.667)	19 (25.333)		
Family History	Present	12 (92.308)	1 (7.692)	0.460	0.498
	Absent	94 (80.342)	23 (19.658)		
Alcohol Consumption	Yes	40 (93.023)	3 (6.977)	4.548	0.033
	No	66 (75.862)	21 (24.138)		
Goiter	Present	0 (0)	1 (100)	0.666	0.414
	Absent	106 (82.171)	23 (17.829)		
COPD	Present	2 (50)	2 (50)	0.994	0.319
	Absent	104 (82.54)	22 (17.46)		
CKD	Present	10 (66.667)	5 (33.333)	1.500	0.221
	Absent	96 (83.478)	19 (16.522)		
PAD	Present	2 (100)	0 (0)	~0	~1
	Absent	104 (81.25)	24 (18.75)		
HTN	Present	65 (82.278)	14 (17.722)	0.002	0.969
	Absent	41 (80.392)	10 (19.608)		

x^2: *Chi-Squared Test,* ***DM:*** *Diabetes Mellitus,* ***COPD:*** *Chronic Obstructive Pulmonary Disease,* ***PAD:*** *Peripheric Artery Disease,* ***CKD:*** *Chronic Kidney Disease,* ***HTN:*** *Hypertension*

DISCUSSION

Our study analyzed the prevalence of cardiovascular risk factors among Turkish adults, who had an operation in 2018 in the Cardiovascular Surgery Department of Trakya University School of Medicine, on behalf of investigating morbidity and mortality in coronary artery bypass grafting and valve replacement surgeries.

Gender distribution for CABGS and VRS was statistically significant with a 95.4% male population in CABGS group that correlates with the risk factors for being a male in CVD (10). Vascular physiological factors such as a narrower atheroma wall, a smaller vessel diameter, less collateral flow, less coronary flow reserve, more vascular rigidity, distinctions in remodeling, and functional variations of smooth muscle cells in the vessel wall of women may be the cause of the difference of the outcomes between men and women (10). Within all age categories, aortic valve sclerosis, and stenosis were more common in males compared with women (11, 12). On the other hand, in our study, it was statistically significant for females to have VRS more than the male population.

While low HDL level in CABGS group compared to VRS was significant; LDL, triglyceride and total cholesterol levels were not different between both surgery groups. It is confirmed that the risk of getting CVD is correlated with dyslipidemia, not with total cholesterol levels (13). Dyslipidemia can be described as having unusual values of total cholesterol/LDL, HDL and triglycerides which was present in our study with significance in low HDL levels (13). However, in most studies, in fact, high triglyceride levels is a valuable reason for dyslipidemia (14). The ways of getting a healthy lipid chart may vary; a diet which is rich for vegetables and fruits decrease the risk whereas an eating behavior consists of saturated oils would increase the risk of hyperlipidemia. Daily exercise is another well-known factor for decreasing the chance of hyperlipidemia. Physical exercise improves physical fitness, metabolic profile, and, integrated with sufficient diet significantly reduces body mass and has a beneficial influence on psycho-social status as well as the quality of life (15).

At the same time, having a higher level of FBG and the presence of DM was found to be statistically significant in CABGS group compared to VRS group (p=0.007). The increased FBG level has an effect of accelerating the deposition rate of lipids on the blood vessels, leading to build up of atherosclerotic plaque which has the tendency of building up a thrombus resulting with CHD (16). According to Aronson et al. (17), CHD is an influential determinant of the long-term prediction among patients with DM, associated with a 2 to 4-fold increased fatality risk from CVD.

In our study, being a smoker and consuming alcohol was statistically significant with having a CVD and undergoing CABGS. Meta-analysis done by Roerecke et al (18) noted that, only people with alcohol use disorder had a high risk of IHD (1.5- to 2-fold). Results also demonstrated that drinkers without any episodic heavy drinking and with an average consumption of <30 g/day had the lowest risk of IHD.

Although, high CRP level is found to be a risk factor for CVD, in our study even though both groups had an increased level of CRP, the increase between both groups was not statistically different. In comparison with research run by C-Reactive Protein Coronary Heart Disease Genetics Collaboration (CCGC), increased levels of CRP due to a genetic polymorphism in the CRP encoding DNA segment can be a risk factor for CVD which is compatible with our findings (19).

In order to strengthen the gathered data, number of patients could be increased as well as data could be analyzed and compared with other cardiovascular surgeries. In this study passive smokers were counted to be in the category of non-smokers which may have an effect on our findings. In order to eliminate this effect, a group for passive-smokers might have been created in data collection. In result of earlier research by Law et al (20), it is defined that the addition of confounding factors can be associated with passive smoking and CVD.

Furthermore, advancements in medical science have displayed the pathogenesis of cardiovascular disease to be complex, with a large-scale of underlying factors. Amongst these factors, stress is considered to be crucial (21). Two meta-analyses have done by Rugulies R (22) and Wulsin et al. (23) indicates that depression has a significantly negative influence on the prognosis of patients with CHD. Therefore patients stress levels and diagnosis with clinical depression could be included.

In conclusion, there was a significant difference between risk factors for CABGS and VRS including HDL levels, fasting blood glucose levels, diabetes mellitus, gender and smoking status. In order to elucidate and amplify the risk factors more being in first place for CABGS and VRS and other cardiovascular surgeries, further studies are in need.

Ethics Committee Approval: This study was approved by the Scientific Research Ethics Committee of Trakya University School of Medicine (TUTF-BAEK2019/224)

Informed Consent: Written informed consent was obtained from the participants of this study.

