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Dear Readers,

We are pleased to accompany you during this warm August. In this issue of our journal, we present 4 articles, 2 case reports, 1 short communication and 1 scientific letter.

Diabetes, which is a chronic and important public health problem, is an area that all our colleagues are currently intensely interested in. Every branch of medicine has a relationship with diabetes. Does the branch where diabetes is followed affect diabetes management? Arman et al. seek an answer to this question in their study. As a result of the study, it is concluded that blood pressure measurement, foot and neurological examinations are performed more frequently in patients followed up in family medicine. The study reveals the fact that reactivating the first step, which has been idle for a long time for the management of diabetes, may produce positive results.

Our other article is a randomised controlled trial investigating the effect of family counselling on anxiety, depression and stress levels in mothers of children with disabilities. As a result of the study, it was concluded that mothers of disabled children experience more depression and stress than the general population and that an appropriate family counselling service can have very positive results. We think that it is a study that must be evaluated for those who shape health policy.

Our other two articles are studies on the factors affecting the risk of falls in haemodialysis patients and the general characteristics of hospitalised zona patients. Considering that both groups of patients are patient groups that we can see frequently in our offices, we think they will be useful to our readers.

One short communication and 1 scientific letter will meet the readers in this issue, both of which provide information on emergencies. The first one deals with the outbreak of pink eye in India, Pakistan and Vietnam, while the second one is about the monkeypox outbreak that is approaching our doorstep.

In addition, this issue will feature two case reports: one on Legionella pneumonia and the other on Wilkie Syndrome.

We wish all our readers an enjoyable experience, and we extend our gratitude to the authors, reviewers, and editors who contributed to this issue.

Hope to meet you in the December issue...

M. Reşat Dabak, Prof., M.D.

Chief Editor

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Original Article

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The Effect of Family Counseling on Anxiety, Depression, and Stress Levels in Mothers of Disabled Children: A Randomized Controlled Trial

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ABSTRACT

Objectives: This study aims to assess the impact of family counseling on anxiety, depression, and stress levels in mothers of disabled children.

Methods: The study involved 80 mothers of disabled children, enrolled in a Special Education and Rehabilitation Center under the Ministry of National Education. The participants were randomly divided into two groups: 40 (50.0%) mothers in the study group and 40 (50.0%) in the control group. The study group received family counseling in six sessions, with eight mothers per session. The Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), and Perceived Stress Scale (PSS) were administered to both groups at three intervals: Pre-counseling, immediately post-counseling, and 3 months post-counseling. The control group completed the same assessments without receiving counseling.

Results: In the study group, mean scores for the 1st, 2nd, and 3rd assessments were as follows: PSS (17.9±4.9, 14.8±4.3, 14.4±4.4, respectively, p<0.001), BDI (13.6±5.8, 9.8±5.0, 10.1±6.1, respectively, p<0.001), and BAI (19.9±11.1, 17.2±10.3, 16.5±9.3, respectively, p<0.001). In the control group, mean scores for the 1st, 2nd, and 3rd assessments were as follows: PSS (15.9±5.6, 15.2±5.9, 15.2±5.9, respectively, p=0.197), BDI (14.4±6.8, 14.3±7.9, 14.5±9.4, respectively, p=0.777), and BAI (15.7±8.3, 15.2±7.6, 16.6±9.3, respectively, p=0.666). At the 3rd follow-up, there was a difference in BDI and PSS stress scores between the study and control groups; however, no difference in BAI and total PSS scores (p=0.014, p=0.009, p=0.927, p=0.132, respectively).

Conclusion: Providing psychological support to mothers of disabled children can help reduce depression and stress levels.

Keywords: Counseling, disabled children, social support

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INTRODUCTION

Disability is a difficulty in functioning at the body, person, or societal levels, in one or more life domains, as experienced by an individual with a health condition in interaction with contextual factors.[1] Approximately 15% of the world's population (around one billion people) is diagnosed with a disability. The "World Report on Disability" published by the World Health Organization in 2011 shows a disability prevalence of 15.6% in studies conducted in 59 countries.[2] The Turkey Disability Survey 2002 investigated the profile of disability in Turkey. Accordingly, disability prevalence is 12.3% (13.5 per cent among men and 11.1 per cent among women), making 8431937 people.[3]

Independent of the disability degree, having a disabled child bears some unique difficulties. The associated problems can be listed as psychological and financial deprivations, barriers to formal education, interference with daily life, and weakened relationships with family and the social environment.[4] Other difficulties may include changes in parental roles; encounters with insensitive health professionals; and the reactions of other family members, friends, and the social environment.[5,6] Usually, the mother takes a more active role and personally attempts to solve all these difficulties.

Studies show that parents (especially mothers) with mentally or physically disabled children experience more stress and have increased anxiety levels than parents who do not have this condition.[7] Somatic complaints, depression, and anxiety disorders are observed more frequently in mothers with handicapped children.[8] Furthermore, Seltzer et al. reported that depression is more common in parents with mentally or physically disabled children.[9]

If the family (especially the mother) succeeds in combating these difficulties, the quality of life of the disabled child increases and the discomfort within the family is eliminated.[10] Parents of disabled children often expressed their need for family counseling to deal with problems within the family. These needs emerge, especially in dealing with grief, sorrow, and troubles brought about by living with a disabled child.[11] Family, counseling is a learning process between a specialist in disability and the child's parents. It focuses on developing the attitudes and skills necessary to solve the problems of the parents. During the counseling process, parents are given opportunities to freely express their feelings such as anger, guilt, and hostility that they refrain from speaking, and they are encouraged to make realistic plans for themselves and their children. It is among the counselor's goals to help parents take ownership and responsibility for their own skills and communicate more effectively in the social environment.[12]

This study aimed to examine the effect of family counseling on anxiety, depression, and stress levels of mothers with handicapped children.

METHOD

This study was designed as a randomized controlled intervention study. The study population consisted of mothers of children with disabilities who were receiving education in a special education and rehabilitation center (Çizmelioğlu Special Education and Rehabilitation Centre) in Erzurum province between August 30, 2014, and March 31, 2015, under the supervision of the Ministry of National Education. The prerequisites of being a mother of a disabled child receiving education in Çizmelioğlu Special Education and Rehabilitation Centre and not having received family counseling services for her disabled child before were accepted as inclusion criteria. Failure to comply with the family counseling program, discontinuing the relationship with the rehabilitation center, having interactions that would strongly change the psychological state of the mother such as death, birth, and divorce in the last year, having another accompanying disease that may affect the stress level of the mother, and having any physical or mental disability that may constitute an obstacle to participate in the study were determined as exclusion criteria.

With a significance level of 5%, an effect size of 10%, and 80% power to detect differences between the two groups using independent t-tests, it was calculated that a sample size of 40 individuals in each group was needed. The research was applied to the mothers of 80 children randomly selected from 200 children with disabilities. The 200 children were numbered from 1 to 200. The randomizer program was asked to select 40 numbers in two groups from the numbers from 1 to 200.[13] The mothers of the children corresponding to the numbers in the first group were selected as the study group and the mothers of the children corresponding to the second group were selected as the control group.

A total of mothers randomly assigned to the study group received family counseling provided by a psychologist, consisting of six sessions. The mothers in the control group, on the other hand, completed the study questionnaires without any intervention. In the family counseling implementation plan, while creating the plan for family counseling to be given to mothers of disabled people, the main themes of the sessions were first determined. Afterward, the sessions were standardized by transcribing what would be discussed in each counseling session based on these themes.

Main Themes of Family Counselling Sessions

1st Interview: A short introductory speech was made. Afterward, stories about their children's disabilities were taken from the mothers.

2nd Interview: The aim of the second session was to enable the mothers to accept the fact that their children have disabilities. For this reason, the acceptance of the reality of the situation and how the mothers felt were discussed in the 2nd session.

3rd Interview: In the third session, the mothers talked about the best way to meet their child's needs. Mothers were made to realize that their children go through similar stages of physical development with their peers and that their needs are basically the same as those of other children. Moreover, their awareness was emphasized.

4th Interview: In this session, it was emphasized to the mothers that their children have normal developing char-

acteristics as well as disabilities. Moreover, these characteristics were discussed.

5th Interview: Mothers were guided to help other members of the family to recognize and understand the disabled child. The counselor also helped the mothers to see how their attitudes and feelings about disability affect their maternal behavior. The counselor also talked about how they could benefit from the available medical, educational, and financial support resources in the community to help the child and family solve the problems they face.

6th Interview: It was stated that the counseling process would end. A summary of what was discussed in the previous sessions was made.

The participating mothers were administered the Perceived Stress Scale (PSS), Beck Depression Inventory (BDI), and Beck Anxiety Inventory (BAI) 3 times: Before the start of the family counseling program, immediately after the program, and 3 months after its completion. The BAI is a 4-point Likert-type self-rating scale. The Turkish validity and reliability of the scale were made by Ulusoy et al.[14] The 0-7-point range obtained from the scale indicated "minimal anxiety," the 8-15-point range "mild anxiety," the 16–25 point "moderate anxiety," and the 26–63 point "severe anxiety".[15] The BDI is another 4-point Likert-type self-rating scale. The Turkish validity and reliability of this form were developed by Hisli.[16] The 0-9-point range indicated "minimal depression," the 10–16-point range indicated "mild depression," the 17–29-point range indicated "moderate depression," and the 30–63-point range indicated "severe depression."[16,17] The other inventory used in the study is the PSS, a 5-point Likert-type scale. The Turkish validity and reliability of the PSS were developed by Yerlikaya.[18] It has two subscales, namely Perceived Stress and Perceived Coping. The scale is evaluated on both total scores and subscale scores, the higher the total score, the higher the stress.[18,19]

Statistical analysis was performed with the SPSS version 23.0 statistic software package (SPSS, version 23X, IBM, Armonk, New York 10504, NY, USA). The skewness test and histogram graph analyzed the conformity of numerical variables to normal distribution. For descriptive statistical analysis, frequency and percentage for categorical data and means and standard deviations for numeric data were presented. The Student's t-test, repeated-measures ANOVA, and Chi-square test were used as hypothesis tests. Statistical significance was accepted as $p<0.05$.

RESULTS

A total of 80 mothers were included in the study, 40 (50.0%) of whom were in the study group and 40 (50.0%) of whom were in the control group. The mean maternal age was 42.1±10.0 years, and the mean age of the disabled children was 13.5±8.8 years. Sociodemographic characteristics of mothers and children according to the groups are summarized in Table 1.

