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The journal is published every four months. The language of the publication is English.

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CONTENTS

ORIGINAL ARTICLE

- 70** DETERMINATION OF HOMOPHOBIA LEVELS OF PHYSICIANS AND EVALUATION OF THE APPROACHES AGAINST LGBTI INDIVIDUALS
Eylem Yaren Yılmaz, Çağla Tarım, Sercan Oktar, Gizem Yağdıgöl; İstanbul, TÜRKİYE

CASE REPORTS

- 78** CAN BARIATRIC SURGERY BE A HOPE FOR RESISTANT HYPERTENSION?
Utku Yartaşı, Buket Şen, Servet Altay; Edirne, TÜRKİYE
- 81** HIDDEN ENEMY BEHIND FEVER
Sena Batu, Şerife Sultan Uysal, Hakkı Onur Kırkıızlar; Edirne, TÜRKİYE
- 84** THE RESTRICTIVE EFFECTS OF THE COVID-19 PANDEMIC ON THE MANAGEMENT OF PLASTRON APPENDICITIS IN A KNOWN HEMOPHILIA A PATIENT
Mert Yurtsever, İrfan Arda Aykut, Beste Girgin, Berkay Aldemir, Oğuzhan Alp Öztürk, Zeliha Türkyılmaz; Edirne, TÜRKİYE
- 88** A CASE OF COEXISTENCE OF PULMONARY EMBOLISM AND ANOMALOUS ORIGIN OF CORONARY ARTERY
Bengisu Çıray, Yağmur Duraklı, Eylül Duraklı, Fethi Emre Ustabaşoğlu; Edirne, Ankara, TÜRKİYE

2022 Index

- 2022 Referee Index
2022 Author Index
2022 Subject Index

Editorial

Dear readers,

I am more than delighted to present to you the October 2022 issue of the Turkish Medical Student Journal. This year, we enhanced our accessibility and visibility and expanded our editorial board vastly. We have always been a journal that valued and followed the double-blinded peer review system. This year, we expanded the diversity of our reviewers and had the chance to get various independent peer reviewer opinions for all of our articles. I would personally like to thank our amazing editorial board for all of their hard work and dedication, they all did a marvelous job.

As a medical journal founded and run by medical students, we often face many obstacles that most journals do not experience. However, I would like to extend my gratitude to all our editorial advisory board members and esteemed peer reviewers for their meticulous work and never-ending interest and belief in our journal. Lastly, I would like to highlight all the valuable submissions we had this year. As the Turkish Medical Student Journal editorial board, we have always tried to give constructive feedback to our authors and strived to publish their work in the best possible quality.

Thank you for your interest in our journal, hope to meet you again next year.

Beliz Koçyiğit
Editor-in-Chief, Turkish Medical Student Journal
Trakya University School of Medicine, Edirne, TÜRKİYE

DETERMINATION OF HOMOPHOBIA LEVELS OF PHYSICIANS AND EVALUATION OF THE APPROACHES AGAINST LGBTI INDIVIDUALS

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ABSTRACT

Aims: LGBTI is known to be abbreviated from the first letters of "lesbian", "gay", "bisexual", "transgender", "queer" and "intersex". Attitudes towards LGBTI individuals, stereotypes, and false beliefs about them persist. Thus, prejudice and discrimination against LGBTI individuals stand out as an important problem in today's society. LGBTI individuals face discrimination and barriers due to their sexual orientation and gender identity/expression. This study aims to observe physicians' attitudes towards LGBTI individuals, measure their knowledge, determine the level of homophobia among them, and find the factors that affect homophobia, considering the difficulties of LGBTI individuals in the field of health.

Methods: The descriptive research was done on the physicians of Marmara University Pendik Research and Application Hospital. Eight sociodemographic and 24 Likert scale questions were asked in the questionnaire. Afterwards, 5 two-choice questions compiled from the "Misconceptions About Sexual Orientations" section of the "LGBT Health for Physicians" published by the Turkish Medical Association were directed to the participants, and a final open-ended question was asked.

Results: Sixty percent of the participants were female (n=120) and 40% were male (n=81). The proportion of participants who had acquaintance with LGBTI individuals was 63%. Participants with more familiarity with LGBTI individuals were found to have lower levels of homophobia. There was a statistically significant relationship between homophobia levels and approaches to misconceptions about sexual orientations ($p<0.01$). Consequentially, in areas where interaction with the patient is more common, levels of homophobia were found to be less than in the areas where interaction with the patient was less.

Conclusion: Our results suggest that having incorrect information and no acquaintances from the LGBTI community affects the level of homophobia. To avoid this situation, medical students should be adequately educated about the LGBTI community in order to have a better understanding of patient care.

Keywords: Homosexuality, bisexuality, transgender, homophobia, acquaintances

INTRODUCTION

LGBTI is known to be abbreviated from the first letters of "lesbian", "gay", "bisexual", "transgender", and "intersexual". It is mostly written as LGBTQI+ (lesbian, gay, bisexual, transgender, queer, intersexual, and plus). "Plus" in the abbreviation emphasizes that sexual orientation and gender identity are defined in a spectrum. Furthermore, some individuals see gender as fluid and choose to identify as non-binary individuals.

The term "transgender" identifies that the sex assigned at birth and identification and/or expression of gender might be different (1).

Although it is known that in many societies, LGBTI individuals are perceived as disrespectful and unhealthy compared to individuals defining themselves as heterosexual (2). Yet, sexual orientation and/or gender expression can be tolerated to a certain degree in some societies and/or communities (2).



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Attitudes towards LGBTI individuals, perceived stereotypes, and false beliefs about them persist (2). Thus, prejudice and discrimination against LGBTI individuals stand out as important problems in today's societies (3).

The most common example of prejudice and discrimination against LGBTI individuals are cases of homophobia. Homophobia is generally defined as negative feelings, attitudes, and/or behaviors towards people with different sexual orientations or gender identities (4).

Although the term homophobia is widely used, the term heterosexism and the newer term heteronormativity are being proposed (5).

In a medical context, LGBTI individuals face discrimination and barriers due to their sexual orientation and gender identity/expression, in addition to their health problems. This may create avoidance of healthcare due to discrimination and cause inadequate use of health services, which is an important problem (6). Medical students and physicians must be educated on the rights and needs of LGBTI individuals in health care so that the discriminatory language created by heterosexism and homophobia can be avoided in medical education and health care (7).

Within the capacity of the questionnaires used, this study aims to observe physicians' attitudes toward LGBTI individuals, measure their knowledge, determine the level of homophobia among them, and find the factors that affect homophobia, considering the difficulties of LGBTI individuals in the field of health.

MATERIAL AND METHODS

Study Participants

Two hundred and one randomly selected interns and physicians working at Marmara University Pendik Research and Application Hospital participated in the study. The study was planned as a cross-sectional study. Surveys were hand-delivered to participants and collected. Before the survey, a brief explanation was given to the participants about the survey. After the explanation, informed consent was obtained from the participants, and questions asked by the physicians about the research and/or survey were answered appropriately. The survey was planned to be conducted with 200 people with a 95% confidence interval in the sample selection. 201 participants were reached by the removal of 34 participants who left their surveys blank and/or gave invalid answers.

Surveys were conducted after the approval of the Marmara University Local Ethics Committee (protocol code: 09.2018.082, date: 05.01.2018).

Survey

The survey of the study consisted of 4 parts. The first section contained questions that determined the demographic characteristics of the participants affecting their interactions

with LGBTI individuals. In the second section of the survey, a Turkish adaptation of a 25-point Hudson and Ricketts (8) Homophobia scale with 24 questions developed by Hudson and Ricketts (8) and adapted by Sakalli et al. (9) was used to measure attitudes of survey respondents towards LGBTI individuals. Before applying the scale to the participants, Sakalli et al. (9) removed the question about "being able to walk comfortably in gay parts of the city" because there was no such zone in the city where the scale was applied (Ankara). Since there is no such area in Istanbul, it was also not included in our survey. The original scale reliability was high with a Cronbach alpha score of 0.94 in the Turkish version (9).

The evaluation on the homophobia scale was carried out by questions of the 6-point Likert scale type and the homophobia levels of the individuals were measured according to the median of these values, which were ranked from 1 (I disagree at all) to 6 (I agree very much). Proximity to 1 in an answer indicates decreased homophobia, while proximity to 6 indicates an increase in homophobia. The 15th, 16th, 18th, 20th, 21st, 23rd, 27th, 28th, 33rd, and 34th questions in the homophobia questionnaire were collected by reversing. The median value of the total score was obtained. After this, the low and high levels of homophobia categorization, according to the median score, was conducted. The methodology of scale usage has been validated in other studies (4).

In the third section of the survey, the presence of a meaningful relationship between physicians' misconceptions about LGBTI and homophobia levels was investigated by asking the participants for their opinions on statements from 5 articles which we compiled from the "False Beliefs About Sexual Orientations" section of "LGBTI Health for Physicians" published by the Turkish Medical Association (TMA) in 2016 (7). The participants were able to choose between 2 options: "I agree" and "I disagree". According to information from the same article of TMA, participants' answers were classified as right (0 points) and wrong (1 point). A maximum of 5 points obtained indicated the lowest level of knowledge about LGBTI. With this point system, the relationship between participants' homophobia levels and knowledge about LGBTI was evaluated. The overall survey can be seen in Table 1.