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ORIGINAL ARTICLE

AWARENESS OF SYMPTOMS AND SIGNS IN SPONDYLOARTHRITIS AMONG FAMILY PHYSICIANS IN EDIRNE CITY CENTER

Hilal Sena Çifcibaşı[1], Berfin Tan[1], Aslı Göztepe[1], Alperen Taha Certel[1], Ayşe Çaylan[2], Barış Yılmazer[3]

[1] Trakya University School of Medicine, Edirne, TURKEY
[2] Department of Family Medicine, Trakya University School of Medicine, Edirne, TURKEY
[3] Division of Rheumatology, Department of Internal Medicine, Trakya University School of Medicine, Edirne, TURKEY

ABSTRACT

Aims: The aim of this study is to evaluate the knowledge of signs and symptoms of spondyloarthritis among family physicians working in Family Health Centers in Edirne. ***Methods:*** In this study, a questionnaire consisting of 17 questions were applied to the family physicians working in the Family Health Centers of Edirne Province. The data were analyzed using non-parametric Spearman Correlation test and Mann-Whitney U test on IBM SPSS version 20.0. ***Results:*** The total number of subjects in the study was 45. All subjects' median age was 47 years (1st quartile, 42 years; 3rd quartile, 51 years). Five of the participants were family medicine specialist. The median duration of medical practice was 20 years (1st quartile, 13 years; 3rd quartile, 25.5 years). Four of the participants were trained in rheumatology. The median number of patients examined by the participants was 60 per day (1st quartile, 47.5; 3rd quartile, 70). Forty-one of the participants stated that they referred patients with back pain to the hospital for further examination. The median number of referral percentage was 15 (1st quartile, 5; 3rd quartile, 25). ***Conclusion:*** Spondyloarthritis is a disease that is diagnosed too late and reduces patients' quality of life. In this study, it was investigated which factors could be related to spondyloarthritis awareness of family physicians in a limited area. The most important output of this is study is the relation between referrals to rheumatology and awareness of spondyloarthritis. These parameters are related to each other and the physician. ***Keywords:*** Back pain, arthritis, family physicians

INTRODUCTION

Spondyloarthritis (SpA) is a group of chronic systemic inflammatory immune-mediated rheumatic diseases which affect axial and peripheral joints (1). Ankylosing spondylitis is the most common group in spondyloarthritis which is a rheumatic disease with common clinical symptoms (2). It is a chronic inflammatory disease which primarily affects the spine and sacroiliac joints (1).

Treatment in the early stages for spondyloarthritis is very efficient; therefore, early diagnosis is crucial for the treatment of the disease. However, there are no pathognomonic clinic or laboratory tests for spondyloarthritis (3).

Primary health care service is provided by family physicians in Family Health Centers. Giving people fundamental healthcare is a very important mission which is family physicians' responsibility. Family physicians can also make an early diagnosis and decide if the patient needs to be sent to any specialist. Symptoms of spondyloarthritis show similarities with other diseases, therefore symptoms can mislead primary care physicians to misdiagnoses (3).

Inflammatory back pain is one of the most important symptoms of spondyloarthritis (4). Despite its importance, it can be misdiagnosed as myalgia in primary care because of the similarities in symptoms (4). Such similarities among different diseases make diagnostic processes difficult. If the family physician does not have enough knowledge about spondyloarthritis, the patient may receive an inappropriate treatment.

The aim of this study is to investigate the knowlegde of family physicians on signs and symptoms of spondyloarthritis.

Address for Correspondence: Hilal Sena Çifcibaşı, Trakya University School of Medicine, Edirne, TURKEY
e-mail: hilalsena98@gmail.com ORCID: orcid.org/0000-0002-9507-1092
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MATERIAL AND METHODS

This study was approved by the Scientific Research Ethics Committee of Trakya University Medical Faculty (Protocol Code: TÜTF-BAEK2019/62). Permission to conduct the questionnaire to the family physicians in Edirne was obtained from the local health authority of the city. Informed consent was obtained from the family physicians who answered the questionnaire. The study was carried out between March and May 2019. The participants of the study were planned to be 53 family physicians working in 23 Family Health Centers in Edirne city center. However, 8 family physicians refused to participate. Questionnaires consisting of 17 questions were given to the participants during working hours (Table 1). The participation was on a voluntary basis and the necessary information was written on the questionnaire.

In the questionnaire, sociodemographic data like age, degree and the years of practice were questioned. The information from questions 6, 9 and 10 was obtained from the computer system of the Ministry of Health by family physicians. However, answers to these questions were not used in the analysis due to missing data. Question 16 was composed of 20 yes/no items that evaluate the family physicians' knowledge of spondyloarthritis (Table 1).

Data was analyzed with IBM SPSS version 20.0. Suitability of quantitative data for normal distribution was analyzed using Shapiro-Wilk test. Spearman's correlation analysis was used to investigate the relation between the number of correct answers given in yes/no items of the questionnaire and age, years of practice, the number of patients per day, and referral percentage. Mann-Whitney U test was used to compare the number of correct answers given in yes/no items of the questionnaire with categorical data of specialty, training in rheumatology, referral to orthopedics department, neurology department, neurosurgery department, physical medicine and rehabilitation department, internal medicine department, rheumatology department. A p-value of <0.05 was evaluated as statistically significant. Numbers, percentages, median, 1st quartile and 3rd quartile were used as descriptive statistics for this study.

RESULTS

This survey-based study was conducted among 53 family physicians working in 23 Family Health Centers in Edirne city center. Eight family physicians refused to participate and were excluded from the study. Therefore, 45 participants were included in the study.

Sixteen of 20 yes/no items have been evaluated. All subjects' median number of correct answers given as yes/no items was 14 (1st quartile, 12; 3rd quartile, 15). All subjects' median age was 47 years (1st quartile, 42 years; 3rd quartile, 51 years). No significant correlation was found between age and number of correct answers given in yes/no items of the questionnaire ($p=0.062$). The median duration of medical practice was 20 years (1st quartile, 13 years; 3rd quartile, 25.5 years). There was no significant correlation between the duration of practice and the number of correct answers ($p=0.127$). The median number of patients examined by the participants was 60 per day (1st quartile, 47.5; 3rd quartile, 70). There was no significant correlation between the number of patients examined daily and the number of correct answers ($p=0.477$). The median number of referral percentage was 15 (1st quartile, 5; 3rd quartile, 25). No significant correlation was found between referral percentage and number of correct answers ($p=0.303$) (Table 2).