Table 1. Sociodemographic characteristics of mothers and children according to the groups

	Study Group (n=40)	Control Group (n=40)	p
Maternal age (year)	42.8±9.6	41.5±10.5	0.504*
Age of the disabled children (year)	12.9±9.7	14.1±8.0	0.221*
Monthly income	1681.7±950.2	1330.3±553.1	0.129*
Educational status			
Illiterate	6 (15.0)	11 (27.5)	0.574†
Primary school	17 (42.5)	14 (35.0)	
Middle school	12 (30.0)	12 (30.0)	
High school	4 (10.0)	3 (7.5)	
University	1 (2.5)	0 (0.0)	
Disability type			
Physical	5 (12.5)	12 (30.0)	0.141†
Mental	21 (52.5)	15 (37.5)	
Physical and mental	14 (35.0)	13 (32.5)	
Number of disabled child			
1 children	35 (87.5)	38 (95.0)	0.235†
≥ 2 child	5 (12.5)	2 (5.0)	

Data is presented as n (%) and mean±standard deviation.
*Student t-test, †Chi-square test.

Compared to the mothers' first PSS score in the study group, a significant decrease was observed in the second PSS scores (p<0.001). However, there was no significant difference between the second and the third PSS scores (p=0.123). On the other hand, there was no significant difference between the first and the second PSS scores or the second and third PSS scores of the mothers in the control group (p=0.197 and p=0.521, respectively). Compared to the mothers' first perceived coping scores in the study group, a significant increase was observed in the second perceived coping scores (p<0.001). However, there was no significant difference between the second and the third perceived coping scores (p=0.100). On the other hand, there was no substantial difference between the first and the second perceived coping scores or the second and the third perceived coping scores of the mothers in the control group (p=0.706 and p=0.195, respectively). Compared to the mothers' first PSS scores in the study group, a significant decrease was observed in the second PSS scores (p<0.001). However, there was no substantial difference between the second and the third PSS scores (p=0.491). On the other hand, no significant difference was found between the first and the second PSS scores of the mothers in the control group, nor between the second and the third PSS scores (p=0.271 and p=0.873, respectively). BDI, BAI, PSS, and subscales scores at follow-up between the groups are summarized in Table 2.

There was a significant decrease in the mothers' second BDI scores in the study group compared to the first BDI scores (p<0.001). However, there was no significant difference between the second and third BDI scores (p=0.500) of this group. On the other hand, there was no significant difference between the first and second BDI scores of the moth-

Table 2. BDI, BAI, PSS, and subscales score at follow-up between the groups

	Study Group (n=40)	Control Group (n=40)	p
BDI scores			
1st	13.6±5.8	14.4±6.8	0.743*
2nd	9.8±5.0	14.3±7.9	0.041*
3rd	10.1±6.1	14.5±9.4	0.014*
p	<0.001†	0.777†	
BAI scores			
1st	19.9±11.1	15.7±8.3	0.086*
2nd	17.1±10.3	15.2±7.6	0.183*
3rd	16.5±9.3	16.6±9.3	0.927*
p	<0.001†	0.666†	
Total PSS score			
1st	17.9±4.9	15.9±5.6	0.669*
2nd	14.8±4.3	15.2±5.9	0.027*
3rd	14.4±4.4	15.2±5.9	0.132*
p	<0.001†	0.197†	
Perceived stress score			
1st	12.6±4.3	10.7±5.2	0.019*
2nd	10.5±3.9	10.0±4.6	0.143*
3rd	9.7±3.2	9.9±4.7	0.009*
p	<0.001†	0.313†	
Perceived coping score			
1st	6.7±1.3	6.6±2.2	0.025*
2nd	7.7±2.0	6.8±2.2	0.014*
3rd	7.4±1.9	6.4±2.3	0.435*
p	0.002†	0.389†	

BAI: Beck anxiety inventory; BDI: Beck depression inventory; PSS: Perceived stress scale.
Data is presented as mean±standard deviation.
*Student's t-test, †Repeated-measures ANOVA.

ers in the control group or between the second and third BDI scores (p=0.770).

Compared to the mothers' first BAI scores in the study group, a significant decrease was observed in the second BAI scores (p<0.001). However, there was no significant difference between the second and the third BAI scores (p=0.573). On the other hand, in the mothers of the control group, there was neither a significant difference in the first BAI scores compared to the second BAI scores nor a substantial difference between the second and the third BAI scores (p=0.666 and p=0.156, respectively).

DISCUSSION

This study determined that family counseling positively affected depression and stress levels in mothers with disabled children. During the study period, significant changes were observed in BAI, BDI, and total and subscale PSS in both the study and control groups. On the other hand, there was a difference in BDI and PSS stress scores between the study and control groups, however, no difference in BAI and total PSS scores end of the study.

The decrease in BAI, BDI, and PSS scores in the second tests applied after family counseling compared to the first tests' scores indicated that providing family counseling services to mothers would reduce the anxiety, depression, and stress correlated with the care of disabled children. As a matter of fact, parents of disabled children frequently stated that they needed family counseling to cope with the family's problems.[11] In previous studies, the professional psychological support provided to parents with disabled children has been found to be beneficial.[20,21] A psychological support program effectively reduced the hopelessness levels and increased the optimism levels of mothers with disabled children in the experimental group.[20] Dilmaç et al. showed that compared to the study group, the anxiety levels of mothers with mentally disabled children decreased after having education sessions.[21] In Yıldırım and Conk's study, there was a significant decrease in depression and stress levels of mothers with mentally disabled children after receiving private education. [22] All these findings are consistent with this study.

In some study results, it was reported that mothers of children with mental disabilities experience the most stress in the group of mothers with disabled children.[23-25] Mothers responsible for the care of mentally disabled children were exposed to increased levels of stress more than healthy mothers; thus, their mental and physical health was impaired. In this study, there was no significant difference between mothers of mentally disabled children and physically disabled children regarding anxiety, depression, and stress levels.

Studies have also reported that mothers responsible for the care of disabled children are exposed to more stress than healthy children's mothers, causing subsequent impairment in their mental and physical health.[26,27] The first BAI scores in this study were compatible with moderate anxiety and the first BDI scores with mild depression. These means were higher than the total BAI, and BDI mean scores of the mothers of non-disabled children comprising the control group in the study conducted by Uğuz et al.[28] This supported the hypothesis that mothers with disabled children were exposed to more anxiety, depression, and stress than mothers in society.[24,29] It should also be noted that the mothers included in this study had disabled children receiving private education. Previous studies demonstrated a significant positive difference in depression scores of mothers of children receiving private education than those who were not.[30] This alludes to the idea that the mother of a disabled child who does not have a private education has a much higher depression.

In this study, the family counseling plan focused on accepting the disability, the needs of the disabled child, the typically developing characteristics of the disabled child, the acceptance of the child by other family members, and how mothers' with disabled children can receive support in dealing with problems. These are the topics that concern the mother, the handicapped child, and the family comprehensively. "Acceptance of the disability" is the most challenging period of the process.[31] Providing counseling services would be more beneficial for mothers' with disabled children when interacting with their disabled child for the 1st time. By establishing a feedback system on this issue, mothers who have a disabled child should be registered, and counseling should be provided. Mothers who are found to have a disabled child during pregnancy should be recorded on a database so that professional counselors can provide comprehensive care before and after birth.

The support of other parents is crucial for the parents of children with disabilities.[32] Mothers can express their feelings and thoughts more efficiently in a group environment than in a one-on-one conversation with a specialist. Group work with mothers can have various purposes. The group session's general goal is to allow the participants to share their problems and the members to provide mutual assistance and support to each other by transferring the ways of coping with the unique situation. Mothers participating in the group can realize what is happening in their lives with the feedback they receive from other mothers. Many studies emphasize the importance of group counseling and the social support created by disabled children's mothers.[33,34] Being together with mothers in the same situation provides

solidarity within the group. A family with a disabled child sees and understands the troubles and fears experienced by another family in a similar situation.[35] In this study, the consultancy service provided to mothers included groups of eight members. This has probably increased the effectiveness of the provided counseling method. For the results obtained to be permanent, the consultancy service may need to be repeated as needed for years to come. Because one of the basic principles of family consulting is the continuity of the service, consultation may be a never-ending process that continues even after its formal end. This is called "open termination." Because families may need to be consulted again.[36]

The application of control questionnaires only once (3 months later) after the counseling service is considered a limitation. Conducting studies with larger samples and for a longer duration would better reveal the impact of family counseling services and its effect on mothers with disabled children in combating anxiety, depression, and stress. Furthermore, the inclusion of women who did not have disabled children could allow a comparison with the general population. The mothers who participated in this study were not encountering their children's disabilities for the 1st time. Therefore, the likelihood of having already accepted the problem was high. This can be considered as a limitation of this research. Providing counseling services solely to mothers in the family of disabled children is a limitation of this study. However, the mother's psychological well-being affects not only the disabled child but also all family members.[23] For this reason, working only with the mother does not mean ignoring the needs of the other family members and siblings. Helping the mother also means supporting the whole family.

CONCLUSION

In this study, it was determined that family counseling is effective in reducing the levels of depression and stress in mothers of disabled children. This indicated that the positive impact of family counseling on the levels of depression and stress in mothers of disabled children continued to persist. Conclusively, counseling service implementation will empower the mother to overcome the difficulties that complement the uniqueness of parenting a disabled child with the least psychological damage possible.

Disclosures

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The Comparison of Diabetes Management and Follow-up by Family Medicine or Endocrinology

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ABSTRACT

Objectives: This study aimed to compare the disease management of type 2 diabetes mellitus (T2DM) patients followed up in family medicine (FM) or endocrinology outpatient clinics.

Methods: This descriptive study was carried out with T2DM patients who applied to endocrinology and FM outpatient clinics. When analyzing data, patients who only went to endocrinologists (Group 1) and patients who went to both endocrinology and FM or only FM (Group 2) were compared. A questionnaire form (sociodemographic characteristics, education, disease management status, and hemoglobin A1c [HbA1c] levels) was applied to participants.

Results: A total of 151 participants were enrolled in the study, with 49 (32.5%) in Group 1 and 102 (67.5%) in Group 2. The median value of HbA1c was 7.5% (2.1%) in Group 1 and 7.1% (2.2%) in Group 2 (p=0.324). Blood glucose measurement abilities and the ability to adjust the insulin dose were higher in Group 1 (47 [95.9%] vs. 75 [73.5%], p=0.001; 22 [44.9%] vs. 15 [14.7%], p<0.001, respectively). However, the frequency of blood pressure measurement, foot examination, and neurological examination was higher in Group 2 (17 [34.7%] vs. 64 [62.7%], p=0.001 for blood pressure measurement; 3 [6.1%] vs. 26 [25.5%], p=0.005 for the foot examination; and 2 [4.1%] vs. 24 [23.5%], p=0.003 for the neurological examination, respectively).