Statistical Analysis

The obtained data were analyzed with IBM SPSS version 21. Chi-squared and independent group t-test was used in the analysis of the findings. The significance level in the tests was set as $p < 0.05$. While evaluating the findings, the physicians' branches were categorized into internal medical sciences, surgical medical sciences, and basic medical sciences. Emergency medicine, forensic medicine, family medicine, dermatology, cardiology, neurology, pulmonology, physical medicine and rehabilitation, child and adolescent psychiatry, pediatrics, internal diseases, infectious diseases, psychiatry, and radiology were considered internal medical science. Anatomy, biophysics, medical

Table 1: The survey used in this study.

Questions	Answers
1) Gender	
2) Age	
3) Profession	
4) Specialization	
5) Is there someone who is LGBTI among your circle of acquaintances?	Yes/no
6) If yes, how close is this person to you?	Very close/close/a little close/not much close/not close at all
7) Do you have any prior education on health care for LGBTI individuals?	Yes/no
8) If yes, for how long?	
9) Have you ever lived abroad?	Yes/no
10) If yes, for how long and in which country?	
Hudson & Ricketts Homophobia Scale (8)*	
11) I would feel uncomfortable in a homosexual group.	1-6
12) I would be angry if a person of my sex sexually attracted to me.	1-6
13) I would be disappointed if I learned that my son/daughter was homosexual.	1-6
14) I would be disappointed if I learned that my brother/sister was homosexual.	1-6
15) I would enjoy attending social functions at which homosexuals were present.	1-6
16) I would feel comfortable if I learned that my daughter's teacher was lesbian.	1-6
17) I would be bothered if a person of my sex sexually attracted to me.	1-6
18) I would easily speak with homosexuals in a party.	1-6
19) I would feel uncomfortable if I learned that my son's teacher was gay.	1-6
20) It would not bother me if I work with a male homosexual person.	1-6
21) It would not bother me if a person of my sex sexually interested in me.	1-6
22) I would feel that I had failed as a parent, if I learned that my child was homosexual.	1-6
23) I would feel comfortable if I found myself attracted to a person of my sex.	1-6
24) If I saw two man holding hands in public, I would feel disgusted.	1-6
25) It would bother me if I found that my physician was homosexual.	1-6
26) It would bother me if I found that my superior at work was homosexual.	1-6
27) I would feel proud knowing that I was attractive to persons of my sex.	1-6
28) It would not bother me if I work with a female homosexual person.	1-6
29) It would bother me if my partner/spouse was interested in persons of their sex.	1-6
30) I would feel uncomfortable if I found that my neighbor was homosexual.	1-6
31) I would be uncomfortable to be seen in a bar where homosexuals usually go.	1-6
32) I would be bothered if I learned a clergyman of my religion, was homosexual.	1-6
33) I would feel comfortable knowing that my best friend was homosexual.	1-6
34) I would feel comfortable knowing that I am attractive to the persons of my sex.	1-6
Approaches on Misconceptions about Sexual Orientations	
35) Homosexuality is unnatural.	Agree/disagree
36) Homosexuality is a fad. It begins with curiosity; is socially learned and becomes a habit if not intervened promptly.	Agree/disagree
37) Gay and bisexual men are more likely to sexually abuse children.	Agree/disagree
38) Homosexuality is the result of early brain development problems or certain postpartum upbringings.	Agree/disagree
39) AIDS is a gay disease.	Agree/disagree
Case based evaluation	
40) How would be your approach to a transsexual patient of yours? (More than 1 option is possible.)	I would accept/I would not accept/I would be nervous
41) What would be the reasons of your approach? (No enough information, my beliefs, etc.)	

*Answers to this part of the survey were presented as 6-point Likert scale type ranked from 1 (I disagree at all) to 6 (I agree very much). LGBTI: Lesbian, gay, bisexual, transsexual, intersexual, AIDS: Acquired immunodeficiency syndrome

biochemistry, medical history and ethics, physiology, histology and embryology, medical microbiology, and medical biology were considered basic medical science. Further, pediatric surgery, general surgery, cardiovascular surgery, thoracic surgery, gynecology and obstetrics, otorhinolaryngology, orthopedics and traumatology, urology, and ophthalmology were considered surgical medical science.

Our dependent variables in the study were the physicians' perspectives and approaches to LGBTI individuals. The independent variables that we evaluated were demographic variables such as age and gender, prior education on the topic of health care for LGBTI individuals, having social interactions with an LGBTI individual, and living abroad.

RESULTS

Two hundred and one participants completed the survey, of whom 120 (60%) were female, and 81 (40%) were male. There was no statistically significant association between homophobia levels and sex (p=0.069). The mean age of participants was 32 years. The lowest age was 22 and the highest age was 73 years. When we classified the age of the participants as under 32 years old and over 32 years old, no statistically significant association was found between the level of homophobia and the two age groups (p=0.609).

Specialization areas of the participants were classified as internal medical sciences, surgical medical sciences, and basic medical sciences. Most of the participants were from internal medical sciences (n=153, 76%). Others were from surgical medical sciences (n=20, 10%) and basic medical sciences (n=28, 14%). Although no statistically significant association could be found between specialization and homophobia level (p=0.472), homophobia levels were lowest in surgical medical sciences and highest in basic medical sciences (Table 2).

Thirty-seven percent (n=75) of the participants had no acquaintances with LGBTI individuals. A statistically significant association was found between acquaintance and homophobia levels (p=0.036). Further, acquaintance levels with LGBTI individuals were significantly associated with homophobia levels (p=0.013).

Ninety percent (n=181) of the participants had no education about LGBTI health. We found no statistically significant association between education and homophobia level (p=0.833).

Seventy-five percent (n=151) of the participants had lived abroad and 40% (n=19) of them had lived abroad for 4 months or less. No statistically significant association was found between living abroad and homophobia level (p=0.774).

A statistically significant association was found between homophobia level and points achieved in third part of the survey (p<0.01).

Higher homophobia levels were detected on participants who had 5 points (All answers were "I agree") (Table 3).

Some Sample Questions and Their Analyses According to "Hudson & Ricketts Homophobia Scale"

Q13: I would be disappointed if I learned that my son/daughter was homosexual.

- There was a statistically significant association between gender and frustration when they found out their children was homosexual (p<0.01). Most of the males answered, "agree very strongly" (Figure 1).
- A statistically significant association was found between acquaintances with an LGBTI individual and frustration when they found out their children were homosexual (p<0.01). Participants that have no acquaintances with an LGBTI individual mostly answered "agree very strongly" (Figure 2).

Table 2: Distribution of the homophobia levels according to specializations.

Specialization	Homophobia level*	
	Low (%)	High (%)
Surgical medical sciences	60	40
Internal medical sciences	52.9	47.1
Basic medical sciences	42.9	57.1

* The low and high levels of homophobia categorization was calculated according to the median score.

Table 3: Distribution of the responses to the "Approaches to Misconceptions about Sexual Orientations" scale.

Misconceptions about sexual orientations	Agree [%(n)]	Disagree [%(n)]
Homosexuality is unnatural.	18 (36)	82 (165)
Homosexuality is a fad. It begins with curiosity; is socially learned and becomes a habit if not intervened promptly.	16 (32)	84 (169)
Gay and bisexual men are more likely to sexually abuse children.	18 (36)	82 (165)
Homosexuality is the result of early brain development problems or certain upbringings after birth.	26 (52)	74 (149)
AIDS is a gay disease.	5 (10)	95 (191)

AIDS: Acquired immunodeficiency syndrome

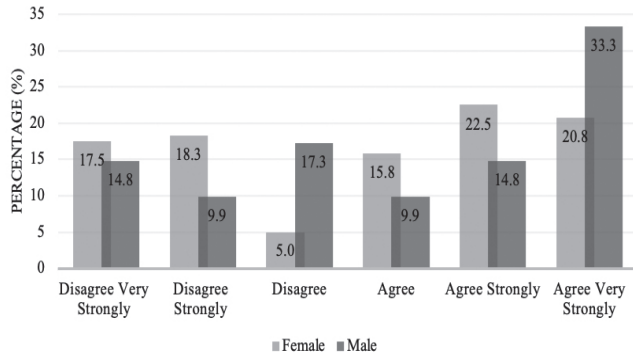


Figure 1: Distribution of the responses to Q13 according to gender.

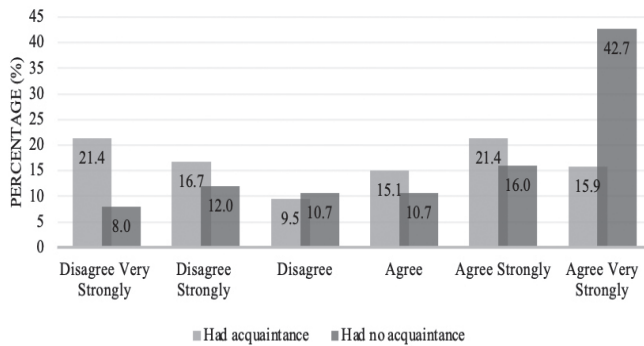


Figure 2: Distribution of the responses to Q13 according to acquaintance.