Five of the participants were family physician specialists. The median number of correct answers for family physician specialists was 15 (1st quartile, 14.5; 3rd quartile, 16) and 13.5 (1st quartile, 12; 3rd quartile, 15) for family physicians. A statistically significant association was found between being a family physician specialist and number of correct answers ($p=0.024$). Four of the participants were trained in rheumatology. No statistically significant association was found between the rheumatology training and the number of correct answers ($p=0.162$) (Table 3).

Forty-one of the participants stated that they referred patients with back pain to the hospital for further examination. Five of the participants stated that they referred to rheumatology. The median number of correct answers given as yes/no items for participants referred to rheumatology was 15 (1st quartile, 15; 3rd quartile, 15.5) and 13.5 (1st quartile, 12; 3rd quartile, 14.75) for participants referred to other departments. Statistically significant association was found between referral to rheumatology and the number of correct answers ($p=0.022$), but there was no statistically significant association found between referral to other departments and number of correct answers ($p>0.005$) (Table 3).

Table 1: Questionnaire used for the study.

1. What is your age?
2. What is your degree? Family physician ☐ Family physician specialist ☐
3. For how long have you been practicing? For … years
4. Have you attended any course/ training/ workshop concerning rheumatology? (If your answer is no, please skip to the sixth question) Yes ☐ No ☐
5. What was the name of the training you had about rheumatology?
6. What is the number of patients registered to you?
7. What is the mean number of patients you examine daily?
8. Averagely, how many of the patients you examine daily apply with low back pain complaint?
9. What is the age profile of your registered patients? 11-20 21-30 31-40 41-50 51-60 60-64 65+
10. How are the age range and gender distributions of your patients with low back pain?

	Woman	Man
11-20		
21-30		
31-40		
41-50		
51-60		
61-64		
65+		

11. What is the percentage of your patients you have referred to a higher center or hospital for low back pain?
12. What is the name of the department you referred your patients with low back pain?
13. How did you get feedbacks after referring your patients to the other departments? (You may choose more than one option.) By contacting the doctor ☐ From patient himself ☐ From consultation paper ☐ From the information recorded in the system ☐ Other ☐
14. Have you received feedback from the patients you referred to a different department?
15. If you received their feedback, what are the diagnoses that your patients frequently receive?
16. Answer the following questions.

Family history should be questioned.	Yes ☐	No ☐
Low back pains that last longer than 3 months should be referred to a higher center.	Yes ☐	No ☐
Acute low back pain is mostly due to mechanical causes.	Yes ☐	No ☐
Chronic low back pain that begins before the age of 45 requires further examination for spondyloarthritis.	Yes ☐	No ☐
A significant response to non-steroidal anti-inflammatory drugs is a significant clue for low back pain associated with spondyloarthritis.	Yes ☐	No ☐
Low back pain increased with resting, decreased with exercise is mechanical originated.	Yes ☐	No ☐
Night pain is a characteristic of inflammatory low back pain.	Yes ☐	No ☐
Mechanical low back pain is mostly associated with spondyloarthritis.	Yes ☐	No ☐
Low back pain with inflammatory origin starting after 45 years of age requires further examination.	Yes ☐	No ☐
HLA-B27 positivity is a finding related to spondyloarthritis.	Yes ☐	No ☐
The presence of arthritis may be associated with spondyloarthritis	Yes ☐	No ☐
Heel pain can be a symptom associated with spondyloarthritis.	Yes ☐	No ☐
The presence of uveitis may be associated with spondyloarthritis.	Yes ☐	No ☐
The presence of chronic diarrhea may be associated with spondyloarthritis.	Yes ☐	No ☐
The presence of psoriasis may be associated with spondyloarthritis.	Yes ☐	No ☐
A high level of C reactive protein (CRP) may be associated with spondyloarthritis.	Yes ☐	No ☐
A high level of ASO may be associated with spondyloarthritis.	Yes ☐	No ☐
Celiac disease is one of the diseases that may be associated with spondyloarthritis.	Yes ☐	No ☐
Systemic lupus erythematosus is one of the diseases that may be associated with spondyloarthritis.	Yes ☐	No ☐
Gout is one of the diseases that may be associated with spondyloarthritis.	Yes ☐	No ☐
Is there anything you would like to add?		

Table 2: The correlation of participants' characteristic with the number of correct answers given in yes/no items.

		Age	Duration of medical practice	Number of patients per day	Referral percentage
Total correct answers in yes/no items	ρ*	-0.281	-0.231	0.109	0.165
	p	0.062	0.127	0.477	0.303

*Rho

Spearman's correlation analysis, p≤0.05.

Table 3: The relation of participants' characteristic with the number of correct answers given in yes/no items.

		Specialty	Training in rheumatology	Referral to rheumatology	Referral to physical medicine and rehabilitation	Referral to neurosurgery	Referral to orthopedics	Referral to neurology	Referral to internal medicine
Total correct answers in yes/no items	p	0.024	0.162	0.022	0.458	0.525	0.432	0.276	0.274

Mann-Whitney U test, p≤0.05.

DISCUSSION

Spondyloarthritis is a group of chronic systemic inflammatory immune-mediated rheumatic diseases which affect axial and peripheral joints. People in their teens and 20s, particularly males, are affected the most (1). Therefore, early diagnosis is very important for the course of the disease. In Turkey, getting the diagnosis of spondyloarthritis takes about 8 years (5). The main point of this study was to evaluate the knowledge of family physicians about spondyloarthritis for giving the early diagnoses.