Conclusion: While no difference was found in HbA1c levels according to the clinics where the patients were followed, it is noteworthy that blood pressure measurements and foot and neurological examinations were performed more frequently in patients visiting their FMs.

Keywords: Diabetes complications, endocrinology, family practice, self-management, type 2 diabetes mellitus

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INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disorder that requires continuous medical care, in which carbohydrates, fats, and proteins cannot be adequately utilized due to insulin deficiency or disorders in the effect of insulin.[1] Especially T2DM is a common chronic disease due to changes in lifestyle and nutritional habits, and there is an increase in diabetes mellitus (DM) and related complications all over the world. While the prevalence of DM aged 20 years and over was 7.2% in the TURDEP-I study conducted throughout Türkiye in 1997–1998, the incidence of DM was found to be 13.7% in the TURDEP-II study conducted in 2009–2010.[2,3] Accordingly, the incidence of DM in Türkiye has increased by 100% in 10 years.

DM emerges as a major health problem for both the individual and the society, as it is a serious and progressive disease, and has negative effects on acute and chronic complications, morbidity, and mortality.[1] There were approximately 422 million adults with T2DM in the world in 2017.[4] It is estimated that the global amount spent on the treatment of DM and its

complications is 673 billion dollars. According to 2012 figures, the total cost of DM in Türkiye was approximately 4.34 billion USD. This corresponded to 22.6% of the total health expenditure.[5]

The importance of patient motivation and knowledge in the good management of DM has been confirmed by many studies.[6,7] It has been determined that patients with DM education have fewer complications, manage the disease better, and have lower weight and Hb1Ac levels. Therefore, DM education is important both during diagnosis and the course of the disease.

Family medicine (FM) has a central position in the follow-up of DM with its holistic and inclusive approach and the continuous care it offers.[8] Since DM follow-up requires a multidisciplinary approach (annual controls, screenings, endocrinology, nephrology, cardiology follow-ups, nutritionist consultation, fundus examination, foot examination, etc.), and the inclusion and empowerment of patients in care, family physicians are expected to work as a team leader.[1,8]

Family physicians play a role in the education of DM patients, compliance with lifestyle changes and medication, hemoglobin A1c (HbA1c) monitoring, taking precautions to prevent complications, screening them, and managing complications.[9] However, patients' use of Family Health Centers (FHC) for chronic disease follow-up is not at the desired level. It has been reported that there are patients who use only tertiary health institutions for DM follow-up, as well as patients who have never met their family physician. In Turkiye, the follow-up of DM patients is carried out by family physicians in FHCs or FM clinics, and internal medicine, endocrinology, or DM clinics are managed by internal medicine specialists. There are also a small number of DM centers, which are established in the field and are multidisciplinary. Some studies are showing that the follow-up of patients with T2DM from different units leads to different results.[10,11] In a study conducted in the USA, it was shown that in the endocrinology clinic, compliance with the clinical recommendations of the American Diabetes Association (ADA) was better and the HbA1c levels of the patients were significantly lower.[10] In a study conducted in Saudi Arabia, although the average HbA1c levels of patients followed up by FM were higher than those followed up by endocrinology, no statistically significant difference was observed.[11] However, no similar study has been found in Turkey, where the FHC system was introduced nationwide in 2010.

In this study, it was aimed to compare the blood glucose regulation and disease self-management of T2DM patients followed up in FM or endocrinology outpatient clinics.

METHOD

This descriptive study population consists of patients with T2DM who applied to Marmara University Training and Research Hospital's Internal Medicine, Endocrinology clinic, specialized DM outpatient clinic, FM outpatient clinic, and an Education FHC affiliated with that university in Istanbul, Turkiye. Patients over the age of 18 who applied to the University Education and Research Hospital Endocrinology or FM polyclinics or education FHCs and who have been diagnosed with T2DM for at least 6 months were included in the study. Those with hearing loss and those who did not have the cognitive capacity to understand the Turkish questions were excluded from the study. A sample was not selected, but the study was carried out with convenience sampling, among those who applied to those clinics within 1 month, the targeted population and volunteered to participate in the study were included. The response rates of the DM outpatient clinic, FM clinic, and FHC were 81.7, 78.3, and 65.8%, respectively. The research data were collected from each clinic for 1 month, for a total of three, between April 1st and June 31st, 2019.

The sociodemographic characteristics of the participants, the duration of DM, the center where the diagnosis was made and followed up, the education level about DM and its complications, the last HbA1c level and when it was checked, where the routine follow-ups and controls regarding the disease were made, which drugs they used, drug use compliance, adaptation to lifestyle changes, and some secondary preventive medicine practices (aspirin use, pneumococcal and influenza vaccination, etc.) were questioned. The survey asked whether the individual could use a blood pressure or blood glucose meter at home without assistance. The researchers investigated the patients' knowledge and attitude toward the disease, their ability to manage it, and routine follow-up status based on the information provided by the patients themselves. Furthermore, the researcher determined patients' adherence to the recommended lifestyle for effective DM management based on self-report. The researcher calculated the target HbA1c and target blood pressure levels in alignment with the values reported by the patients. For this, the questionnaire form was applied face to face to each participant by the researcher.

In the evaluation of the data, the patients who had their follow-up only from the endocrinology department and had never been to an FM clinic or an FHC for their DM management were determined as "Group 1;" and the patients who received service mostly from the FM outpatient clinic or FHC were considered "Group 2," regardless of whether they went to endocrinology or not. The deci-

sion to create two groups instead of three is based on the infrastructure of chronic disease management for T2DM. Managing DM and its complications through FM alone is neither appropriate nor practical for almost all DM patients. Sometime after diagnosis, patients with T2DM require tertiary health-care services, for screening, diagnosis, treatment, and rehabilitation. For effective disease management, it is recommended to consult with specialists in internal medicine, especially endocrinology, also cardiology, ophthalmology, and neurology. In cases of multi-drug or insulin use, it is advisable to seek consultation from specialists in endocrinology and internal medicine for health services and treatments. Because the family physician, whether an FM specialist or not, is unable to issue a report and prescribes most of the DM medication and insulins, not covered by the Social Security Institution. Therefore, consultation with specialists is necessary but not absolute. Although there were patients with newly diagnosed DM who had never seen an endocrinologist, they were a small minority in the overall sample. For this reason, it would not have been useful to create a separate group for them.

The data obtained from the study were analyzed with the Statistical Package for the Social Sciences Statistics v.25 statistical program. The assumption of normality of the data was tested with the Kolmogorov–Smirnov and Shapiro–Wilk tests. The mean and standard deviation of the normally distributed continuous data were given together, while the non-normally distributed continuous data were indicated with the median, quartiles. To determine the descriptive statistics of the categorical variables, frequencies and percentages were used. To compare the normally distributed continuous variables in independent groups, a student t-test was used. In determining the differences in quantitative variables between two independent groups that were not normally distributed, the Mann–Whitney U-test was used. The Chi-square test was used to compare sequential and nominal data. Statistical significance was determined by taking the significance level as 0.05 and the power level as 80% in all analyses.

RESULTS

A total of 151 participants were included in the study, 49 (32.5%) in Group 1 and 102 (67.5%) in Group 2. Total participants were 97 (64.2%) female, and the mean age was 57.9±10.3 years. In addition, 23 (15.2%) of the participants had not previously consulted a family doctor in a lifetime. In Group 1, age mean was 57.4±10.4 and 58.3±10.4 in Group 2 (p=0.621). Sociodemographic characteristics and current disease status according to groups are summarized in Table 1.

The median value of HbA1c was 7.5% (2.1%) in Group 1 and 7.1% (2.2%) in Group 2 (p=0.324). The comparison of HbA1c levels between groups is shown in Figure 1.

The insulin users in Group 1 were 38 (77.6%) participants and 23 (22.5%) in Group 2 (p<0.001). The ability to adjust the insulin dose was 22 (44.9%) in Group 1 and 15 (14.7%) in Group 2 (p<0.001). In addition, blood glucose measurement ability was observed to be 47 (95.9%) in Group 1, whereas it was 75 (73.5%) in Group 2 (p=0.001). Self-reported status of DM management and related education are summarized in Table 2.

Self-reported status of having routine blood pressure measurement was detected 20 (40.8%) in Group 1 and 34 (33.3%) in Group 2 (p=0.002). Self-reported status of having routine examinations related to DM is summarized in Table 3.

Knowing the target HbA1c for their health status was 6 (12.2%) in Group 1 and 17 (16.7%) in Group 2 (p=0.585). Knowing the target blood pressure for their health status was 30 (61.2%) in Group 1 and 32 (31.4%) in Group 2 (p=0.002). Self-reported status of knowledge, attitudes, and skills related to DM is summarized in Table 4.

DISCUSSION

This study aimed to compare the effects of FM versus endocrinology follow-up on the management of T2DM. The inclusion of participants who exclusively received services from endocrinology outpatient clinics, and even those who had no prior interaction with their family physician, is a noteworthy discovery in itself. The comparison of two groups within this sample, those who solely received services from endocrinology outpatient clinics and those who received services from both endocrinology and predominantly FM outpatient clinics or FHC, was expected to yield more significant results.

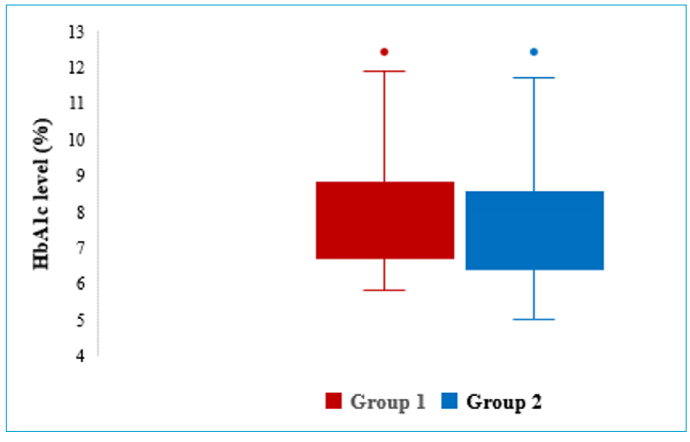

Figure 1. The comparison of hemoglobin A1c levels between groups.