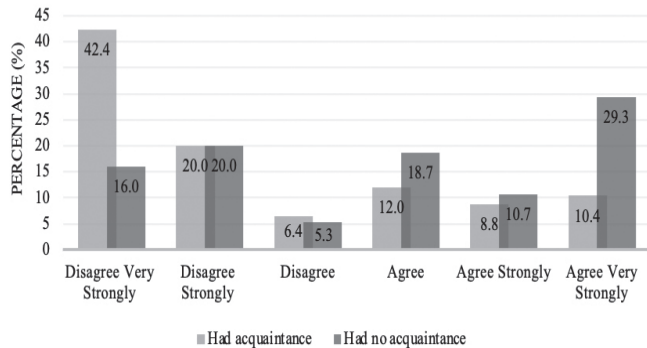


Figure 3: Distribution of the responses to Q19 according to acquaintance.

Q16: I would feel comfortable if I learned that my daughter's teacher was lesbian.

- Twenty-four percent (n=49) of the participants answered "agree very strongly". 23.9% (n=48) of the participants answered: "Disagree very strongly".
- There was no statistically significant association between gender and the state of feeling comfortable after learning daughter's teacher was lesbian (p=0.053).
- No statistically significant association was found between having acquaintances with an LGBTI individual and state of

feeling comfortable after learning their daughter's teacher was lesbian (p=0.322).

Q19: I would feel uncomfortable if I learned that my son's teacher was gay.

- Seventeen percent (n=35) of the participants answered: "Agree very strongly". 32.3% (n=65) of the participants answered "disagree very strongly".
- There was a statistically significant association between gender and the state of feeling uncomfortable after learning their son's teacher was homosexual (p=0.048). Most of the males answered, "agree very strongly". Also, most of the females answered, "disagree very strongly".
- A statistically significant association was found between having acquaintances with an LGBTI individual and the state of feeling uncomfortable after learning their son's teacher was homosexual (p<0.01) (Figure 3).

Q22: I would feel that I had failed as a parent, if I learned that my child was homosexual.

- Forty-three percent (n=86) of the participants answered "disagree very strongly". 8% (n=16) of the participants answered: "Agree very strongly".
- There was no statistically significant association between gender and state of feeling failed as a parent after learning their child was homosexual (p=0.703).
- A statistically significant association was found between having acquaintances with an LGBTI individual and state of feeling failed as a parent after learning their child was homosexual (p=0.01). Most of the participants that had acquaintances answered: "Agree very strongly" (50%, n=100).

Q25: It would bother me if I found that my physician was homosexual.

- Sixty-one percent (n=123) of the participants answered: "Disagree very strongly". 5% (n=10) of the participants answered: "Agree very strongly".
- There was no statistically significant association between gender and the state feeling bothered after learning their physician was homosexual (p=0.09).
- No statistically significant association was found between having acquaintances with an LGBTI individual and the state of feeling bothered after learning their physician was homosexual (p=0.205).

DISCUSSION

It is known that people's physical health affects their mental well-being and the impact of discrimination is deep and multifaceted. The discrimination they experience can become a part of LGBTI individuals' daily lives, which can cause great losses in their well-being (10, 11).

According to the report of the Organization for Economic Co-operation and Development (OECD), which consists of 35 countries, despite the increasing awareness and acceptance of homosexuality in OECD countries, in recent years, homophobia still maintains its prevalence. While Nordic countries, Western Europe, Spain, Australia, New Zealand, and Canada are above the OECD average in the recognition and acceptance of homosexuality, it is seen that Turkey takes the last place (12).

It is a fact that LGBTI individuals face discrimination and obstacles due to their sexual orientation and gender identity. This decreases their access to health services, causing them to experience increased health problems compared to the rest of society (13).

When looking at our and previous studies' results, we see that for homosexual parameters, males show more extreme results (14-16). In one study by Ratcliff et al. (17), it was found that women were less prejudiced against male homosexuals than men; the same approach has been shown to lesbians, though somewhat less prejudiced. It has been revealed that women show higher internal motivation than men in reacting without prejudices. It has been also understood that gender role variables play a role in the willingness to react without prejudices (17).

In the Sakalli et al. (18) 2002 study, it was observed that male participants used stereotypic attributes more, and unique attributions (counter-stereotypic attributes) less in describing male homosexuals (gays); whilst female participants used fewer stereotypical citations and more specific citations overall (18).

In our study, we found no difference in homophobia levels between genders. This can be due to the national and educational differences between studies.

When we try to understand the different results between specialties, we see that in the 2007 study conducted by Smith and Mathews (19) on 1271 physicians in San Diego, California, the United States of America, the fields of specialization with the lowest homophobia level listed as psychiatry, internal medicine, and pediatrics; whilst the most homophobic specialties were found to be surgery (excluding orthopedics), family health, and orthopedics. In a study conducted by Ramos et al. (20) in New Mexico in 1998, it was observed that gynecology and obstetrics, orthopedics, pathology, and radiology specialties exhibited more negative attitudes towards male and female homosexuals. In addition, it has been determined that gynecology and obstetrics, and orthopedists have been less accepting of male and female homosexuals since the acquired immunodeficiency syndrome epidemic. The specialties with the most positive attitudes towards male and female homosexuals were psychiatry, emergency medicine, family health, and pediatrics. It has been stated that these four specialties can be important resources in providing non-judgmental healthcare to male and female homosexual patients (20).

When we evaluated the specialties one by one (for example, physiology, dermatology, radiology, orthopedics and

traumatology, cardiology, and general surgery), no statistically significant relation between the specialties and the homophobia levels of the physicians was found. However, when the specialties were grouped under 3 main groups as internal, basic, and surgical medical sciences, a statistically significant relation was observed between the branches and the homophobia levels of the physicians. Having less patient interaction, homophobia levels were highest in the basic medical science group. Further, both having more patient contact, homophobia levels in internal medical sciences group were lower and the lowest levels were seen in the surgical medical science group.

We expected to have different results for individuals who had acquaintances with LGBTI individuals and who do not. In the previously mentioned study of Sakalli et al. (9) participants who did not have any social relationships or acquaintances with homosexual people preferred stereotypical references and authentic references less, while those having previous acquaintances preferring specific references and less stereotypical references. Considering both gender and familiarity with LGBTI individuals, the study of Sakalli et al. (9) concluded that male participants and participants without social relations used more negative stereotypes than female participants and participants with social relations, respectively.

In a study conducted by Anderssen (21), in which the attitudes of 511 19-year-old Norwegian young people towards homosexuals and their acquaintances with them throughout 2 years were examined through questionnaires. Two years later, it was seen that there was a negative attitude towards homosexuals at the baseline. The majority (66-79%) had no prior contact with an LGBTI individual. At the end of the study, contact change was found to be positively related to attitude change, although the contact rate only increased by 15-17%. At the same time, it was found that the positively changed behavior pattern made participants more inclined to interact with LGBTI individuals (21).

In our study, a statistically significant relationship was found between acquaintances with LGBTI individuals and the level of homophobia. It was observed that homophobia level was lower in those with LGBTI individuals in their social circle. It was revealed that the level of acquaintances was also an important factor in homophobia. In addition, it was observed that the level of homophobia of people who are very close to LGBTI individuals was lower than those who are not close.

Considering that there are prejudices at the core of all discrimination, education emerges as one of the factors that can affect homophobia. In a study by McNair (22), it was stated that lesbian health should be integrated into the medical education curriculum in Australia. In another study conducted by Khalili et al. (23), 16% of the physicians stated that they had received training to help them master LGBTI health. 52% stated that they had never received any training on LGBTI health, and 80% stated that they wanted to have more information about LGBTI health.

In this study, no statistically significant relationship was found between previous education about health care for LGBTI individuals and the level of homophobia. This may be because the participants who previously did not receive any education about LGBTI were the overwhelming majority.

We looked at the relationship between homophobia levels and living abroad. The effect of not being receptive to new ideas, which is in the formation of all kinds of discrimination, is so important that it cannot be ignored. On the other hand, it is known that being open-minded and liberal often brings respect for human diversity and the ability to accept differences in human nature (24). Living abroad has an undeniable effect on people's worldviews, perceptions, and interpretations of their environment (25). Considering this, it became inevitable to question the effect of living abroad on the level of homophobia in our research. However, no statistically significant relationship was found between living abroad and the level of homophobia.

We also assessed the relationship between believing in misconceptions about sexual orientations and homophobia. In a study by Plugge-Foust and Strickland (26), a statistically significant relationship was found between irrational beliefs and homophobia level. In our study, a statistically significant relationship was found between the knowledge score (formed according to the answers on misconceptions about sexual orientation) and the level of homophobia. It was revealed that the participants who had false beliefs about sexual orientation had higher levels of homophobia. Wrong or incomplete information and not being open to new information and understandings are the basis of discontent, fear, and hatred towards those who are different from oneself (27, 28). Considering this, our results about the level of misconceptions about sexual orientation become even more important.

In our study, no statistically significant result was found between age and homophobia. In a study conducted by Johnson et al. (16), it was observed that homophobia decreased with increasing age. The study further found that the belief that homosexuality is genetically based increased with age (16). In the previously mentioned study by Smith et al. (19), dramatic differences were found in attitudes towards homosexuality among physicians. Responses were arranged according to the year of graduation from medical school. It was found that new graduates displayed more accepting attitudes towards homosexuality than those who had graduated before. Therefore, we can see that the literature is also controversial on this relationship between age and homophobia.