Family Health Centers are institutions that provide primary health care service and family physicians are one of the key steps of the health care system in the world. These centers and doctors are seen as a bridge between the general health care system and the patients because of the easy access to the living quarters and also because patients are constantly followed up their family physicians (6). Considering all these advantages, it is very important for the family physicians to make the correct diagnosis, to apply the adequate treatment and to decide if the patients need to be referred to a secondary or tertiary health care facility. Referring the patients to the right department is also important for the efficient treatment of the patients. Spondyloarthritis is also among these diseases.

In primary care, there are family physicians and family physician specialists working in the field in Turkey (6). In our study, a significant difference between the specialization and correct answers was found (p=0.024). Results are more reliable in a community with more family physician specialists. According to the developments of the medical specialization educa-

tion, new generation of family physician specialists will be trained for physiotherapy as an optional vocational training (7). This may raise the awareness of spondylarthritis in the near future.

According to our results, there is no significant relationship between awareness of spondyloarthritis and training in rheumatology (p=0.162). Cooper et al. (8) declared that short pieces of trainings have an impact on physicians in a positive way. However, in our study, the short pieces of trainings of physicians like workshops or courses did not have any deviant effect on the knowledge of the physicians. The diagnosis and their treatment of the spondyloarthritis are not expected from family physicians. However, in our health system, they should know specific symptoms of spondyloarthritis and not neglect it in order to manage the further process.

In our study, there was a significant relationship between correct answers and referral to rheumatology (p=0.022). This shows that in primary care, if the physician knows the differential diagnosis of rheumatologic back pain, the physician can make a more accurate decision in order to guide the patients to the right specialists. With the right referral of the patient, appropriate access to health care is provided just like Hazlewood et al. (9) declared in their study.

There was no correlation between the age of the family physicians and their correct answers (p=0.062). In a review, it was stated that there could be a positive and a negative relationship between age and medical professionalism (10). In other words, it can be said that advanced age can have a positive effect on the issue as it increases the experience but on the other hand; factors like attrition, aging, tiredness etc. may affect them negatively (10). In our study, we did not find any association that could support or refute these theories on behalf of SpA awareness and age.

Morris et al. (11) stated that it is hard to make correct clinical choices if the credible evidence is lacking. Moreover, there was a considerable amount of limitations in this survey-based study. First of all, the area in which this study was conducted is local (central district of Edirne). This defines the number of physicians that attends the study which is a negative factor for validity. In addition, since this study was conducted as a survey, participant's attitudes might misguide the results. For example, the participant might get help from using online or other sources while answering the questions. Additionally, they might declare number of the patients incorrectly. All of these factors might affect the results of the study.

As a conclusion, in this study, it is found that the most important factor related to the spondyloarthritis awareness of family physicians was to refer the patient to the rheumatology service. On the other hand the results that were not significant in this study may be a guide for future SpA awareness studies in order to decide on points should be focused on.

Ethics Committee Approval: This study was approved by the Scientific Research Ethics Committee of Trakya University Medical Faculty (Protocol Code: TÜTF-BAEK2019/62).

Informed Consent: Informed consent was obtained from all of the participants of this study.

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CASE REPORT

A NEWBORN WITH ESOPHAGEAL ATRESIA, TRACHEOESOPHAGEAL FISTULA AND FEEDING PROBLEMS

Arda Ulaş Mutlu[1], Oğuz Kızılkaya[2], Mustafa İnan[2]

[1] Trakya University School of Medicine, Edirne, TURKEY
[2] Department of Pediatric Surgery, Trakya University School of Medicine, Edirne, TURKEY

ABSTRACT

Aims: Esophageal atresia is the most common congenital malformation of the esophagus. It can be diagnosed in the prenatal period, during the delivery or at the neonatal intensive care unit. With the operation, the respiratory system and digestive tract are being corrected to the anatomic position. In this case, we wanted to emphasize that patients with esophageal atresia may continue to have functional problems even after successful surgical treatment. ***Case Report:*** After preterm delivery, a female patient was consulted to Trakya University Department of Pediatric Surgery, at one day of age with the symptom of regurgitation of saliva. There were no abnormalities on physical examination. Due to the inability to pass an orogastric tube to the stomach, esophageal atresia was suspected. Thus, radiocontrast x-ray study was performed: the proximal esophageal pouch was identified, and malformation was diagnosed. After the diagnosis, tracheoesophageal fistula has been ligated. The patient received physical therapy after the operation, and she was followed-up for 10 months. A full recovery was observed, and the patient was able to swallow food. ***Conclusion:*** Esophageal atresia with distal tracheoesophageal fistula is not an uncommon malformation. The patients can have problems with swallowing in their infancy even they are treated surgically in the neonatal period.

Keywords: Esophageal atresia, tracheoesophageal fistula, newborn

INTRODUCTION

Esophageal atresia (EA) consists of a discontinuity or atresia of the esophagus; with the majority of newborns exhibiting a connection or fistula between the esophagus and trachea (1). EA is seen in 1.9/10000 births and this frequency makes EA the most seen congenital malformation of the esophagus (1-3). Esophageal atresia could occur with the tracheoesophageal fistula (TEF) or without TEF. This congenital malformation could appear in different structures. Even they are all defined as EA, their differences made classification requisite. According to Gross (4), five sorts of EA have recognized (type A, B, C, D and E) being: type A is EA without TEF, type B is proximal TEF with distal EA, type C distal TEF with proximal EA, type D proximal and distal TEF and type E is TEF without EA, otherwise called "H-type TEF". The most noted type is type C EA, being 87.5% of all cases (5).

The embryology of this malformation is not still fully defined (6). A newborn with this defect can have problems with breathing and swallowing. A meta-analysis made by Connor et al. (7) found out that the estimated prevalence of dysphagia between people with EA is 50.3%. Today, EA with or without TEF can only be repaired surgically. This operation damages the nerves responsible for the esophageal motility. Dysmotility of the esophagus that leads to more problems like dysphagia, malnutrition, gastroesophageal reflux (GER) and complications arising out of prementioned problems (8).