Table 1. Sociodemographic characteristics and current disease status according to groups

	Group 1 (n=49)	Group 2 (n=102)	p
Age groups			
30-44 years	6 (12.2)	10 (9.8)	0.603
45-59 years	22 (45.0)	41 (40.2)	
60-74 years	20 (40.8)	44 (43.1)	
75 years and over	1 (2.0)	7 (6.9)	
Gender			
Male	30 (61.2)	67 (65.7)	0.592
Female	19 (38.8)	35 (34.3)	
Marital status			0.265
Single/widow	7 (14.2)	26 (25.5)	
Married	42 (85.8)	76 (74.5)	
Income			
Below minimum wage	0 (0.0)	37 (36.3)	<0.001
Moderate	42 (85.7)	59 (57.8)	
Good	7 (14.3)	6 (5.9)	
Education level			
Illiterate	7 (14.3)	16 (15.7)	0.005
Literate	0 (0.0)	11 (10.8)	
Primary school	31 (63.2)	34 (33.2)	
Secondary school	2 (4.1)	12 (11.8)	
High school	7 (14.3)	17 (16.7)	
University and more	2 (4.1)	12 (11.8)	
Employment status			
Unemployed	23 (46.9)	57 (55.9)	0.463
Employee	10 (20.4)	21 (20.6)	
Retired	16 (32.7)	24 (23.5)	
Atherosclerotic disease			
Yes	13 (26.5)	16 (15.7)	0.113
No	36 (73.5)	86 (84.3)	
Hypertension			
Yes	26 (53.1)	65 (63.7)	0.210
No	23 (46.9)	37 (36.3)	
Hyperlipidemia			
Yes	32 (65.3)	41 (40.1)	0.004
No	17 (34.7)	61 (59.8)	
Thyroid disease			
Yes	14 (28.6)	26 (25.5)	0.688
No	35 (71.4)	76 (74.5)	
Renal disease			
Yes	2 (4.1)	3 (2.9)	0.714
No	47 (95.9)	99 (97.1)	
Cancer			
Yes	0 (0.0)	2 (2.0)	0.324
No	49 (100.0)	100 (98.0)	
Other diseases			
Yes	12 (24.5)	38 (37.3)	0.119
No	37 (75.5)	64 (62.7)	

Data is presented as n (%).

Chi-square test.

Table 2. Self-reported status of DM management and related education

	Group 1 (n=49)	Group 2 (n=102)	p
Knowledge of measuring blood glucose	46 (93.9)	53 (52.0)	<0.001
Knowledge of adjusting insulin dose	40 (81.6)	35 (34.3)	<0.001
Knowledge of hypo/hyperglycemia	43 (87.8)	52 (51.0)	<0.001
Knowledge of possible consequences of diabetes	45 (91.8)	62 (60.8)	<0.001
Knowledge of appropriate exercise	45 (91.8)	62 (60.8)	<0.001
Knowledge of appropriate nutrition	47 (95.9)	73 (71.6)	0.001
Knowledge of blood pressure measurement	17 (34.7)	64 (62.7)	0.001
Knowledge of foot care	5 (10.2)	21 (20.6)	0.114

DM: Diabetes mellitus.
Data are presented as n (%).
Chi-square test.

Table 3. Self-reported status of having routine examinations related to DM

	Group 1 (n=49)	Group 2 (n=102)	p
Urine analysis	48 (98.0)	79 (77.5)	0.001
Cardiology examination	37 (75.5)	63 (61.8)	0.095
Eye examination	34 (69.4)	60 (58.8)	0.210
Foot examination	3 (6.1)	26 (25.5)	0.005
Neurology examination	2 (4.1)	24 (23.5)	0.003

DM: Diabetes mellitus.
Data are presented as n (%).
Chi-square test.

Table 4. Self-reported status of knowledge, attitudes, and skills related to DM

	Group 1 (n=49)	Group 2 (n=102)	p
Having to take a break in medication due to prescription problems	2 (4.1)	34 (33.3)	<0.001
Giving attention to the diet	25 (51.0)	50 (49.0)	0.818
Doing appropriate exercise	15 (30.6)	31 (30.4)	0.978
Pneumococcal vaccination	3 (6.1)	13 (12.7)	0.216
Influenza vaccination	6 (12.2)	14 (13.7)	0.802

DM: Diabetes mellitus.
Data are presented as n (%).
Chi-square test.

First, in this study, no statistical difference was found in HbA1c levels between the endocrinology outpatient follow-up patients and FM follow-up patients. However, in nearly all educational parameters, with the notable exceptions of blood pressure and foot care, the group that went only to the endocrinology clinic had better results. These results are in line with the results of the study conducted by Zoberi et al.[12] Similarly, in this study, insulin use was found to be significantly higher in patients who were followed up from endocrine only, and metformin was mostly used in those who went to FM. In a study comparing an endocrinology clinic with a primary care clinic, adherence to ADA recommendations and HbA1C levels was significantly better in the endocrinology clinic.[10] In multiple different studies comparing specialized DM clinics and general medicine clinics, the quality of care was found to be better in the spe-

cialized clinic than in the general medicine clinic.[13-16] Out of these studies, Sone et al. and Shah et al. only compared HbA1c levels.[15,16] In Ho et al.'s study, the endocrinology clinic was better in all ADA recommendations.[13] In Sieng and Hurst study, the DM clinics were better in every parameter, except for blood pressure targets in the community setting, which is a similar result to this study.[14]

There are also studies in which there are no demonstrable differences between specialized and general clinics. Alhabdan et al. found no statistically significant difference in HbA1c levels between DM clinics and FM clinics in their study.[11] Honkasalo et al. concluded that the follow-up of most DM patients can be organized in primary care with the same quality of secondary care.[17] Huang et al. did not find a definitive positive impact of specialized DM clinics over a 4-year period.[18] Chou et al. suggest that family physicians may provide better care at a lower cost to DM patients.[19]

In a study conducted by Satman et al., it was found that both endocrinologists and family physicians were insufficient to meet the disease management recommendations of guidelines, but in some areas, family physicians were significantly more inadequate in examination and laboratory testing.[20] In this study, it was found that family physicians provided more services in routine DM-related examinations, but there was a distinct lack of patient education. The fact that there are nurses who only work and specialize in patient education in endocrinology clinics may have been one of the reasons for this situation. In addition, more specialized care and training can be structured with healthcare professionals such as DM nurses, dietitians, and training nurses working with DM clinics in tertiary care. On the other hand, the patient education given in FM depends on the personal effort of the family physician/nurse.

One other reason for this might be the way primary care is set up in Turkiye.[9] The FHC system has been implemented in Turkey since 2010 to strengthen the primary health care services. Although the FHC system has been in operation for more than 10 years, DM diagnosis, treatment, and follow-up are done less frequently in FHCs. It has been reported that there are patients who do not know that family physicians can monitor HbA1c, regulate their medications and insulin doses, provide necessary precautions against all complications, and provide education and related services regarding the disease. These studies were conducted shortly after the start of FM practice in Turkey, however, there has been little reason for change because the pay system has remained unchanged until recently. In this system, if there is inadequacy in any of the pregnancy follow-ups, neonate health-care follow-ups, child health-care follow-ups, or mandatory vaccination schedule, physicians and nurses get pay cuts. The most common chronic diseases, such as DM and hypertension, were not subject to any difference in pay up until very recently. For this reason, successful field applications such as 98% coverage achieved by family physicians in childhood vaccination were not seen in terms of chronic disease screening and management. In the newly implemented system, common chronic diseases are meant to be rigorously screened and followed up in FHC from 2021.[21] However, in its current form, not doing the follow-ups does not result in pay cuts, there are only pay raises for those who complete them. Therefore, there may not be the desired positive changes in the immediate future.

According to a study conducted in the İstanbul, Turkiye, vaccination prevalence in DM cases was found to be 6% for pneumococcus and 11.1% for influenza.[22] In another study, it was reported that 10.7% of DM patients were aware of the pneumococcal vaccine and only 0.9% of them were vaccinated.[23] In this study, although the vaccination rates in both groups were very low, they were found to be higher than these studies. The reason for this may be that the study was conducted in a university hospital setting. In another study conducted in Turkiye, 27% of DM patients had influenza and 9.8% had the pneumococcal vaccine.[24] A reason for the relatively high influenza vaccination rate in this study may be the fact that the study was conducted soon after the H1N1 flu pandemic, as stated in its discussion. In another study, influenza vaccination rates of patients followed by endocrinologists, internists, and family physicians were similar.[25]

It was observed that those who received service from FM interrupted their treatment more often because of not being able to get their medication prescribed, compared to patients who received service only from endocrinology. Having to interrupt treatment due to the inability to get prescribed medication is a type of treatment non-compliance.[26] Studies on adherence to treatment have mostly been about factors related to patients.[27] Factors related to the health system and health-care professionals in adherence to treatment have been relatively less studied. However, in the multicenter diabetes attitudes, wishes, and needs study, it was stated that the presence of a DM nurse increased both adherence to treatment and adaptation to lifestyle changes.[28] Therefore, this difference may be due to the presence of personnel specialized in DM in the endocrinology clinic. Another reason may be in the Turkish health system, many of the oral anti-DM drugs and insulins are covered by the Social Security Institution only when they are prescribed by an endocrinologist or an internal medi-

cine specialist, and the insurance does not cover the bill when family physicians prescribe the same drugs and/or insulins. DM requires a multidisciplinary approach with an emphasis on primary, secondary, and tertiary prevention.[1] FM could play a key role in the management of DM, especially regarding patient advocacy, patient empowerment, and coordination of health care in the context of person-centered care.[7] However, FM does not have the expected role in terms of diagnosis, treatment, and follow-up in Türkiye, and there are deficiencies in applying the training and examinations recommended by the guidelines. The fact that routine blood pressure measurements, foot examination, and neurologic examination were performed more in patients with FM follow-up is one of the more encouraging findings of this study. Nevertheless, it is necessary to increase other follow-ups and especially patient education within the scope of DM management in FM. Necessary steps should be taken to ensure that some practices and counseling in endocrinology are also carried out in primary care. To reveal the role of FM and primary health-care services in DM management, multicenter, large-scale studies should be conducted, and necessary practices should be expanded to provide preventive health services and to empower patients.

The limitation of this study is the small sample size. Furthermore, some information collected from patients is self-reported and not measured by a validated method. There is also the possibility of recall bias. To increase the reliability of the data on a very common disease and generalize it to the whole society, it is necessary to reach a larger number of participants and to carry out a multicenter design.

CONCLUSION

There was no difference in HbA1c levels between the group followed up only in endocrinology and the follow-up group including FM, and also in patients receiving endocrinology care exhibited superior self-management abilities and received more comprehensive DM education. In contrast, FM follow-up, provided more frequent follow-up services, including blood pressure, foot, and neurological assessments. These results suggest that FM in Türkiye has the potential to expand its role in the management of DM, particularly in the areas of patient education and comprehensive follow-up. To realize this potential, increased resources and training opportunities in DM education and follow-up protocols for family physicians could be beneficial.

Disclosures

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Examination of Factors Influencing the Risk of Falls in Hemodialysis Patients: A Cross-sectional Study

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ABSTRACT

Objectives: This study aimed to investigate the factors influencing the risk of falls in hemodialysis patients within the community.