Limitations

One of the most important limitations of our study was the open-ended questions, which were not adequately answered by the participants. The last two questions of the questionnaire, "How would be your approach to a transsexual patient of yours? What would be the reasons of your approach?" were one of the

most important questions for our research. Since they were at the end of the questionnaire, we have made them larger and bolder to increase the chances of it catching physicians' attention. We intended to use these questions to gain a better understanding of their approach to patients, to make connections about the effect of homophobia, and to link this approach to many other parts of the research. However, the majority of the physicians skipped those. This could be due to the physicians' lack of time or unwillingness to respond to the questions.

Another limitation of our study was that the study was planned as a single-centered study. This may not be sufficient to generalize the results for all groups of physicians.

CONCLUSION

Statistically significant relationship was found between homophobia levels and approaches to misconceptions about sexual orientations. This suggests that having the wrong information affects the level of homophobia. This may affect the access of LGBTI individuals to health resources. In this regard, better training may be given to physicians.

Our study found that the highest homophobia levels were seen in participants in basic medical sciences, followed by internal medical sciences with intermediate homophobia levels, and surgical medical sciences with the lowest levels of homophobia. In that regard, it is thought that the change in the levels of homophobia in these areas may be due to the number of patients contacted and the number of interactions with patients.

Physicians who have not met with LGBTI individuals may have misconceptions about them. However, the level of homophobia can decrease, as they interact with them. This indicates the presence of prejudices in people's minds.

The level of homophobia can be affected by misconceptions in any profession. In the case of physicians, some difficulties can be seen in access to health care for LGBTI individuals, which is one of the most natural human rights. LGBTI individuals regardless of their sexual orientation should be able to take advantage of health care facilities with peace of mind, just like heterosexual individuals. The level of homophobia can easily be affected by people's misconceptions. Therefore, understanding the root of these misconceptions can act as a guide for what can be done in society. In order to avoid homophobia in healthcare, medical students should be adequately educated about the LGBTI community.

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CAN BARIATRIC SURGERY BE A HOPE FOR RESISTANT HYPERTENSION?

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ABSTRACT

Obesity is a common, dangerous disease that can cause serious health problems, and its increasing worldwide prevalence drives toward increased cardiovascular morbidity and mortality. This case report aims to illustrate the relationship between the management of obesity-related disorders, such as resistant hypertension, and the efficiency of bariatric surgery in patients with obesity. A 52-year-old female patient with obesity was admitted to the department of cardiology of our hospital with complaints of resistant hypertension and left ventricular dysfunction. The patient had a history of preeclampsia. During her fifth month of pregnancy, antihypertensive treatment was started on the patient. Although her blood pressure returned to normal after delivery, she applied to the emergency department with complaints of fainting and headache 10 months after delivery. After a detailed examination, the patient was diagnosed with metabolic syndrome due to increasing body mass index, high blood pressure, and insulin resistance. Obesity surgery was recommended to the patient who was using eight different medications due to her existing chronic diseases. After surgery, the body mass index of the patient regressed to normal values, and all anti-hypertensive medications were discontinued. Considering this case, it may be more effective to perform bariatric surgery instead of diet and medical treatment in selected patients with hypertension and other obesity-related diseases.

Keywords: Bariatric surgery, diabetes mellitus, metabolic syndrome, obesity

INTRODUCTION

Obesity is a multifaceted chronic disease defined as having a body mass index (BMI) greater than 30 kg/m², which may lead to additional diseases such as diabetes mellitus and hypertension (1, 2). About 13% of the world's population struggles with obesity and this rate is increasing due to malnutrition and sedentary lifestyles (3). BMI is the most frequently used index for diagnosing obesity and is determined by dividing a person's weight by their height squared (kg/m²) (4). People with a BMI greater than 30 are classified as obese, while those with a BMI greater than 40 or with a BMI of 35 or higher accompanied by obesity-related health conditions are classified as morbidly obese (5, 6). Obesity may cause dyslipidemia, hyperglycemia, and high blood pressure, which are the components of metabolic syndrome (7). These conditions may fail to respond to treatment due to obesity and lead to additional health problems such as

resistant hypertension, type 2 diabetes, and cardiovascular diseases (8). Resistant hypertension is defined as systolic blood pressure over 140 mm Hg and diastolic blood pressure over 90 mm Hg despite the simultaneous use of 3 different antihypertensive drugs taken at the maximum tolerated doses, one of which is a diuretic selected by considering kidney function (9).

This case report aims to present the remission of an obese patient following bariatric surgery as a treatment for resistant hypertension.

CASE REPORT

A 52-year-old female patient with obesity was admitted to the department of cardiology of our hospital with a ten-year history of resistant hypertension and left ventricular dysfunction. She had no previous complaints before being diagnosed with



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preeclampsia in 1999, in the 5th month of her second pregnancy. During this period, her BMI was 31.2 kg/m² and her blood pressure was 200/120 mm Hg. The patient was prescribed nifedipine 10 mg 1x1. In the 36th week of her pregnancy, she underwent an early caesarean section, and the medication was continued three more weeks after delivery until her blood pressure returned to normal. The patient's weight gain continued after delivery. After the endocrinology control examination in the same year, she was diagnosed with metabolic syndrome due to obesity, high insulin resistance, hypercholesterolemia, and resistant hypertension. Metformin 1000 mg 2x1, duloxetine 30 mg 1x1, pantoprazole 40 mg 1x1, and rosuvastatin 10 mg 1x1 were prescribed. Ten months after delivery, the patient presented to the emergency service with severe headaches and fainting. Amlodipine 10 mg 1x1 was prescribed following a five-day follow-up period.

In 2012, the patient was admitted to the cardiology clinic of our hospital, and benidipine hydrochloride 4 mg 1x1 and olmesartan hydrochlorothiazide 20/12.5 mg 1x1 were prescribed. The previous medications were abandoned. Left ventricular dysfunction and mild mitral regurgitation were detected on transthoracic echocardiography (TTE) performed in 2017. The patient was using four hypertension drugs (olmesartan hydrochlorothiazide 40/12.5 mg 1x1, benidipine hydrochloride 4 mg 2x1, bisoprolol 5 mg 1x1, doxazosin 4 mg 1x1) and was being followed up for resistant hypertension. Despite aggressive treatment, the patient's blood pressure was consistently measured higher than 150/100 mm Hg. Additionally, increased left ventricular dysfunction was detected in TTE performed in April 2019. Therefore, bariatric surgery was recommended. During this period, the patient's BMI was 36.3 kg/m². Bariatric surgery took place on 24 April 2019, following an endoscopic examination. Transit bipartition was performed on 26 April 2019. The patient was discharged on the postoperative 3rd day, and all medications were discontinued. After being discharged, the patient was prescribed olmesartan 40 mg 1x1 since her blood pressure was 160/100 mm Hg. On the postoperative 10th day, the patient was prescribed benidipine hydrochloride 4 mg 1x1 and olmesartan hydrochlorothiazide 20/12.5 mg 1x1 and was called for follow-up six months later. The treatment was reduced to a single drug, benidipine hydrochloride 4 mg 1x1, in the 6-month follow-up, and all medication for hypertension were discontinued in the 9-month follow-up since the patient was hypotensive with a blood pressure of 70/40 mm Hg. The patient's BMI was measured as 20.7 kg/m² with a total weight loss of 30 kg during this period (Figure 1). Postoperative TTE and other laboratory results were normal. The patient, who did not use any medication after the operation until September 2021, was prescribed olmesartan 20 mg 1x1 in September due to high blood pressure and headache. Routine follow-ups were recommended for the patient.

DISCUSSION

Obesity and obesity-associated disorders have been posing a serious threat to global health over the last decades



Figure 1: Comparison of the patient's pre/post-bariatric-surgery BMI.

BMI: Body mass index

(10). Resistant hypertension is one of the most prominent comorbidities of obesity and based on the blood pressure threshold of 140/90 mm Hg, resistant hypertension is present in around 14% of obese people (11). Increased adipose tissue and circulating free fatty acids play an important role in the development of hypertension (12). Bariatric surgery was thought as the first option for the treatment of obesity-related hypertension, which may cause sympathetic nervous system stimulation and insulin resistance (13). When evaluating treatment methods for both weight reduction and comorbidity remission after surgery, including hypertension, bariatric surgery was confirmed to be the most efficient treatment for these patients (14). Patients with a BMI of over 40 kg/m² or 35 kg/m² with major comorbidities may benefit from bariatric surgery (15). Our patient's pre-operative BMI was 36.3 kg/m², and she had resistant hypertension, type 2 diabetes mellitus, asthma, and Hashimoto's thyroiditis. Therefore, it was decided that she was suitable for surgery. Bariatric surgical procedures are classified as restrictive, malabsorptive, and mixed operations (16). Obesity and type 2 diabetes mellitus were indications for transit bipartition surgery, which is classified as a mixed operation. This procedure aims weight loss and increased insulin sensitivity. Additionally, increased bile acids and partially digested foods, caused by intestinal bypass, contribute to increased glucose sensitivity (17). The remission rates of comorbidities and complications after surgery vary according to the type of surgery performed (18).