Patients who have type C TEF can present more serious problems with breathing since regurgitation of gastric content, especially hydrochloric acid, damages the lungs and respiratory system irreversibly and cause lifelong continued breathing problems (8). Here we present the diagnosis and treatment of a patient with esophageal atresia and distal tracheoesophageal fistula.

Address for Correspondence: Arda Ulaş Mutlu, Trakya University School of Medicine, Edirne, TURKEY
e-mail: ardamutlu.1999@gmail.com ORCID: orcid.org/0000-0001-7499-7155
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CASE REPORT

One day old patient consulted to Trakya University Department of Pediatric Surgery with the symptom of regurgitation of saliva after preterm delivery. She was 32+3 week-gestation infant born by uneventful caesarian section. The birth weight was 1635 grams and polyhydramnios was noted during gestation. There were no abnormalities on physical examination and patient's Apgar score was 10 at the delivery. Due to the inability to pass an orogastric tube to the stomach, esophageal atresia was suspected. Thus, radiocontrast X-Ray study was performed, a proximal esophageal pouch was identified, and malformation was diagnosed (Figure 1). Echocardiography was performed for the cardiac examination, and the presence of right arcus aorta was reported. It is important for the strategy of surgical intervention. At the operation, the left thoracotomy was performed, and the tracheoesophageal fistula was repaired (Figure 2). Then, proximal and distal ends of the esophagus were primarily anastomosed over 10 Fr nasogastric tube with 6/0 Polydioxanone absorbable sutures and thorax drain placed to the left thorax. At postoperative 2nd day, the patient was fed with breastmilk from a nasogastric tube and on the 5th day methylene blue was given orally to control the presence of anastomotic leakage. Thorax tube was removed on the 8th day. However, nasogastric tube was not removed because the patient did not have an effective swallowing function. No postoperative complications were noted, and the patient was discharged with a nasogastric tube to be fed with. In the postoperative 2nd month, radiocontrast video-fluoroscopy was performed, and no anastomotic stenosis or leakage was observed (Figure 3). In postoperative 8th month, the patient was being fed from the feeding tube since the swallowing function was inadequate and there were no extra complications noted. In postoperative 10th month, the patient's nasogastric tube was removed. She was referred to a physical medicine and rehabilitation specialist for chewing rehabilitation for a month. Following the rehabilitation, she was able to swallow food.

Figure 1: Preoperative plain X-Ray film *(Radiocontrast liquid accumulated in proximal atresia is seen).*

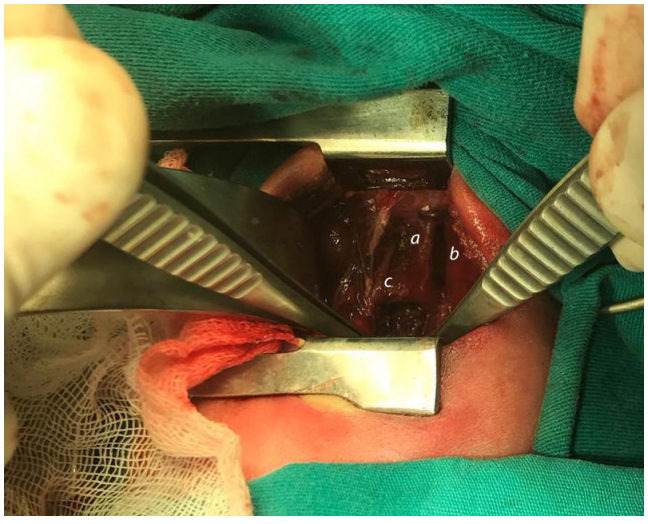

Figure 2: Intraoperative image *(a: proximal atresia, b: trachea, c: distal fistula).*

Figure 3: Postoperative plain X-Ray film *(No radiocontrast liquid accumulation is seen).*

DISCUSSION

The most common newborn esophageal malformation is esophageal atresia (9). It can be diagnosed in a prenatal period, at delivery or in a postnatal period by the responsible physicians. The complete swallowing process can be visualized by video-fluoroscopy and a definitive diagnosis can be achieved (9). Surgical treatment is essential for patients suffering from EA. New methods are being developed for its surgical treatment. Specifically, for short-gap EA, type-C according to Gross (4), primer anastomosis of distal and proximal parts is the most used surgical method. In this method, the surgeon attaches distal and proximal parts by suturing them together and forms a proper esophagus (8). This open or thoracoscopic chest surgery has life-threatening complications and causes a lifelong-carried scar (8). The major lifelong-carried complication of this operation is esophageal dysmotility and its related problems like GER. In the post-operative period, 34% of patients suffer from GER caused by esophageal dysmotility (8). Patients may continue to have problems with these basic reflexes and may need physical therapy even when they are treated well surgically. 30% of children with EA undergoes fundoplication for GER treatment (10). A study made by Menzies et al. (11) showed that failure to thrive is seen at patients who had fundoplication. In addition to failure to thrive, instead of fundoplication, studies showed that transpyloric feeding is more beneficial for the patient in different aspects like growth and reducing the effects of reflux (12, 13).

The patient in our case received physical therapy and was followed-up for ten months after the surgery. Although we have seen a full recovery and the patient was able to swallow food at the end of the treatment the diagnosis could be achieved during the prenatal period and the surgery and the required follow-up therapy could be planned more easily.

Today, a new method developed by Morrow et al. (14) is aiming to decrease the risk of long-term complications of the operation. In this method, the physician uses magnets to reattach two parts of the esophagus. At patients with shorter than 4 centimeters long gap, this method has been successful and approved by the United States Food and Drug Administration (14). Morrow's method does not require a primer anastomosis to reattach two parts of the esophagus and maintain a proper integration naturally. This natural integration of proximal and distal ends minimalizes the risk of damaging nerves, which are innervating the esophagus and correlatively minimalizing the risk of esophageal dysmotility. This new method is being tried by many physicians and their experiences are being reported (14). In the future, it can be a safer option. But today, primer anastomosis is still the most common surgical method for EA.