Methods: This cross-sectional study was conducted on all patients receiving maintenance hemodialysis treatment in the central district of Çanakkale between July 2020 and August 2020. A total of 133 (74.7%) of 178 hemodialysis patients were included in the study. The risk of falls was assessed by the Hendrich II Scale. Sociodemographic variables, anthropometric variables, presence of diabetes mellitus, and biomarker values from the past 3 months were used as independent variables.

Results: Of the 133 participants who had been receiving hemodialysis for a median of 5.0 (2.0–8.0) years, 86 (64.7%) were male and the median age was 63.0 (53.0–69.0) years. Participants had a mean score of 2.1±0.1 on the Hendrich II Scale and 9 (6.8%) were at high risk of falling. There was no association identified between age, gender, educational attainment, marital status, height, weight, presence of diabetes mellitus, smoking status, hemoglobin levels, albumin levels, calcium levels, parathormone levels, grip strength in the dominant hand, triceps skinfold thickness, mid-upper arm circumference, mean arterial blood pressure, and the duration of hemodialysis with the risk of falls in individuals undergoing maintenance hemodialysis (Likelihood ratio test=12.532, p=0.767).

Conclusion: Physicians will not be able to simply determine the fall risk in hemodialysis patients by looking at certain values within the community. Larger and more comprehensive studies are needed to identify the fall risk in hemodialysis patients within the community.

Keywords: Anthropometry, falls, hemodialysis, muscle strength

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INTRODUCTION

Chronic kidney disease is characterized by the National Kidney Foundation –Kidney Disease Outcomes Quality Initiative as abnormalities in kidney structure or function that persist for a duration of at least 3 months and have implications for one's health.[1] It has been determined that chronic kidney diseases affect a portion of the global population ranging from 11% to 13%.[2] As its prevalence continues to increase and its effects on hemostasis in the body become clearer, chronic kidney disease is observed to transform into a global health problem.[3] Chronic kidney disease is defined as Stage G5 renal failure based on glomerular filtration rate classification.[4] The majority of patients at this stage require hemodialysis. Specifically, 0.041% of the entire population needs hemodialysis.

The bone abnormalities resulting from reduced kidney function contribute to a higher prevalence of fractures in hemodialysis patients compared to the general population.[5] These

fractures are associated with elevated mortality rates.[6] While falling is a crucial risk factor for fractures, the risk is higher in hemodialysis patients compared to the general population.[7,8]

In hemodialysis patients, factors such as decreased serum albumin levels, reliance on walking aids, sarcopenia, depression, advanced age, shorter stature, orthopedic and cerebrovascular diseases, reduced calf circumference, diminished quadriceps muscle thickness, increased body weight, presence of diabetes mellitus, inappropriate environmental conditions, frailty, and worse postural balance have been linked to an elevated risk of falls.[9-17] These risk factors are typically identified using multivariate statistical tests. It is not uncommon to encounter conflicting results, where variables identified in one study as increasing the risk of falls in hemodialysis patients are found to be ineffective in another study. Although there is only one study assessing the factors influencing the risk of falls in hemodialysis patients in the Turkish community, the study solely evaluated the risk of falls before and after hemodialysis sessions.[18]

There is a limited number of studies in the literature on factors influencing the risk of falls in hemodialysis patients, and some of these studies present conflicting results. There is a need to reconcile these contradictions and demonstrate the validity of identified risk factors in different populations. In addition, falls are preventable and avoidable circumstances. Early detection of increased fall risk in hemodialysis patients within primary health-care services will be highly beneficial in preventing many comorbidities, such as fractures, and reducing mortality in these patients.[19] Therefore, identifying the factors associated with fall risk in hemodialysis patients in the Turkish population will empower primary care physicians to prevent adverse health outcomes. This study aimed to investigate the factors influencing the risk of falls in hemodialysis patients within the community.

METHOD

This cross-sectional study was conducted on all patients receiving maintenance hemodialysis treatment in the central district of Çanakkale with a population of approximately 200000, located in the northwest of Turkey. Between July 2020 and August 2020, a total of 178 hemodialysis patients were reached as all patients who are under maintenance hemodialysis in the city center.

In our study, where 17 independent variables were used, the minimum required sample size for the smallest group was determined to be 17×10=170. Finding 170 high-fall-risk hemodialysis patients would require 1000 participants, which is excessively higher than the number of hemodialysis patients in the city. Forty-five (25.3%) individuals were excluded from the study, consisting of 23 (12.9%) who declined to participate, 20 (11.2%) who had not received hemodialysis treatment in the past 3 months, and 2 (1.1%) who had sensory organ impairment directly associated with falls (loss of visual acuity). Thus, the final study was conducted on 133 (74.7%) patients receiving maintenance hemodialysis treatment.

At the hemodialysis center, patients underwent a face-to-face interview before receiving hemodialysis, during which the Hendrich II Scale and a questionnaire comprising sociodemographic variables were administered, and anthropometric measurements were taken. In addition, the results of laboratory tests performed in the past 3 months were accessed and recorded through electronic medical records.

The participants' risk of falling was assessed using the Hendrich II Fall Risk Scale before each hemodialysis session. This scale is not specific to a particular field and is designed to evaluate the risk of falls in patients across all domains. The model, which is based on a comprehensive literature review of risk factors for falls, was initially developed by Hendrich and colleagues in 1995. It was later revisited in 2003, leading to the creation of its second version.[20] The highest possible score on the scale is 16, and a score of 5 or higher indicates the presence of a high risk of falling.

Sociodemographic characteristics of the participants such as age, gender, marital status, and educational status, as well as anthropometric measurements such as height, weight, grip strength in the dominant hand, upper middle arm circumference, and triceps skinfold thickness measurements were used as independent variables. Marital status was recorded as "Married" and "Other (single/widowed/divorced)." Educational status was recorded on a scale ranging from "Illiterate" to "University and above," with six options.

Grip strength in the dominant hand was measured using a hand dynamometer in our study, and it is generally associated with overall muscle health and performance in the body.[21] The upper mid-arm circumference is utilized as an indicator of malnutrition.[22] Triceps skinfold thickness, measured with a skinfold caliper in our study, serves as a reliable indicator of body fat percentage.[23] The inclusion of body anthropometric measurements in the predictive model for fall risk is justified by the fact that the muscle system and its health can directly impact the occurrence of falls.

Cigarette smoking (pack/year for quit, current smokers vs. zero for never smokers) and the time elapsed after starting hemodialysis treatment were also used as independent variables.

It is well-established that diabetes mellitus is an independent risk factor for falls in hemodialysis patients.[24] Therefore, in this study, the presence of diabetes mellitus was utilized as an independent variable. The existence of diabetes mellitus was self-reported by the patients.

Hemoglobin, albumin, calcium, and parathormone values measured within the past 3 months were used as independent variables. Laboratory test results were obtained from the electronic medical records of the patients. In addition, both systolic and diastolic blood pressure values were measured before the hemodialysis session, and mean arterial blood pressure ([2xdiastolic blood pressure+systolic blood pressure]/3) was added to the model as an independent variable.

Statistical analyses were conducted using the "logistf" version 1.26.0 package in the R software, version 4.3.1. The normal distribution of continuous independent variables was assessed using the Shapiro–Wilk test. The data that followed a normal distribution were presented as mean±standard deviation, whereas non-normally distributed data were presented as median (1st quartile-3rd quartile). Categorical data are described as frequency and percentage. As all variables did not exhibit a normal distribution, univariate tests, specifically the Chi-Square and Mann–Whitney U tests were employed. Due to the dichotomous nature of the dependent variable, logistic regression was chosen as the primary statistical method. For logistic regression, it is necessary to have a minimum of 10 cases per independent variable (for the smaller group). In this study, considering 17 independent variables, it was calculated that there should be at least 170 individuals in the smaller group for logistic regression analysis. However, despite efforts to reach all possible dialysis patients, only nine cases at risk of falls were identified. The "Firth's logistic regression with added covariate" method was employed in our study. A significance level of $p<0.05$ was considered the threshold for statistical significance.

RESULTS

A total of 133 participants, of whom 86 (64.7%) were male, with a median age of 63.0 (53.0–69.0) years. Of the participants, 96 (72.2%) were married, and 73 (54.9%) had completed primary school. The participants had been receiving hemodialysis treatment for a median duration of 5.0 (2.0–8.0) years. A diagnosis of diabetes mellitus was present in 44 (33.1%) participants. Sociodemographic and laboratory characteristics of hemodialysis patients according to fall risk are summarized in Table 1.

Participants obtained a mean score of 2.1±0.1 on the Hendrich II Scale. A score of 5 or higher on the Hendrich II Scale was observed in 9 (6.8%) participants, indicating a high risk of falls.

Firth's logistic regression with an added covariate model created to predict the dependent variable, the risk of falls, was not statistically significant (Likelihood ratio test=12.532, p=0.767). The prediction of fall risk in hemodialysis patients is summarized in Table 2.

DISCUSSION

This study aimed to investigate the factors influencing the risk of falls in hemodialysis patients within the community. No relationship was found between age, gender, education level, marital status, height, weight, diabetes mellitus, smoking status, hemoglobin, albumin, calcium, parathormone, grip strength in the dominant hand, triceps skinfold thickness, mid-upper arm circumference, mean arterial blood pressure, and duration of hemodialysis with the risk of falls in patients undergoing maintenance hemodialysis. Although significant associations were observed between albumin levels and Hendrich II scores in pairwise comparison tests, this significance disappeared in Firth's logistic regression model.