Bariatric surgery has been shown to be superior to other methods in recovery or regression rates of obesity-related

diseases. After bariatric surgery, type 2 diabetes regressed by 73%, hypertension by 63%, hyperlipidemia by 65%, and sleep apnea by 75%, according to a meta-analysis evaluating a mean follow-up of 5 years (19). Without an operation, the mortality rate is 0.28%, while the re-hospitalization rate is 6.5% (19). Complications such as nausea, vomiting, leakage, bleeding, ulcer, vitamin-mineral deficiency, and malnutrition are major reasons for re-hospitalization. Transit bipartition surgery is preferable because it preserves the physiological digestive tract and is associated with less vitamin and mineral malabsorption (19). Our patient, who previously, was on multiple different medications, gradually decreased her medications after the surgery and eventually stopped taking them. This case suggests the question: Could bariatric surgery be a primary solution for obese patients who are suitable for surgery to treat resistant hypertension and cardiovascular complications?

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HIDDEN ENEMY BEHIND FEVER

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ABSTRACT

This study aimed to raise awareness about autochthonous malaria caused by *Plasmodium vivax* which is increasing day by day in Türkiye and could be fatal if not treated in time. The patient, a 25-year-old man was admitted to the hematology division of Trakya University Hospital with the symptoms such as fever, chills, cough, headache, and drenching night sweats. After a delay of 10 days, he was diagnosed with *Plasmodium vivax* malaria and then treated with primaquine. The diagnosis of malaria is challenging in areas where malaria is not widespread, but clinicians must keep differential diagnoses of fever, cytopenia, and splenomegaly in mind, especially in times of globalization in the world.

Keywords: *Plasmodium vivax*, malaria, autochthonous transmission

INTRODUCTION

Malaria is an important public health problem with about 241 million cases, which accounts for 627 thousand deaths in 2020 globally (1). There are five *Plasmodium* species [*Plasmodium vivax* (*P. vivax*), *Plasmodium malariae*, *Plasmodium ovale*, *Plasmodium falciparum*, *Plasmodium knowlesi*] that infect humans and are transmitted by the bites of infected female *Anopheles* mosquitoes (2). Türkiye, a part of the WHO European Region is a malaria-free country. The European Region has been malaria free since 2015 (1, 3). According to the annual health statistics, autochthonous cases have not been seen in recent years, but 279 imported cases were reported in 2019 (1, 3, 4). For these reasons, malaria is not considered in the differential diagnosis in patients without a travel history. This study aimed to raise awareness about autochthonous malaria caused by *P. vivax* which is increasing day by day in Türkiye and could be fatal if not treated in time (4).

CASE REPORT

A 25-year-old male patient was admitted to the hematology division of Trakya University Hospital with a 10-day history of fever, chills, cough, headache, and drenching night sweats. He

had never traveled outside of Türkiye and had no history of blood transfusion, organ transplantation, or intravenous drug use. The patient works in Kapıkule which is the name of the border crossing station in Edirne province on the border of Türkiye and Bulgaria. The temperature of the patient was 38.9 °C, the blood pressure was 110/60 mm Hg, and the pulse was 90 beats per minute. Splenomegaly was detected in his physical examination, but hepatomegaly was not present. The results of routine blood tests revealed that the erythrocyte count was 2.95 million cells/mcL, hemoglobin was 7.8 g/dL, red blood cell distribution width was 15% and white blood cell count was 3680/uL, with 61.7% neutrophils, 20.1% lymphocytes, 2.7% eosinophils, and 15.2% monocytes. The platelet count was 45000/uL. The patient's blood tests showed the following: C-reactive protein of 54.4 mg/L, lactate dehydrogenase of 475 U/L, alanine aminotransferase of 36 U/L, aspartate aminotransferase of 28 U/L, total bilirubin of 1.1 mg/dL, conjugated bilirubin of 0.7 mg/dL. The creatinine level of the patient was slightly decreased (1.7 mg/dL). Prothrombin time was measured as 13.4 sec, international normalized ratio was 1.14, and activated partial thromboplastin time was 22.5 sec. The level of serum ferritin was 954 ng/mL. Urine and blood cultures were negative.



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Examination of the peripheral blood smears showed the presence of atypical lymphocytes and poikilocytosis. Due to an enlarged spleen, and abnormal hematologic findings, a bone marrow biopsy was requested for further examination and to rule out hematological malignancies such as lymphoma or leukemia. Bone marrow aspirations showed normal cellularity without any pathological findings. The reverse transcription-polymerase chain reaction test for severe acute respiratory syndrome coronavirus 2 was negative. Brucella, hepatitis B, hepatitis C, Epstein-Barr virus, cytomegalovirus, and syphilis were excluded from serological evaluation. The culture of *Leishmania* was negative. Due to the relapsing fever episodes, the peripheral blood smears were repeated and stained with Giemsa and the presence of trophozoites and gametocytes was shown (Figure 1). The definitive diagnosis was *P. vivax* infection, and the patient was treated with primaquine. No parasites were observed in the peripheral smear after three days of treatment. The patient, whose general condition improved on the seventh day of his hospitalization, was discharged and routine check-ups were recommended after discharge. No parasites were observed in the peripheral smear after three days of treatment. The patient, whose general condition improved on the seventh day of his hospitalization, was discharged and routine check-ups were recommended after discharge. No parasites were observed in two peripheral smears which were performed one week and two weeks after the start of treatment to check the effectiveness of the treatment. An informed verbal consent form was obtained from the patient to publish the paper.

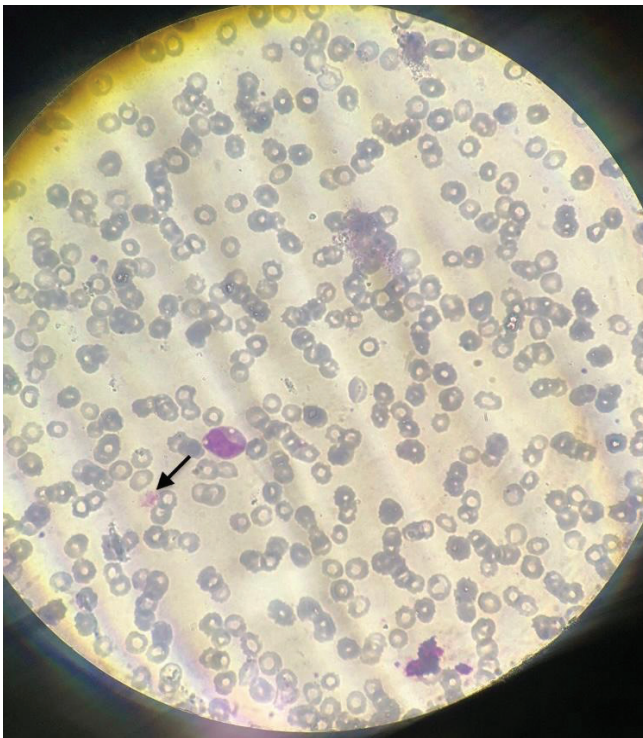


Figure 1: Peripheral blood smear, thin region (Giemsa stain, x1000 magnification). Intraerythrocytic trophozoite, and gametocytes of *Plasmodium vivax* (black arrow).

DISCUSSION

Autochthonous malaria refers to local transmission by the bite of a vector. This could either be introduced (with strong epidemiological evidence linking to a known imported case) or indigenous (without direct proof of transmission from an imported case) (5, 6). Other circumstances must also be ruled out, whether they arise naturally (such as congenital malaria), through blood transfusions, or another type of parenteral contagion (induced malaria) (6).

Since the elimination of malaria, autochthonous malaria cases have not been reported anywhere else in Türkiye and there have been no imported cases in the region where the patient lives (1, 3, 4). The patient had not traveled abroad to a malaria-endemic country and his home was 200 km from the nearest airport and 100 km from the seaport. Besides, and had no previous history of malaria. All this led to the conclusion that the patient acquired the infection at the border-cross station Kapıkule. After Türkiye opened its border gates in February 2020 (27 February), immigrants from many provinces of Türkiye who wanted to cross into European Union countries came to the border gates. Immigrants from Syria, Iran, Afghanistan, Morocco, and North Africa gathered in Edirne, the border gates with Europe (7). Immigrants are often coming from malaria-endemic countries, transporting malaria with them as they cross borders. Swamps caused by Meriç, Tunca, Arda, and Ergene Rivers flooding and rice farming used to provide ideal conditions for *Anopheles* breeding (8). Prior to eliminating malaria, *P. vivax* was the only reported species from autochthonous cases and other *Plasmodium* species are reported as imported cases of malaria in Türkiye (9). Migrants from malaria-endemic countries, *Anopheles* populations, and climate played an important role in the transmission of malaria.

There was a delay of 10 days from the first development of febrile symptoms to the time that malaria was diagnosed. One of the main challenges in the post-elimination phase of malaria is that it tends to be overlooked as a cause of fever by clinicians (10). However, in this case, the reason for the delay in the diagnosis of malaria may be that the patient did not give a history of traveling abroad and presented with pancytopenia (10, 11). Pancytopenia is a condition that is frequently observed in clinical practices. Megaloblastic and aplastic anemia is a finding that can also result from other several diseases such as hematological malignancies, metastatic cancer, infection, and/or inflammation. These diseases may affect the bone marrow, either primary or secondary, and result in manifestations of pancytopenia that predispose the patient to anemic symptomatology, infections, and hemorrhagic diathesis (12). Pancytopenia due to *P. vivax* malaria is extremely rare (11).