As a conclusion, esophageal atresia with distal tracheoesophageal fistula is not an uncommon malformation. The patients can have problems with swallowing in their infancy even when they are treated surgically in the neonatal period. Therefore patients need to be followed-up and may need a referral to a physical medicine and rehabilitation specialist for appropriate postoperative treatment.

Ethics Committee Approval: N/A

Informed Consent: Written informed consent was obtained from the patient's family for this study.

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CASE REPORT

TORTICOLLIS SECONDARY TO A POSTERIOR FOSSA TUMOR: A CASE REPORT

Aslı Göztepe[1] , Mahmut Alper Güldağ[1] , Ahmet Tolgay Akıncı[2] , Mert Çiftdemir[3],

[1] Trakya University School of Medicine, Edirne, TURKEY
[2] Department of Neurosurgery, Trakya University School of Medicine, Edirne, TURKEY
[3]Department of Orthopedics and Traumatology, Trakya University School of Medicine, Edirne, TURKEY

ABSTRACT

Aims: Torticollis secondary to a posterior fossa tumor is a rare condition that is mostly seen in pediatric patients. In this case report, it is aimed to present a 23-month-old male patient with a posterior fossa tumor that presents the symptoms of torticollis. ***Case Report:*** A 23-month-old male patient was admitted to the hospital with a history of a restricted range of motion in his neck and leaning to his left side while sitting. Physical examination of the patient revealed acute onset of atlantoaxial rotatory subluxation findings therefore, the initial diagnosis was Grisel's Syndrome. Later, a cranial magnetic resonance imaging revealed a mass which was seen in the posterior fossa. The mass was considered as the cause of the torticollis. ***Conclusion:*** This case report shows the importance of the differential diagnosis of torticollis. Posterior fossa tumors should not be overlooked while searching for the cause of torticollis. ***Keywords:*** Torticollis, posterior fossa tumors, infratentorial neoplasms

INTRODUCTION

Torticollis is generally a pediatric pathology that can be congenital or acquired. Various pathologies can lead to acquired torticollis (1). It is originated from sternocleidomastoideus muscles on the neck (1). Acquired torticollis can be seen due to ligamentous, osseous, muscular, neurological and many other pathologies. However rarely, it could present secondary to posterior fossa and cervical spinal tumors (2).

23 month-old child with torticollis secondary to a posterior fossa tumor, which was diagnosed at first as Grisel's syndrome was reported in this case report. The aim of this report is to attract attention to the acquired torticollis that presents with posterior fossa tumors since it can easily be overlooked by the physicians.

CASE REPORT

A 23-month-old male patient was admitted to the pediatric clinic of the Trakya University School of Medicine with the complaint of limitation in neck movements. After the physical examination performed in the pediatric clinic, the patient was referred to the orthopedics and traumatology clinic with a pre-diagnosis of atlantoaxial rotatory subluxation (AARS) or Grisel's syndrome. The physical examination performed in the orthopedics clinic revealed that his head was deviated to the left, rotated to the right and his left gaze was limited. The patient had an upper respiratory tract infection history about 15 days before admitting to the clinic. He had a high fever, and his complaints were decreased with antibiotic treatment. This information had increased the suspicion of Grisel's syndrome. Muscle relaxant therapy and 500 grams of mento-occipital halter traction were applied. A radiological examination of the atlantoaxial joint was performed. The patient's treatment

Address for Correspondence: Aslı Göztepe, Trakya University School of Medicine, Edirne, TURKEY
e-mail: aslgztp@gmail.com ORCID: orcid.org/0000-0002-9522-7130
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continued with increasing the weights 250 grams each day for 5 days, but his symptoms did not improve. Therefore, the patient underwent cranial computed tomography and a mass pressuring the 4th ventricle was seen. After the observation of the mass, the case was referred to the Neurosurgery Department of Trakya University School of Medicine.

The systemic examination at the neurology clinic did not reveal any pathology. The general condition of the patient was found to be good. His daily behaviors and neurological examination were normal. The pupils were isochoric, the globe movements were natural, and all of the four limbs were active. Also, no facial asymmetry was detected.

Cranial magnetic resonance imaging (MRI) revealed a mass in the right cerebral hemisphere at the level of the middle cerebellar peduncle, which contained cystic areas, expanding towards the foramen magnum direction. The mass had a restricted diffusion, and significant hypointensities that indicate calcification and pressure from the right lateral aspect. Therefore, removal of the mass was deemed suitable for the patient.

The tumor was removed from the patient and was sent to the medical pathology laboratory. The pathological examination revealed the tumor was malignant and composed of slightly differentiated cells. Common INI-1 immune secretion loss was detected.

After the operation, the patient was admitted to the intensive care unit for follow-up. The patient did not have any additional complaints; therefore, his hospitalization continued at the neurosurgery service.

The patient was evaluated in the pediatric hematology-oncology-radiology-neurosurgery council and it was decided to discharge the patient. Whole-body and cranial MRI was recommended. Postoperative structural changes and hemorrhagic products were observed in MRI. In addition, a residual lesion with contrast enhancement, which was thought to belong to the inferior component of the mass, was observed. However, there was no significant change in other findings.

After the last evaluation of the patient, all findings were found to be normal and age-appropriate. The patient, who did not have any additional complaints, was discharged.

DISCUSSION

Atlantoaxial rotatory subluxation is a dislocation of the C1-C2 joint that develops after unilateral injury of the transverse ligament which is characterized by patients' complaints about widespread neck pain (3). The most important symptom of torticollis is that the head turns to one side. In addition, tenderness or pain is felt in the neck and shoulder muscles (4). Torticollis attacks in infants may be accompanied by other symptoms such as vomiting, irritability, and drowsiness. Subsequent torticollis usually results from trauma or reaction to drugs and is considered as an acute condition. Many reasons may cause acute torticollis and usually, the anamnesis of the patient takes the physician to the specific diagnosis. Some medications can cause sudden involuntary contractions of the neck, face or upper back muscles. It may consist of some prescription drugs or addictive substances such as cocaine and amphetamines. Taking such drugs is considered a risk factor for torticollis (5). However, the age of our patient with acute torticollis eliminates some of these reasons.