In our study, none of the dependent variables that we considered to be related to the risk of falls in hemodialysis patients were found to be significant in the multiple models. However, in studies conducted in the literature, increased risk of falls in hemodialysis patients has been associated with various factors such as serum albumin levels, use of assistive devices for walking, sarcopenia, depression, advanced age, short stature, orthopedic and cerebrovascular diseases, decreased calf circumference, decreased quadriceps muscle thickness, increased weight, presence of diabetes mellitus, inappropriate environmental factors, frailty, and worse postural balance.[9–17] However, in the literature, while some studies have found a statistically significant relationship between the presence of diabetes mellitus, albumin levels, female gender, parathormone levels, increased body weight, number of medications used, and systolic blood pressure levels with an increased risk of falls in hemodialysis patients, there are also studies stating no relationship between the same variables – the presence of diabetes mellitus, albumin levels, female gender, parathormone levels, increased body weight, number of medications used, and systolic blood pressure levels – and the risk of falls.[12,13,16,17,25-28] As evident, there is no clarity in

Table 1. Sociodemographic and laboratory characteristics of hemodialysis patients according to fall risk

	Fall Risk		p
	Absent (n=124)	Present (n=9)	
Age (years)	63.0 (53.2–69.0)	58.0 (49.0–68.5)	0.482*
Gender			
Female	44 (35.5)	3 (33.3)	1.000†
Male	80 (64.5)	6 (66.7)	
Marital status			
Single/divorced/widowed	36 (29.0)	1 (11.1)	0.444†
Married	88 (71.0)	8 (88.9)	
Education level			
Illiterate	7 (5.6)	0 (0.0)	0.362†
Literate	2 (1.6)	0 (0.0)	
Primary school	68 (54.8)	5 (55.6)	
Middle school	8 (6.5)	1 (11.1)	
High school	24 (19.4)	0 (0.0)	
University and above	15 (12.1)	3 (33.3)	
Diabetes mellitus			
Absent	82 (66.1)	7 (77.8)	0.717†
Present	42 (33.9)	2 (22.2)	
Smoking status (pack/year)	0.0 (0.0–20.0)	30.0 (0.0–38.0)	0.188*
Weight (kg)	69.2 (61.0–80.0)	66.0 (58.0–83.7)	0.989*
Height (cm)	166.5 (160.0–172.0)	173.0 (159.0–176.5)	0.272*
Hemoglobin (g/dL)	11.2 (10.2–12.0)	11.4 (9.3–12.6)	0.982*
Albumin (g/dL)	4.1 (3.9–4.4)	3.9 (3.6–4.1)	0.039*
Calcium (mg/dL)	9.0 (8.6–9.5)	9.2 (8.6–9.9)	0.507*
Parathormone (pg/mL)	178.1 (334.4–555.0)	280.0 (193.4–562.4)	0.771*
Grip strength in dominant hand (kg)	20.0 (13.0–25.0)	15.0 (9.5–26.0)	0.308*
Triceps skinfold thickness (mm)	9.0 (8.0–14.0)	11.0 (8.5–15.0)	0.278*
Mid-upper arm circumference (cm)	27.0 (25.0–29.0)	28.0 (24.0–30.5)	0.958*
Mean arterial blood pressure (mm/Hg)	88.3 (83.3–96.7)	93.3 (85.0–100.0)	0.282*
Duration of hemodialysis	5.0 (2.0–8.0)	6.0 (1.5–10.5)	0.666*

Data are presented as median (25-75. percentiles) and n (%).
*Mann-Whitney U test, †Chi-square test.

the literature regarding risk factors for falls in hemodialysis patients. One possible primary reason for this could be errors made in model selection during multiple analyses. The results in these studies generally rely on the outcomes obtained from regression analyses. Many studies did not specify the method followed for variable selection for regression.[11,12,14,25-27] Even worse, articles that mention about variable selection, have used the most incorrect method of deciding independent variables of the model just by significance in univariate statistics.[29,30] Furthermore, considering that regression models are highly sensitive to the included independent variables, the heterogeneity in the results of studies investigating risk factors for falls in hemodialysis patients is an expected outcome.[31] Although the small numbers of hemodialysis patients and the limited inclusion of hemodialysis patients in the investigated cases may necessitate the use of different regression types, it is observed that this aspect is not often emphasized in studies examining the relationship between hemodialysis and the risk of falls.[13,14,16,26,27,32] In this context, it is observed that the factors affecting the risk of falls in hemodialysis patients are not sufficiently clear in the literature. In our study, despite reaching all dialysis centers in the city and including all patients from these centers, only 133 participants could be

Table 2. Prediction of fall risk in hemodialysis patients

	β	SE	p	Exp (β)	95%CI
Age	–0.052	0.035	0.121	0.949	0.882–1.014
Gender (Ref:male)	0.651	1.402	0.633	1.917	0.140–35.709
Education level*	0.608	0.338	0.081	1.836	0.937–3.741
Marital status (Ref:married)	0.926	0.973	0.294	2.524	0.491–25.382
Height	0.113	0.085	0.204	1.120	0.944–1.361
Weight	0.014	0.051	0.782	1.014	0.918–1.121
Diabetes mellitus (Ref:absent)	–1.499	1.209	0.190	0.223	0.004–1.934
Smoking status	0.011	0.016	0.472	1.011	0.974–1.041
Hemoglobin	0.125	0.261	0.624	1.133	0.693–2.173
Albumin	–0.029	0.631	0.960	0.972	0.038–2.349
Calcium	0.229	0.405	0.553	1.256	0.597–2.912
Parathormone	–0.001	0.001	0.455	0.999	0.998–1.001
Grip strength in the dominant hand	–0.167	0.080	0.044	0.846	0.689–0.997
Triceps skinfold thickness	0.242	0.200	0.364	1.274	0.954–1.815
Mid-upper arm circumference	–0.179	0.146	0.102	0.836	0.556–1.224
Mean arterial blood pressure	0.055	0.036	0.091	1.056	0.992–1.142
Duration of hemodialysis	0.014	0.065	0.833	1.014	0.893–1.166

SE: Standard error.
*Education level coded as continuous.
Firth's logistic regression with added covariate method.

reached. Therefore, in our study, the Firth's logistic regression method was chosen appropriately for this small number of participants, and decisions regarding the variables to be included in the model were made before the study, using a proper method for creating an accurate model. As a result, in our study, no relationship was found between age, gender, education level, marital status, height, weight, diabetes mellitus, smoking status, hemoglobin, albumin, calcium, parathormone, grip strength in the dominant hand, triceps skinfold thickness, mid-upper arm circumference, mean arterial blood pressure, and duration of hemodialysis with the risk of falls in hemodialysis patients.

In the literature, despite the identification of some risk factors for falls in hemodialysis patients, another reason for not detecting them in our study may be the inadequacy of the Hendrich II Scale used to calculate the risk of falls in hemodialysis patients. Most studies in the literature generally take the number of falls within a specific period as the dependent variable, with rare cases where scales are used. However, to the best of our knowledge, the Hendrich II scale has not been used in any study to measure the risk of falls in hemodialysis patients. In this context, it may raise doubts about the suitability of the Hendrich II Scale as a good tool for measuring the risk of falls in hemodialysis patients.

Although all patients in dialysis units in the provincial center were reached in our study, an insufficient sample size could be reached for logistic regression. As a strength of our study, this problem was overcome using a very new statistical correction method. The limitation of our study is the lack of a study showing the validity and reliability of the Hendirch II Scale in hemodialysis patients, but there is no other valid and reliable scale that can be selected for this situation. In addition, since this study is a single-center study, caution should be exercised when generalizing its results. Another strength of our study is that the variables to be included in the model were decided in the study design and a model selection method criticized in the literature was avoided.

CONCLUSION

Maintenance hemodialysis patients were evaluated for the relationship between age, gender, education level, marital status, height, weight, diabetes mellitus, smoking status, hemoglobin, albumin, calcium, parathormone, grip strength in the dominant hand, triceps skinfold thickness, mid-upper arm circumference, mean arterial blood pressure, and duration of hemodialysis with the risk of falls, but no significant relationship was found. In the literature, while some variables in this study were shown to have a

relationship with the risk of falls in hemodialysis patients, there are noticeable methodological and statistical errors in these studies. In addition, there is currently no scale with sufficient discriminative power to measure the risk of falls in hemodialysis patients. In this context, more comprehensive and multi-center studies are needed to evaluate the risk of falls in hemodialysis patients due to the limitations in the number of patients.

Disclosures

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Evaluation of Zona Zoster Cases

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ABSTRACT

Objectives: This study aimed to describe the overall characteristics, hospitalization symptoms, treatment, and outcome of patients admitted with zona zoster

Methods: In this study, 30 adult patients hospitalized between January 2012 and December 2014 due to zona zoster were evaluated retrospectively. Demographic characteristics, hospitalization symptoms, and treatment of patients of the patients were examined.

Results: Among the 30 patients who followed up with zona zoster, 16 (53.3%) were female and the median age was 57.5 (18.0–87.0) years. Twenty-two (73.3%) patients had comorbidities and 7 (23.3%) patients had hypertension. The most common site of involvement was the head-and-neck region in 14 (46.7%) patients. Twenty-nine (96.7%) patients had lesions along a single dermatome and, fever was detected in 5 (16.7%) patients. The duration of hospital stay was 6.0 (2.0–14.0) days. One (3.3%) patient had persistent pain at the site of the lesion after treatment

Conclusion: Most patients with zona zoster could be treated in primary care. Primary care physicians should be aware of the characteristics of hospitalized patients with zona zoster to better assist with their follow-up.

Keywords: Acyclovir, antiviral, varicella zoster virus

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INTRODUCTION

Varicella zoster virus is one of the eight herpes group viruses (Human Herpes Virus 3, HHV-3) that cause infection in humans.[1] It leads to two different clinical presentations chickenpox and zona. Chickenpox is a primary infection and is mostly seen in childhood. Zona zoster, which is a secondary infection, is mostly seen in adulthood and occurs with the reactivation of the latent virus.[2] The virus, which characteristically becomes latent after primary infection in the dorsal root ganglia, reactivates to cause herpes zoster, a sporadic disease. Herpes zoster or zona zoster occurs on one or two adjacent sensory dermatomes. It is characterized by a unilateral vesicular rash that does not cross the midline of the body, and the appearance of the rash is sufficient for clinical diagnosis.[1,2] Although it tends to be self-limiting in healthy individuals, it may progress as more severe, vesicular-pustular, and nodular in more than one dermatome in immunocompromised patients.[3] Post-herpetic

neuralgia may progress with mild complications including skin color changes, hypertrophic or keloid scars, secondary infections or serious complications including acute retinal necrosis, blindness, cerebellar ataxia, Guillain-Barre syndrome, ophthalmic Herpes zoster, Ramsay-Hunt syndrome, meningoencephalitis, stroke, and myocarditis.[4,5] It can be transmitted by direct contact with patients with shingles or through aerosols from skin lesions to individuals who did not suffer from varicella or who have not been vaccinated. Infectiousness is much less than an individual presenting with chickenpox.[6] Worldwide, individuals have a 30% chance of having herpes zoster. To reduce the risk of developing post-herpetic neuralgia, vaccination is recommended for individuals over the age of 50, immunocompromised patients over the age of 19 with a high risk of herpes zoster, and susceptible healthcare personnel who will care for these patients, and it should be ensured that caregivers are selected from immunized healthcare personnel.[6-8]

This study aimed to describe the overall characteristics, hospitalization symptoms, treatment, and outcome of patients admitted with zona zoster.

METHOD

In this study, the patients who were hospitalized and followed up between January 2012 and December 2014 and diagnosed with zona zoster based on their symptoms and findings were evaluated retrospectively. Patients over the age of 18, who were diagnosed with shingles in any part of their body and who were followed up inpatient services were included in the study.