Plasmodium vivax infection is known to be a prevalent illness in several parts of the world and characteristically presents with fever, chills, and rigors (12). The clinical presentations of malaria are non-specific, but malaria should be suspected in patients with unexplained fever and an abnormal white blood cell scattergram with thrombocytopenia and/or anemia, and a

blood smear test must be performed (12). If the treatment is delayed, disrupted, or not followed up, it can have serious clinical consequences such as acute respiratory distress syndrome, cerebral malaria, multiple organ dysfunction syndrome, dyserythropoiesis, anemia, other hematological complications, and death (12, 13). Malaria has become an emerging infection in Türkiye, which is caused by thousands of immigrants, global warming, and Türkiye's location in the subtropical region where malaria can spread. Therefore, clinicians should be aware of considering malaria early in their differential diagnosis of fever, cytopenia, and splenomegaly. Especially in times of poverty, immigration, and globalization of the world.

Ethics Committee Approval: N/A

Informed Consent: Verbal consent has been obtained from malaria case to publish the paper. The patient has given his consent for his images and other clinical information to be reported in the journal. The patient has not been identified in any manner.

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THE RESTRICTIVE EFFECTS OF THE COVID-19 PANDEMIC ON THE MANAGEMENT OF PLASTRON APPENDICITIS IN A KNOWN HEMOPHILIA A PATIENT

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ABSTRACT

The coronavirus disease-2019 (COVID-19) pandemic has caused many people to fear and worry about getting infected. The atmosphere of anxiety and restrictions due to the pandemic has caused challenges in the diagnosis and treatment of diseases. In this case report, we aim to present the effects of the COVID-19 pandemic on the delay in the diagnosis and treatment of plastron appendicitis in a patient with hemophilia A. A 21-year-old male patient with hemophilia A was admitted to our emergency department in April 2020 with complaints of abdominal pain and vomiting for 4 days. His computed tomography findings were compatible with plastron appendicitis with a diameter of 61x36 mm in the right lower quadrant. The patient was interned for general surgery. After 7 days of antibiotic therapy, the patient was discharged with oral antibiotics. The patient was called for a follow-up appointment 10 days later, and the operation was planned for 6 weeks later. The patient did not attend the follow-up appointment due to government lockdown measures and his fear of the pandemic. The patient was admitted to our emergency department with complaints of right groin pain and discharge in the right groin in May 2020. The patient stated that he stopped taking antibiotics 7 days after discharge, failing to complete his treatment course. On the computed tomography of the patient, it was observed that the plastron abscess opened into the right rectus sheath and fistulated to the skin. The abscess was drained, and the patient was re-admitted to the hospital for intravenous antibiotic therapy. The patient underwent elective appendectomy after factor VIII replacement in June 2020. The patient was discharged on the 7th postoperative day. In conclusion, uncertainties due to the pandemic environment, fear of the coronavirus pandemic, and problems in drug supply caused disruption and delay in his treatment process. Even in the presence of a pandemic that can cause abdominal complaints such as COVID-19, acute appendicitis should always be considered in the preliminary diagnosis of abdominal pain in young patients with a diagnosis of hemophilia A.

Keywords: Plastron appendicitis, COVID-19, pandemic, hemophilia A

INTRODUCTION

Coronavirus disease-2019 (COVID-19) first appeared in December 2019 in Wuhan, China, as a disease caused by severe acute respiratory syndrome coronavirus-2 (1). The disease has spread rapidly and turned into a worldwide public health crisis (1). As a result of the increased public health risks, the outbreak was declared a pandemic by the World Health Organization on 11 March 2020 (2). The COVID-19 pandemic has caused many

people to fear and worry about being infected (2). As a result of this, a reduction in emergency department admissions for non-COVID-19 low severity acute medical conditions has been observed (3). Appendicitis is a medical condition that needs urgent surgical treatment (4). Acute appendicitis occurs when the appendix lumen is blocked due to various reasons, which could be due to feces, lymphoid hyperplasia, infections, and rarely a tumor obstructing the appendix lumen (5). For the clinical diagnosis of appendicitis, the Alvarado scoring system



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is used, which categorizes patients as low-intermediate and high risk depending on signs, symptoms, and laboratory findings consistent with appendicitis including: the presence of right lower quadrant tenderness, elevated temperature, rebound tenderness, migration of pain to the right lower abdomen, anorexia, nausea and vomiting, leukocytosis and leukocyte left shift (5). No biomarker is specific alone in the diagnosis of appendicitis. Among the imaging methods, computed tomography (CT) is the most widely used imaging method, however, in the pediatric age group, transabdominal ultrasonography is preferred to avoid radiation exposure (5). Appendicitis is divided into simple and complicated. Complicated appendicitis has clinical reflections such as gangrenous perforation and abscess formation (5). Plastron appendicitis is described as the formation of an abscess surrounded by the omentum due to complicated perforated appendicitis (6). Plastron appendicitis can present with abdominal pain, nausea, vomiting, diarrhea, and an abdominal mass (6). According to a meta-analysis that included 20 studies with 59,448 patients, the incidence of plastron appendicitis in adults is 4.8%, more commonly seen in males (7, 8). Ultrasonography and CT scans have high specificity and sensitivity in the diagnosis of this condition. Treatment of plastron appendicitis is surgery followed by conservative treatment (7). These gastrointestinal symptoms like abdominal pain, nausea, vomiting, and diarrhea are also seen in COVID-19 (9). This situation may cause diseases that require urgent surgical treatment, such as appendicitis, to be overlooked (2). Emergence of the COVID-19 pandemic has delayed hospital admissions, making it difficult for patients to get diagnosed (10). The pandemic has also caused difficulties in supplying medicines and personal protective equipment (11). These implications can change disease management, delay the diagnosis and cause medical cases to be more complicated (3, 10).

Hemophilia is an inherited bleeding disorder in which the blood does not clot properly (12). Hemophilia A is a coagulation disorder caused by factor VIII deficiency. Hemophilia A is X-linked recessive and is diagnosed in approximately 1 in 5000 male births worldwide (13). The most common complaint of hemophilia A patients is bleeding in the musculoskeletal system, which can include mucous membranes (13, 14). It is crucial to determine whether symptoms such as fever and vomiting that occur with abdominal pain in hemophilia patients are caused by hemophilia or due to another disease (13). In addition to COVID-19, the presence of additional diseases that cause coagulation disorders such as hemophilia A may complicate the diagnosis and treatment process of diseases, like appendicitis in this case (15).

In this case report, we aim to present the effects of the COVID-19 pandemic on delaying the diagnosis and treatment of plastron appendicitis in a patient with hemophilia A. Informed consent was obtained verbally.

CASE REPORT

A 21-year-old male patient with known hemophilia A was admitted to our emergency department in April 2020 with abdominal pain and vomiting for 4 days. On examination, there was tenderness in the right lower quadrant with guarding and rebound tenderness with a negative indirect rebound. The patient's leukocyte count was 15000/uL and C-reactive protein (CRP) was 6.52 mg/dL. From clinical findings, the patient's Alvarado score was calculated to be 7/10. In his CT there was an appearance compatible with plastron appendicitis with a diameter of 61x36 mm in the right lower quadrant. The patient was interned to general surgery. The patient was started on intravenous (IV) antibiotics (Ceftriaxone 1x2000 mg IV). After 7 days of antibiotic therapy, the patient was discharged with oral antibiotics. The patient was scheduled for a follow-up appointment in 10 days, and his surgery was planned for 6 weeks later. The patient did not attend his follow-up appointment 10 days later due to government coronavirus measures. Five weeks later, he presented with pain and discharge from his right groin. He stated that he stopped taking antibiotics 7 days after discharge. The patient's leukocyte count was 13400/uL and CRP was 0.6 mg/dL. In his CT scan, it was seen that the plastron abscess had opened into the right rectus sheath and fistulated into the skin. After factor VIII replacement therapy, abscess drainage was performed under general anesthesia. The patient was followed up with Ampicillin + Sulbactam 4x1.5 g IV and Ornidazole 2x500 mg IV antibiotics for 11 days, alongside a wet dressing. The patient was discharged with an oral prescription for Amoxicillin + Clavulanate 2x1000 mg and Ornidazole 2x500 mg. The patient was called for a follow-up appointment 15 days later. In the follow-up CT, the patient's plastron findings had strongly regressed. It was decided to continue oral antibiotics for 15 days and then operate. In June 2020, the patient was hospitalized for elective surgery. After factor VIII replacement therapy, an open appendectomy was performed. The patient's abdominal drain was removed on the fifth postoperative day, and the patient was discharged on the seventh postoperative day.

DISCUSSION

During the COVID-19 pandemic, elective surgeries have been postponed in many countries, and most hospitals have been reserved to serve only emergency and COVID-19-related cases (16). There are various methods of protection from coronavirus spread such as vaccination, masks, room ventilation, and maintaining social distance (17). For some people, social distancing and fear of COVID transmission may delay seeking medical attention for other medical conditions (16). In addition, policies implemented by authorities, such as handling nonserious diseases at home may have been a reason for the decrease in hospital admissions (16). Because of the pandemic, country-wide lockdowns were declared in many countries.