Infection is another cause of torticollis. Infections frequently affect the lymph nodes and this may cause the spasm in the muscles directly above these structures (5). In this case, the infection was the most important factor that made physicians think about Grisel's syndrome since the patient had a recent history of upper respiratory tract infection.

Other causes of torticollis include wounds, tumors, and neck arthritis similar to our case.

It is thought that acquired torticollis does not frequently present secondary to a posterior fossa tumor. However, in the study of Fąfara-Leś et al. (6) it is discovered that approximately 1 out of 5 patients presenting with torticollis had a central nervous system tumor. Amongst these cases, exactly 10 out of 12 had a tumor located in the posterior cranial fossa (6). Although the incidence of the disease is not very rare, it can often be overlooked because its symptoms are difficult to distinguish.

Our patient did not present only with torticollis, but also he had bilateral pupil edema. But not all of the patients have such a variety of symptoms. In the series of case reports of Turgut et al. (7) patients had no other symptoms but torticollis secondary to posterior fossa tumor. Therefore, physicians should always be considering posterior fossa tumors in their differential diagnosis.

In the case report of Choi et al. (1) posterior fossa tumor was overlooked for one month after the initial visit and the treatment was impeded. In our case, it was

also first thought as secondary to other pathologies such as Grisel's syndrome and posterior fossa tumor was overlooked. However, the patient was correctly diagnosed and treated before the disease reached a form that would cause permanent damage.

In the case series of Ouattassi et al. (8) it is seen that acute febrile torticollis could present secondary to an infectious cause. Two out of three of their cases had a history of an infectious pathology like febrile odynophagia (8). Our case also had a history of an upper respiratory tract infection approximately fifteen days ago. Thus, it is seen that infectious causes are more likely the cause of acute febrile torticollis, not posterior fossa tumors.

In conclusion, physicians should not overlook posterior fossa tumors in their differential diagnosis while trying to find the cause of the torticollis because posterior fossa tumors can be highly lethal and should be treated immediately.

Ethics Committee Approval: N/A
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Editor-in-chief's Note: Two of the authors of this article, Aslı Göztepe and Mahmut Alper Güldağ are members of the editorial board of Turkish Medical Student Journal. However, they did not take place in any stage on the editorial decision of the manuscript. The editors who evaluated this manuscript are from other institutions

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LETTER TO THE EDITOR

Lefkothea Zacharopoulou[1], Christos Tsagkaris[2]

[1] Medical University of Sofia, Sofia, BULGARIA
[2] University of Crete, Medical Faculty, Heraklion, GREECE

Dear editor,

The article "Evaluation of malnutrition statuses in systolic heart failure patients" by Özyiğit et al (1) which was published in the last issue of Turkish Medical Student Journal was certainly an interesting read. The heart diseases have been classified as the number one cause of death worldwide by the World Health Organization, and they are responsible for 17.9 million deaths annually (2). Hence, the significance of evaluating and following up such patients closely needs no justification. We have paid special attention to this study and we would like to make certain comments.

The aim of the study was to evaluate the nutritional statues of the subjects with systolic heart failure and to evaluate how well aware they are of their condition. The Mini Nutritional Assessment (MNA) test was used as the only method for evaluation, the subjects' use of medication and their relation to nutrition levels were not examined in depth. Echocardiography findings were documented as well, the results of which could be reinforced by stress tests in order to get a clear picture of cardiac function. Biochemical and hemodynamic parameters were also documented, however more attention could have been paid towards the specific micronutrients that are, according to the literature, directly related to malnutrition, as discussed later. It is important to point out that the age group of this study did not match the ones recommended for the use of the MNA test, a limitation mentioned in the study. In our opinion, the colleagues could have used additional methods that have been previously employed by similar studies in the literature.

Lee et al. (3) investigated the role of micronutrients such as coenzyme Q10, L-carnitine, thiamine, riboflavin, pyridoxine, amino acids such as taurine, omega-3 fatty acids, and vitamins (especially vitamin D) in cardiac metabolism. Many of them were found to be deficient in patients with heart failure (3). The benefits of supplementation of some, such as thiamine and L-carnitine, were also studied, but further investigations are needed to demonstrate if they would actually prove any benefit.

Additional methods that have previously been used in similar studies include the exercise tolerance test, and the Controlling Nutritional Status (CONUT), an automated assessment method that uses laboratory results such as level of total cholesterol, total lymphocyte count and albumin in serum to assess nutritional status (4). Lastly, the Geriatric Nutritional Risk Index (GNRI), a new index for the evaluation of elderly patients, is also a method widely used nowadays (5).

Furthermore, the evaluation of the nutritional statuses of patients with systolic heart failure could be aimed at investigating the correlation with mortality as done by Aggarwal et al (6). The study has shown that the mortality rate is independent of the degree of malnutrition of patients based on the MNA and a complete nutritional assessment (6).

Heart disease is a growing epidemic and we would like to encourage the continuation of this study with the use of further evaluation methods such as the ones mentioned above. What is more, we would recommend close follow up of these patients and a further investigation into their backgrounds (e.g. economic status) which is proved to be directly related to nutrition (7).