Data were obtained from the hospital's record system. Demographic characteristics of the patients such as age, gender, and concomitant diseases were examined. Moreover, the patients were evaluated in terms of laboratory parameters. White blood cell (WBC) count >11000/mm^3 was defined as leukocytosis and WBC <4000/mm^3 was defined as leukopenia. Lymphocyte count <1000/mm^3 was considered as lymphopenia. Those with a platelet count <150000/mm^3 are considered thrombocytopenia, and those with a hemoglobin value <12 mg/dL are considered anemia accepted. Elevated C-reactive protein >5 mg/L and elevated creatinine >0.9 mg/dL were accepted.

The statistical analysis was performed using the Statistical Package for Social Sciences 21.0 (SPSS Inc., Chicago, IL, USA). The Kolmogorov–Smirnov test was used to analyze the normality of the distribution of parameters. Continuous variables were expressed as median, minimum, and maximum. Besides, categorical variables were expressed as frequency and percentage.

RESULTS

Among the 30 patients who followed up with zona zoster, and the median age was 57.5 (18.0–87.0) years. Twenty-two (73.3%) patients had comorbidities. Patient characteristics and laboratory findings are summarized in Table 1.

Twenty-one (70.0%) of the patients were over 50 years of age. The distribution of patients according to age groups is shown in Figure 1.

The duration of the complaints was 5.0 (1.0–10.0) days, and 5 (16.7%) patients had a fever. Twenty-nine (96.7%) patients had lesions along a single dermatome. Only 1 (3.3%) patient with HIV infection was observed with lesions crossing the midline. The most commonly affected area in our study was the head and neck region including the scalp and eye area on the same side in 5 (16.7%) patients. This was followed by trunk and extremity involvement. Ophthalmic complications such as conjunctivitis, uveitis, episcleritis, keratitis, and retinitis were not observed in patients with periorbital involvement. The distribution of lesions according to the site of involvement is shown in Figure 2.

Table 1. Patient characteristics and laboratory findings

	n (%)
Gender	
Female	16 (53.3)
Male	14 (46.7)
Comorbidities*	
HT	7 (23.3)
Malignancy	4 (13.3)
CRF	3 (10.0)
CHF	2 (6.7)
Asthma bronchial	2 (6.7)
DM	1 (3.3)
Hypothyroidism	1 (3.3)
HIV infection	1 (3.3)
Pregnancy	1 (3.3)
No comorbidity	8 (26.7)
Laboratory Findings*	
Leukocytosis	2 (6.7)
Leukopenia	3 (10.0)
Lymphopenia	6 (20.0)
Thrombocytopenia	9 (30.0)
Anemia	9 (30.0)
Elevated CRP	14 (46.7)
Elevated creatinine	7 (23.3)

*Multiple options selected.

CHF: Congestive heart failure; CRP: C reactive protein; CRF: Chronic renal failure; DM: Diabetes mellitus; HIV: Human immunodeficiency virus; HT: Hypertension.

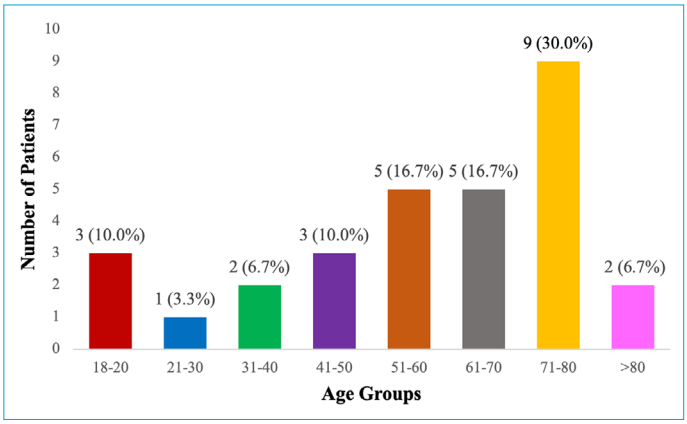

Figure 1. Distribution of patients according to age groups.

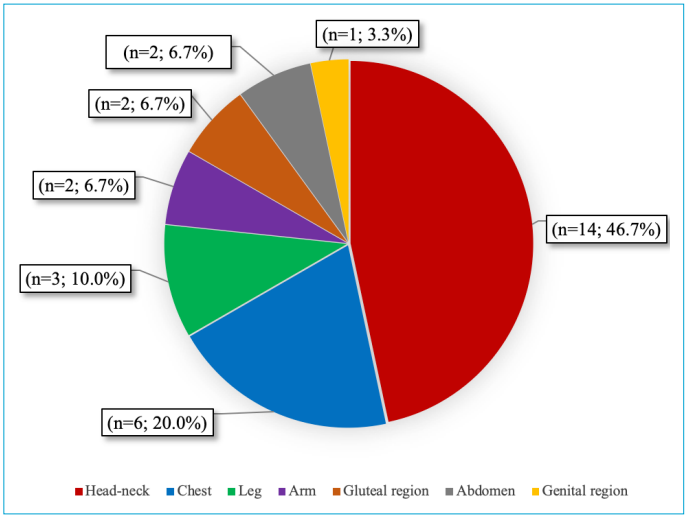

Figure 2. Distribution of lesions according to the site of involvement.

The duration of hospitalization was 6.0 (2.0–14.0) days. All patients received systemic acyclovir (10 mg/kg), paracetamol (10–15 mg/kg), and if required dexketoprofen (25 mg) for analgesia. In addition to acyclovir treatment, 3 (10.0%) patients received antibiotic treatment due to skin and soft-tissue infection at the site of the lesions. One (3.3%) patient with gluteal region involvement, soft-tissue infection, and malignancy was hospitalized for a longer time. Renal functions of the patients were monitored during treatment and no acyclovir-induced increase in creatinine values was observed. In one (3.3%) patient, pain in the lesion area (post-herpetic neuralgia) persisted after treatment, while no complications were observed in the other patients.

DISCUSSION

Zona zoster is characteristically presented as painful vesicles on an erythematous background, often along a dermatome, not crossing the midline. The most affected dermatomes include thoracic (55%), cranial (20%, most commonly involving the trigeminal nerve), lumbar (15%), and sacral (5%) regions.[1] Hospitalization is not indicated in all patients and, it is indicated in patients with head-and-neck involvement and immunodeficiency. Pregnancy is also a physiologic immunodeficiency state.

Pain begins in the affected area 1 to several days before the skin rash.[5] Sometimes, the pain may occur simultaneously with or after the rash, or the rash may be painless.[9] The incidence of zona increases in conditions such as malignancies, being an organ transplant recipient, the presence of autoimmune disease, presence of a disease causing cellular immune deficiency such as HIV infection, female gender, and advanced age.[5,9,10] Seventy percentages of our patients were over 50 years of age and were mostly female. In different studies, lesions are frequently seen in the thoracic region, but in our study, the most frequently affected region was the head-and-neck region.[11-13] Ophthalmic complications such as conjunctivitis, uveitis, episcleritis, keratitis, or retinitis were not observed in any of the patients in this study. Clinical manifestations are usually acute pain and vesicular rash. Important systemic symptoms such as headache, fever, malaise, or fatigue are observed in <20% of patients.[14] Fever was detected in 5 (16.7%) of our patients.

Nucleoside analogs such as acyclovir, valacyclovir, and famciclovir are the antiviral drugs of choice for the treatment of herpes zoster. Valacyclovir and famciclovir are highly bioavailable agents suitable for oral use.[15] Acyclovir is available in oral and intravenous forms and is preferred in pregnancy. Acyclovir may cause nephrotoxicity, close monitoring of renal function and plenty of hydration should be recommended. All patients were treated with acyclovir in this study and, no acyclovir-induced increase in creatinine values was observed.

Secondary bacterial infections due to both Staphylococcus and Streptococcus may rarely occur in the lesion area.[16] Antibiotics should be added to the treatment if there is increased erythema, temperature, or purulent discharge around the lesion. In 3 (10.0%) patients, antibiotic treatment was given in addition to antiviral treatment since skin and soft-tissue infections developed in the same region.

Post-herpetic neuralgia is one of the most important complications in patients with zona zoster. Although the lesions in the area of involvement regress, the complaint of pain may persist.[17] The complaint of pain may resolve in 1 month or it may persist for more than 3 months and become chronic.[18] In only one (3.3%) of our patients, the pain persisted despite the regression of the lesions.

This study has several limitations. It was performed at a single center. The number of inpatient cases was low. As

it was a retrospective study, the vaccination status of the patients could not be questioned. The diagnosis was made only by clinical findings, no laboratory confirmation could be made.

CONCLUSION

Zona zoster is a viral eruptive disease that usually occurs in a single dermatome, but rarely in multiple dermatomes. Most patients with zona zoster could be treated in primary care. Primary care physicians should be aware of the characteristics of hospitalized patients with zona zoster to better assist with their follow-up.

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Case Report

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A Rare Cause of Abdominal Pain: Wilkie Syndrome

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ABSTRACT

The rare pathological condition known as superior mesenteric artery (SMA) (Wilkie) syndrome arises when the third part of the duodenum experiences constriction due to compression between the aorta and the proximal segment of the SMA. The main complaints are nausea, vomiting, epigastric pain, and bloating with significant weight loss. Reported cases of this syndrome have been observed in patients who have scoliosis, suffered burns, led sedentary lifestyles, or experienced unexplained weight loss. In cases where there is unexplained rapid weight loss and recurrent obstructive findings that deviate from common causes, clinicians should include SMA syndrome in their differential diagnosis. This article presents a case of SMA syndrome, which has long affected the patient's quality of life due to diagnostic difficulties, and discusses the disease's diagnosis and management.

Keywords: Acute abdomen, superior mesenteric artery syndrome, wilkie syndrome

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INTRODUCTION

Superior mesenteric artery (SMA) syndrome commonly known as Wilkie's syndrome due to its identification by Wilkie in 1927 as chronic duodenal ileus is a condition where the duodenum's second or third section experiences compression between the aorta and the upper region of the SMA.[1] When we look at the gender distribution, it is more common in women.[2] The etiology of this syndrome may include the lower position of the SMA, malrotation of the duodenum, cancer, burns, previous surgery or psychiatric disorder and associated loss of mesenteric adipose tissue, and anorexia nervosa.[3] Clinically, patients complain of abdominal pain, early satiety, vomiting, and reflux.[4] Developments in computed tomography (CT) and magnetic resonance imaging have aimed to clearly define the angle between the aorta and the SMA and facilitate diagnosis.[3] A conservative approach is used in acute cases. The aim is to provide the patient with nutritional support, help the patient to gain weight and restore the loss of adipose cushioning, which is thought to cause the narrowing of the aorta-mesenteric angle. Surgical treatment should be reserved for patients whose symptoms persist for a long time and do not respond to conservative treatment. The most commonly preferred surgical technique is the side-to-side duodenojejunostomy.[5] This article aims to focus on a patient who sought medical attention due to abdominal pain and was ultimately diagnosed with SMA syndrome.