During the lockdown period, a reduction in hospital admissions and hospitalizations, including emergency departments, was noted (16, 18). In addition, it has been reported that there has been a decrease in cases requiring emergency surgery, like acute cholecystitis and appendicitis (simple and complicated) (16). However, despite the decrease in the number of admissions of complicated appendicitis, the rate of admission for surgery has increased compared to the pre-pandemic period (16). As a result, the pandemic has hindered patients requiring emergency surgery from attending the hospital due to the fear of being infected with COVID-19 and has caused these patients to present in a more complicated fashion later on (19).

The treatment of plastron appendicitis is still controversial. While conservative treatment with antibiotics is appropriate for simple plastron appendicitis, percutaneous or surgical drainage is more appropriate for plastron appendicitis with peripapillary abscesses (7). According to Andersson et al. (8), for conservative treatment, the recurrence rate is 7.2% and the failure rate is 7.6%. The risk of malignancy from appendicitis treated non-surgically is 1.2%, and it has an increased cancer rate for those over 40 years of age if not surgically treated (7).

Appendectomy, which is one of the most frequently performed operations in general surgery, cannot be performed in some delayed presentations due to plastron formation and is performed as an interval appendectomy three months later, as it was found that the morbidity rate decreases as appendectomy is delayed (20). Most surgeons prefer open appendectomy for these cases due to possible adhesions (20).

In addition to these, some factors can complicate the diagnosis, hemophilia being one of them (13). Diagnosis is difficult in patients with hemophilia presenting with abdominal pain, as bleeding should be considered first in the differential diagnosis of hemophilia patients presenting with acute abdominal pain. However, diagnoses such as appendicitis and peptic ulcer perforation may also be the differential diagnoses and coexist with hemophilia A (13). Hemophilia A commonly presents with hemorrhage into the skin, muscles, soft tissues, and mucous membranes (14). Consequently developed symptoms like nausea, abdominal pain, fever, leukocytosis, and vomiting can also be seen in acute appendicitis (21, 22). Therefore, the diagnosis of acute appendicitis with the Alvarado score in a patient with hemophilia A may not be reliable enough. CT is important in such patients in order not to miss appendicitis and other possible causes of acute abdomen (13).

There are two main approaches to replacement therapy in the treatment of hemophilia: First, prophylaxis to prevent bleeding events, and second, management to treat bleeding when it occurs (13). Recombinant factor VIII is crucial in perioperative patient care, as inhibitory antibodies to factor VIII may develop. The response to factor VIII replacement is predicted by the presence of inhibitory antibodies (15). If the inhibitor level is high, plasmapheresis can be used to lower the inhibitory antibody level before elective surgery, but in patients

requiring emergency surgery, plasmapheresis is neither useful nor practical for reducing antibody levels (15). As a surgical approach, factor VIII should be increased above 80% just before the operation to ensure blood clotting cascade during surgery, and dynamic monitoring is essential before, during, and after surgery (13). In our case report, the patient was given 2000U factor XIII twice, on the morning of the operation and two hours before the operation. Postoperatively at the sixth hour, the patient was again given 2000U of factor XIII.

In conclusion, the social isolation conditions required by the pandemic negatively affected individuals with hemophilia in terms of disease management and drug supply (23). The World Federation of Hemophilia has issued guidelines on the need to delay non-urgent medical care and elective surgery and minimize hospital visits for patients with hemophilia who contract COVID-19 (23). As in our case report, with the addition of comorbidities, medical care and treatment can be delayed in such patients. The difficulty experienced by patients with hemophilia in drug supply is more pronounced in low-income countries than in high-income countries (24). However, there is insufficient clinical data on hemophilia patients with COVID-19 (23). Therefore, this case report is unique in that it includes COVID-19, hemophilia A, and plastron appendicitis. Uncertainties arising from the pandemic and fear of infection may delay diagnosis in such cases, as well as making the diagnosis and management of the disease difficult and causing problems in drug supply. Even in the presence of a virus that can cause abdominal complaints such as COVID-19, acute appendicitis should always be considered in the preliminary diagnosis of abdominal pain in young patients with a diagnosis of hemophilia A. For this reason, health professionals should consider this situation while managing the diagnosis and treatment process.

Ethics Committee Approval: N/A

Informed Consent: Informed consent was obtained verbally.

Conflict of Interest: The authors declared no conflict of interest.

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A CASE OF COEXISTENCE OF PULMONARY EMBOLISM AND ANOMALOUS ORIGIN OF CORONARY ARTERY

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ABSTRACT

Coronary artery anomalies are a set of congenital conditions that may cause serious clinical problems and sudden deaths. We aim to present the case of a patient with a massive pulmonary embolism that coexisted with a malignant coursed coronary artery, which was detected on cardiac computed tomography. A 65-year-old female patient with complaints of chest pain, shortness of breath, diabetes mellitus, hypertension, and hyperlipidemia was referred to the radiology department on March 28th 2019. In cardiac computed tomography examination, only one coronary artery originating from the right coronary cusp was observed. The left main coronary artery arrived at its normal position after an interarterial course between the aorta and right ventricular outflow tract after the bifurcation. The patient had an embolism extending from the distal right main pulmonary artery to the lower and upper lobe segmental arteries. The patient's informed consent was obtained. When pulmonary embolism is seen in interarterial course of the coronary artery in conjunction with the isolated coronary artery, it becomes a severe case. Coronary course anomalies can be detected on computed tomography angiography of pulmonary arteries and aorta. Therefore, radiologists should be careful to document these pathologies.

Keywords: Computed tomography angiography, coronary vessels, sudden death, anomalous origin, pulmonary embolism

INTRODUCTION

Coronary artery anomalies (CAAs) are a set of congenital conditions, marked by an aberrant origin or course of one or more of the three primary epicardial coronary arteries (1). Congenital CAAs are really common in clinical cardiology and cardiac surgery due to their relationship with myocardial ischemia and sudden death (2). Physiological variations and pathophysiologically relevant abnormalities are included in CAAs' clinical and anatomical ranges (3). Most of the subspecies are not hemodynamically related and are often found by accident (3). The detection of rare and associated abnormalities that cause associated shunt volumes leading to myocardial ischemia or ventricular tachyarrhythmias with the risk of sudden cardiac death (SCD) is crucial (3). There are so many forms of CAAs like atresia of the left main stem, coronary fistulae, and

anomalous origin of the left coronary artery from the pulmonary artery have also been implicated in cases of sudden death (4). Aside from anomalies originating in the coronary arteries, there are some cases where prepulmonic, transseptal, retroaortic, or interarterial courses are seen (5). Among these anomalies, the anomaly of the interarterial course is defined as malignant and is known as the most serious coronary artery anomaly, since it significantly increases the mortality rate by SCD (5).

A blockage in one of the pulmonary arteries in the lungs is known as pulmonary thromboembolism, which typically presents with shortness of breath and chest pain (6). Because of the restriction in pulmonary blood flow, pulmonary thromboembolism is a serious clinical condition that is commonly observed and can be fatal (6). Today, computed tomography angiography (CTA) is the imaging method primarily used in emergency departments



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for the diagnosis of pulmonary thromboembolism due to its advantages such as having high sensitivity and specificity values, accessibility, and fast application with immediate results. While the detection of a clot on a pulmonary angiography is the gold standard for diagnosis, computed tomography (CT) pulmonary angiography is one of the most often employed imaging modalities (7). We present the case of a patient with a massive pulmonary embolism coexisting with a malignant coursed coronary artery detected on a coronary CTA. As CAAs are rare conditions that can cause serious clinical problems, we hope to contribute to the literature and raise awareness about CAAs.

CASE REPORT

A 65-year-old female patient with diabetes mellitus, hypertension, and hyperlipidemia was consulted at the radiology department on 28 March 2019 with chest pain and shortness of breath for 2 months. Blood pressure was in the normal range (135/75 mm Hg), S1 and S2 were normal, and there was no additional pathological sound on physical examination. Echocardiography revealed concentric left ventricular hypertrophy and mild tricuspid, mitral and aortic valve insufficiency. The patient was referred as a medium risk of CTA. In CTA examination, it was observed that only one coronary artery was originating from the right coronary cusp; this presentation is anatomically correct. There was a bifurcation 4.5 mm distal to the origin. The right coronary artery (RCA) was observed in the normal course of the right atrioventricular groove. RCA and its main branches were patent. The left main coronary artery (LMCA), on the other hand, was arriving at its normal position through an interarterial course between the aorta and right ventricular outflow tract after the bifurcation (Figure 1). The patient also had an embolism extending from the distal right main pulmonary artery to the lower and upper lobe segmental arteries (Figure 2). The patient was discharged from the hospital after diagnosis. The patient did not present to our hospital again. The treatment and follow-ups of the patient were carried out in the city where the patient currently resided.