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Address for Correspondence: Lefkothea Zacharopoulou, Medical University of Sofia, Sofia, BULGARIA
e-mail: z.lefki@gmail.com ORCID: orcid.org/0000-0002-6258-4377
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RETRACTIONS & ERRATA

Date: 2019, February

Errata

In the article by Özkan et al., entitled "An Investigation On The Anticancer Effect Of Spider Web In Human Cervical Cell Line" that was published in the February 2019 issue of Turkish Medical Student Journal, citation information was wrongly written due to a publishing software program error. The Editorial Board reviewed the case and "Turkish Med. Stud. J. 2018; 5: 50-3" is corrected as "Turkish Med Stud J 2019;6(1):1-11".

In the article by Demirel et al., entitled "Systemic Cannabidiol Does Not Reduce Compound 48/80-Induced Itching Behavior In Mice" that was published in the February 2019 issue of Turkish Medical Student Journal, citation information was wrongly written due to a publishing software program error. The Editorial Board reviewed the case and "Turkish Med. Stud. J. 2018; 5: 54-7" is corrected as "Turkish Med Stud J 2019;6(1):12-7".

In the article by Özyiğit et al., entitled "Evaluation Of Malnutrition Statuses In Systolic Heart Failure Patients" that was published in the February 2019 issue of Turkish Medical Student Journal, citation information was wrongly written due to a publishing software program error. The Editorial Board reviewed the case and "Turkish Med. Stud. J. 2018; 5: 58-63" is corrected as "Turkish Med Stud J 2019;6(1):18-24".

In the article by Kolotylo et al., entitled "The Influence Of Intercurrent Diseases On The Course Of Hiv In Association With Active Tuberculosis" that was published in the February 2019 issue of Turkish Medical Student Journal, citation information was wrongly written due to a publishing software program error. The Editorial Board reviewed the case and "Turkish Med. Stud. J. 2018; 5: 64-8" is corrected as "Turkish Med Stud J 2019;6(1):25-30".

In the article by Avul et al., entitled "A Case Report: The Role Of Prostate-Specific Membrane Antigen Labeled Theranostic Agents In The Diagnosis And Treatment Of Prostate Cancer" that was published in the February 2019 issue of Turkish Medical Student Journal, citation information was wrongly written due to a publishing software program error. The Editorial Board reviewed the case and "Turkish Med. Stud. J. 2018; 5: 69-75" is corrected as "Turkish Med Stud J 2019;6(1):31-6".

In the article by Kılıççalan et al., entitled "Caenorhabditis Elegans And Angiogenesis" that was published in the February 2019 issue of Turkish Medical Student Journal, citation information was wrongly written due to a publishing software program error. The Editorial Board reviewed the case and "Turkish Med. Stud. J. 2018; 5: 79-84" is corrected as "Turkish Med Stud J 2019;6(1):37-41".

In the article by Tsagkaris, entitled "Letter To The Editor" that was published in the February 2019 issue of Turkish Medical Student Journal, citation information was wrongly written due to a publishing software program error. The Editorial Board reviewed the case and "Turkish Med. Stud. J. 2018; 5: 69-75" is corrected as "Turkish Med Stud J 2019;6(1):42".

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Type	No	Money Paid to You	Money to Your Institution*	Name of Entity	Comments
1. Grant					
2. Consulting fee or honorarium					
3. Support for travel to meetings for the study or other purposes					
4. Fees for participation in review activities such as data monitoring boards, statistical analysis, end point committees, and the like					
5. Payment for writing or reviewing the manuscript					
6. Provisions of writing assistance, medicines, equipment, or administrative support					
7. Other					

*This means money that your institution received for your efforts this study.

Section 3. Relevant financial activities outside the submitted work.

Please indicate whether you have financial relationships (regardless of amount of compensation) with entities as described in the instructions. You should report relationships that were present during the 36 months prior to submission.

Complete each row by checking "No" or providing the requested information in the white boxes.

Relevant Financial Activities Outside the Submitted Work

Type of Relationship (in alphabetical order)	No	Money Paid to You	Money to Your Institution*	Name of Entity	Comments
1. Board membership					
2. Consultancy					
3. Employment					
4. Expert testimony					
5. Grants/grants pending					
6. Payment for lectures including service on speakers bureaus					
7. Payment for manuscript preparation					
8. Patents (planned, pending or issued)					
9. Royalties					
10. Payment for development of educational presentations					
11. Stock/stock options					
12. Travel/accommodations/ meeting expenses unrelated to activities listed**					
13. Other (err on the side of full disclosure)					

*This means money that your institution received for your efforts.

**For example, if you report a consultancy above there is no need to report travel related to that consultancy on this line.

Section 4. Other Relationships

Are there other relationships or activities that readers could perceive to have influenced, or that give the appearance of potentially influencing, what you wrote in the submitted work?

____No other relationships/conditions/circumstances that present a potential conflict of interest.

____Yes, the following relationships/conditions/circumstances are present (explain below):

At the time of manuscript acceptance, we ask that you update your disclosure statements if anything has changed. On occasion, we may ask you to disclose further information about reported relationships.

This form is adapted from the Author Disclosure Form created by the International Committee of Medical Journal Editors (ICMJE). The ICMJE has not endorsed nor approved the contents here. The official version of the ICMJE Author Disclosure Form is located at http://www.icmje.org/coi_disclosure.pdf

CONSENT FORM for CASE REPORT

Title of Project:_____

1. I have read, and understood the Participant Information Sheet dated _____
2. I freely agree to the use of my medical records for the purpose of this study.
3. I understand that the case report will be published without my name attached and researchers will make every attempt to ensure my anonymity. I understand, however, that complete anonymity cannot be guaranteed.
4. I have been given a copy of the Participant Information Sheet and Consent Form to keep.

Name of Participant_____

Signature of Participant _____ Date _____

The participant was informed through phone call and a verbal consent was obtained.

The following section regarding the witness is not essential but may be appropriate for patients where the research teams feel that the participant should have a witness to the consent procedure.

Name of witness (if appropriate)_____

Signature of witness_____ Date _____

Name of Researcher_____

Signature of Researcher_____ Date_____

Name of Researcher

Signature of Researcher_____ Date_____

Note from our partner.

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