DISCUSSION

Coronary artery anomalies are a group of rare congenital diseases whose pathophysiological mechanisms are extremely variable, ranging from silent anomalies to SCD (8). A single coronary artery is described as an isolated coronary artery, originating from the aortic root through a single ostium in the absence of another one (5). The isolated coronary artery is the only source of blood supply to the whole heart (5). Single CAAs usually go unnoticed, but people should be aware of the potential consequences of these anomalies such as the risk of SCD (5). Some types of single coronary artery abnormalities can cause SCD, especially during exercise (9). Isolated coronary artery abnormalities can also cause clinical conditions such as chest pain, myocardial infarction, cardiomyopathy, arrhythmia, dyspnea, and heart failure (10). Interarterial course of coronary arteries is one of the most dangerous types of cardiovascular diseases. In this type

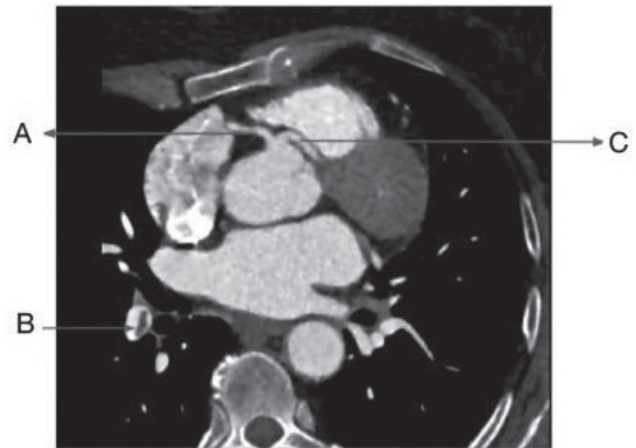


Figure 1: CT angiography image of the left main coronary artery originating from the right coronary cusp.

CT: Computed tomography, A: Right coronary artery, B: Pulmonary embolism, C: Left main coronary artery

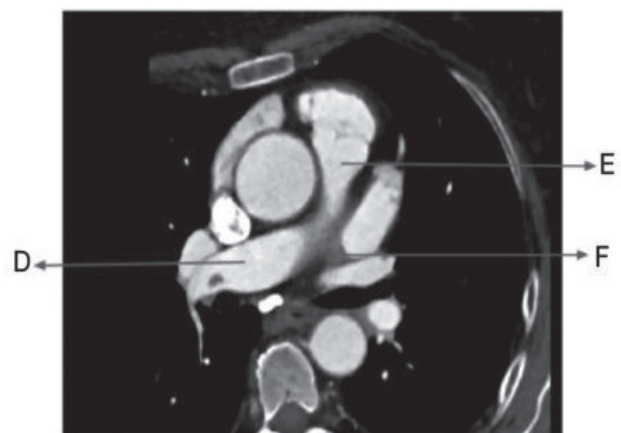


Figure 2: CT image of embolism in the right main pulmonary artery.

CT: Computed tomography, D: Right pulmonary artery, E: Pulmonary trunk, F: Left pulmonary artery

of anomaly, there is a high risk of sudden death if the coronary artery travels between the aorta and pulmonary artery. Even if it does not travel between these arteries, it can still cause dangerous situations and lead to serious conditions such as cardiac ischemia, ventricular fibrillation, and heart failure (10). Although cardiovascular disorders are seen at a lower rate in young patients, if they have coronary anomalies, the risk of SCD is much higher than in elderly patients. Younger patients were significantly more likely than older patients (≥ 30 years old) to die suddenly (62% vs. 12%) (11). Death in these young patients often occurs after intense physical activity because the enlarged coronary artery between the pulmonary artery and the aorta is compressed by them during exercise. Some studies reported that the interarterial course of the LMCA has a high sudden death rate (82%) (11). Therefore, early detection by CTA and surgical operation of this pathology is essential.

Pulmonary embolism is another fatal cardiovascular disorder that is caused by an embolism that travels to the lungs. Pulmonary embolism, which is detected by computer tomography has symptoms that are usually nonspecific (12). One of the most dangerous types of embolism is the saddle embolism, which gets stuck where the main pulmonary artery branches off into a Y-shape to go into each lung (12). Saddle pulmonary embolisms are not stable, and are usually larger than other embolism types, which can cause more risk of splitting and blocking the right and left pulmonary arteries (12).

In conclusion, this case is particularly important because coroner artery anomalies such as interarterial course of coronary arteries are usually rare cases of which medical doctors should be aware. Pulmonary embolism is a cardiovascular condition that can be fatal, and when these two pathologies are seen together, they can cause additional clinical conditions and may increase the mortality rate. Coronary course anomalies can be detected and observed on the CTA of pulmonary arteries and aorta. Therefore, radiologists should be careful and document these pathologies when they encounter them.

Ethics Committee Approval: N/A

Informed Consent: The patient's consent was obtained.

Conflict of Interest: The authors declared no conflict of interest.

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2022 REFREE INDEX

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Ruhan Deniz Topuz

Salim İnan

Selda Karaayvaz

Selma Arzu Vardar

Talha Doğruyol

Tayfur Toptaş

Ülkü Korkmaz

Yasemin Küçükçiloğlu

2022 AUTHOR INDEX

Ahmed Adel Khalifa	8	Irmak İrem Özyiğit	48
Ahmet Emir Çelen.....	36	İbrahim Ethem Cakcak.....	29
Ahmet Tolgay Akıncı	36	İlayda Guluf	67
Ahmet Ulugöl	20	İlhan Kurultak	64
Aykut Alkan.....	25	İrfan Arda Aykut	84
Ayşenur Çolakel	67	Janset Özdemir	48
Bariş Altunel	25	Kübra Duvan Aydemir.....	20
Bariş Chousein	36	Melis Ocak	1
Bengisu Çıray	88	Mert Akaltın	59
Berkay Aldemir	84	Mert Yücel	48
Berkin Ersoy.....	55	Mert Yurtsever	84
Beste Girgin	84	Merve Yaren Kayabaş	29
Betül Filiz Doğan	1	Müçteba Gökalp Özer	25
Buket Şen.....	41, 78	Mustafa Alperen Koşucu	55
Burak Günay	64	Najaf Ali Folladwand.....	20
Buse Ataçer	1	Necdet Süt.....	59
Ceren Yüksel	14, 55	Nihayet Fırat	59
Ceyda Kantur	1	Nisanur Ceviz.....	36
Çağla Tarım	70	Oğuzhan Alp Öztürk.....	84
Dengiz Koray Şahintürk.....	55	Ömer Polat	36
Eda Shundo.....	64	Ömür Türkü Özşalap	20
Ege Gürlü	33	Övgü Güneş Varlık	59
Elif Çalışkan.....	14	Rymejsa Gurmani	20
Elif Cengiz	14, 55	Sarper Kızılkaya.....	48
Elif Mercan Demirtaş.....	36	Selma Arzu Vardar	59
Enisa Mustavataj	64	Sena Batu	81
Erdem Altan.....	20	Sercan Oktar	70
Eylem Yaren Yılmaz	70	Servet Altay	41, 78
Eylül Duraklı.....	88	Sevde Bengisu Yartaşı.....	67
Eylül Şenödeyici	55	Şerife Sultan Uysal	81
Fatma Selin Soyluoğlu	55	Utku Yartaşı	41, 78
Ferdi Karagöz	64	Vuslat Gürlü.....	33
Fethi Emre Ustabaşioğlu.....	88	Yağmur Duraklı	88
Fevzi Oktay Şişman	14	Yekta Altemur Karamustafaoğlu	67
Gizem Yağdıgül	70	Zeliha Türkyılmaz.....	84
Gizem Yıldırım.....	48, 55	Zerrin Yuluğkural.....	48
Görkem Şekerci.....	59	Zeynep Turna.....	64
Hakkı Onur Kırkırlar	14, 81		
İlgın Kılıç	14		

2022 SUBJECT INDEX

Acquaintances	70	Lymphoblastic leukemia	14
AM-251.....	20	Malaria	81
AM-630.....	20	Malnutrition	14
Anomalous origin	88	Medical students	59
Autochthonous transmission	81	Metabolic syndrome	78
Bariatric surgery	78	Microscopy	33
Bisexuality	70	Mitral valve.....	41
Caffeine	8	Mucinous adenocarcinoma	25
Cardiovascular disease	1	Neoplasms.....	25
Cervical cancer	48	Neurosurgery.....	36
Chrisofix Chest Orthosis	67	Nutrigenetics	1
Coffee	8	Obesity	78
Colon cancer.....	29	Osteonecrosis.....	14
Computed tomography angiography.....	88	Pandemic.....	55, 84
Corneal endothelium.....	33	PET-CT scan.....	55
Coronary vessels.....	88	Physical activity	59
COVID-19	55, 84	Physicians	8
Creatinine	64	Pilocytic astrocytoma	36
Diabetes mellitus.....	78	Plasmodium vivax.....	81
Diet.....	1	Plastron appendicitis	84
Dipyrrone.....	20	Pneumonia	25
Ergogenic substance.....	59	Pruritus.....	20
Gastric cancer.....	29	Public health.....	48
Genotype.....	1	Pulmonary embolism	29, 88
Headache	36	Renal transplantation	64
Hemophilia A.....	84	Rib fracture.....	67
Hemorrhage	36	Sudden death	88
Homophobia.....	70	Synchronous neoplasms.....	29
Homosexuality.....	70	Transgender.....	70
Human papillomavirus	48	Trauma.....	67
Infarction	64	Vaccination	48
Infective endocarditis	41	Viral infection	48
Intravenous substance abuse	41	Wilson’s disease	33
Kayser-Fleischer ring.....	33		
Lactate dehydrogenase	64		