CASE REPORT

A 35-year-old woman with no previous gastrointestinal symptoms presented to the family medicine outpatient clinic with postprandial epigastric pain, anorexia, nausea, and weight loss for the last 2 years. There were no significant findings in the medical history and fam-

ily history of the patient. There was no history of regular medication. The patient had previously received symptomatic treatment for the same complaints, but the same complaints had recurred. On physical examination, the patient was thin and pale. The body mass index of the patient was calculated to be 20.3 kg/m^2. The patient reported losing 5 kg in the past 3 months. Laboratory tests of the patient at the time of admission are summarized in Table 1. After being referred to general surgery, the patient underwent an abdominal CT scan, which provided definitive evidence of SMA syndrome as shown in Figure 1. On confirmation of Wilkie's syndrome diagnosis, the patient was promptly admitted to the general surgery ward, and a nasogastric catheter was placed, from which he was discharged after intravenous feeding and antiemetic treatment. The patient was followed in the ward for 3 days and was discharged with a prescription for a laxative and a list of dietary recommendations. Three months later, the patient attended the outpatient clinic, and her symptoms were completely resolved.

DISCUSSION

SMA syndrome is a medical condition where the duodenum's second or third section is compressed between the aorta and the upper region of the SMA.[6] This compression can lead to acute or chronic presentations of the syndrome. The etiology of the condition is not well understood, but rapid weight loss is thought to cause compression of the duodenum due to the loss of mesenteric adipose tissue.[7] Patients usually present to the hospital with complaints of bloating, postprandial abdominal pain, vomiting, and reflux.[5] Our patient was admitted to our outpatient clinic complaining of abdominal pain, nausea, and weight loss. The patient's weight loss of 5 kg in the past 3 months was thought to be related to this disease.

Table 1. Laboratory tests of the patient at the time of admission

	Result	Normal range
Sodium (mEq/L)	139	136–146
Potassium (mEq/L)	4.7	3.5–5.1
Chlorine (mEq/L)	107	101–109
Fasting glucose (mg/dL)	82	70–100
Creatinine (mg/dL)	0.7	0.51–0.95
Urea nitrogen (mg/dL)	21	6–20
Ferritin (µg/L)	24	11–307
Hemoglobin (gr/dL)	10.2	11.7–15.5
Hematocrite (%)	30.3	34.5–46.3
Leukocyte (10^3/µL)	9.5	4.1–11.2
Platelet (10^3/µL)	349	159–388
MCV (fL)	49	73–101
Iron (µM)	35	50–150

MCV: Mean corpuscular volume.

SMA syndrome can be diagnosed by radiological and angiographic methods.[8,9] Standing direct abdominal radiography shows only dilatation of the stomach and duodenum. The definitive diagnosis is CT angiography, which also allows measurement of the aortomesenteric angle. In this patient, gas images were first seen on radiography. Subsequently, duodenal dilatation was observed on abdominal CT and the definitive diagnosis was made by measuring the aortomesenteric angle. Conservative methods should be tried first in the treatment of SMA syndrome. First, NG is used to relieve the stomach and duodenum. Then the patient should be started on oral or intravenous nutrition, anti-nausea drugs, appetite stimulants, and bowel regulators that the patient can tolerate. The aim is to increase the patient's mesenteric fat and relieve pressure on the duodenum. The majority of patients are treated conservatively, but surgical procedures should be performed in patients who do not improve.[8]

CONCLUSION

SMA syndrome should be considered in the differential diagnosis of patients with nausea, vomiting, and weight loss of unknown cause, as well as those who are presumed to exhibit an obstruction at an upper level of the gastrointestinal tract. A family physician should take a comprehensive approach to the patient, continuously monitor the patient's complaints and underlying problems, and conduct a more detailed assessment when symptoms do not improve.

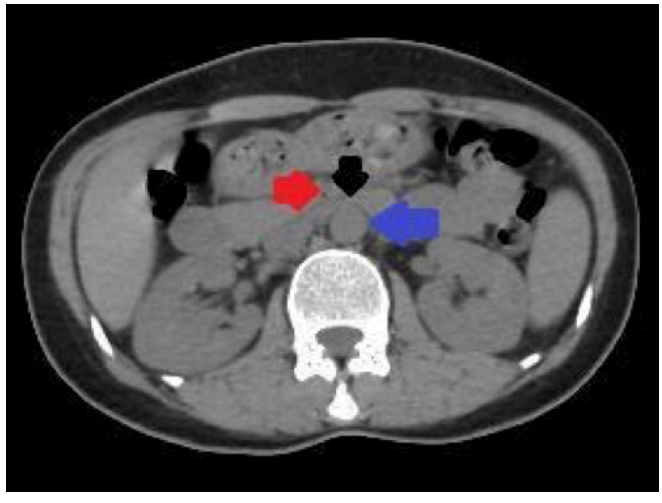

Figure 1. A computed tomography section of the patient.
Black arrow: Duodenum; Blue arrow: Aorta; Red arrow: Superior mesenteric artery.

Disclosures

Informed Consent: Written informed consent was obtained from the patients.

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Case Report

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A Case of Legionnaire's Disease

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ABSTRACT

This case report aims to provide up-to-date information about the conditions requiring hospitalization in primary health-care services in cases of Legionella pneumonia. This case was a 66-year-old woman with a history of smoking who admitted to the emergency department with increasing dyspnea and fatigue. On physical examination, he appeared dyspneic and tachypneic, and on auscultation, inspiratory rales and bilateral widespread expiratory rhonchi were detected. C-reactive protein was 324.3 mg/L, leukocytosis was 10980 10^3/mm^3, and neutrophil-dominated (90.2%). There was a respiratory failure according to the arterial blood gas analysis (PO_2: 57.3 mmHg, HCO^3: 25.7 mEq/L, PCO_2: 33.6 mmHg, SO_2: 91.3%). Moxifloxacin (400 mg 1×1) and oseltamivir (75 mg 2×1) peroral empirically were initiated because of pneumonia, and additionally inhaler steroid and bronchodilator treatments (Salmeterol+flutikazon 50/500 mcg twice daily) for bronchitis. However, on the third day of follow-up, 40 mg methylprednisolone parenterally was added to the treatment because of bronchospasm and dyspnea continued despite bronchodilator therapy, and additionally parenteral ampicillin-sulbactam (4x1 gr.) was started to expand the spectrum of Gram-positive bacteria. Legionella was detected as the causative pathogen by viral and bacterial sampling of the airways with PCR. Low awareness about the disease may cause serious mortality and morbidity in patients presenting with a vague clinical picture in the early stages.

Keywords: Infectious diseases, legionnaire's disease, primary healthcare

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INTRODUCTION

Legionella is a Gram-negative bacterium and caused a major pandemic in 1976.[1] First identified in 1977, *Legionella* bacteria is a common cause of community-based pneumonia.[2] It is an intracellular pathogen of freshwater protozoa and uses a similar mechanism when infecting human phagocytic cells.[3] *Legionella* is becoming increasingly significant as a public health problem all over the world. Although it is a rarely reported disease, its incidence has been documented to be on an increasing trend.[4] It is one of the most reported waterborne pathogens in industrialized countries. It often colonizes water ecosystems, interacts with many other resident microorganisms, and remains in biofilms.[5] Cough, fever, gastrointestinal symptoms, hyponatremia, and impaired liver function tests are the most common clinical and laboratory features.[6] In clinical practice, to confirm the diagnosis, *Legionella* antigen is examined in the urine taken from the patient, and the sputum or bronchial alveolar lavage samples are evaluated by molecular polymerase chain reaction (PCR) methods to investigate the bacterial genetic structure. In the studies conducted, diagnosis is obtained by patient sample cultures such as sputum and bronchial lavage.

This case report aims to provide up-to-date information about the conditions requiring hospitalization in primary health-care services in cases of *Legionella* pneumonia.

CASE REPORT

A 66-year-old female patient living in the Kuşadası district of Aydın province was diagnosed with acute bronchitis and lower respiratory tract infection at a secondary healthcare facility when she visited five days ago due to cough and difficulty in breathing. She was started on inhaled salmeterol+fluticasone propionate 50/500 micrograms twice daily for bronchitis and oral cefuroxime axetil 500 mg twice daily for lower respiratory tract infection. The patient applied to the emergency department of our university hospital due to the lack of improvement in her general condition and the increase in difficulty in breathing. The patient, who experienced a fever once at home, had a cough and difficulty in expectoration. Sputum was white in color and the amount of one cup a day. In her medical history, it was revealed that her summer house had a pool, and her complaints started when she went there. She had no lung pathology known in her background. She had pneumonia in her childhood and a history of cerebrovascular disease 6 years ago. She had had prosthetic surgery on both knees. She was using antidepressants (sertraline 100 mg 1×1). She was also an active smoker who had a smoking history of 72 packages/year. In her family history, there was a history of colon cancer in her son and breast cancer in her grandmother.

In the physical examination; her general condition was good, she was oriented-cooperative, had a fever of 38.1°C, pulse of 107/min, arterial blood pressure of 147/115 mmHg, respiratory rate of 22/min, and saturation (without oxygen) of 89%. In her respiratory system examination, tachypneic, dyspneic, inspiratory rales in the right mid-lower zone, and bilateral expiratory rhonchi were revealed. The patient, whose other system examinations were normal, was admitted to the pulmonary diseases department, as 2 points were determined by the CURB-65 pneumonia scoring. Laboratory parameters of the patient at admission are summarized in Table 1. The patient's cardiothoracic ratio was increased, her right hemidiaphragm was elevated, both hiluses were full, and there were interstitial reticular infiltrates in the mid-lower zones in her chest radiograph at the first admission. The chest X-ray of the patient at the time of admission is shown in Figure 1.

Treatment was started empirically, considering atypical pneumonia according to the current radiological and clinical findings. Since the patient did not respond to the oral treatment, intravenous infusion and moxifloxacin were started as of her hospitalization. However, considering the possible risk of influenza infection due to extensive lung infiltration, oral oseltamivir was also started and used for 5 days until the viral PCR result was obtained. Besides, considering the symptoms and physical examination findings and bronchial hyperreactivity, the patient was also given inhaler steroid and bronchodilator nebulizer treatments. During the follow-up process, no fever was detected during the hospitalization of the patient. Since bronchospasm

Table 1. Laboratory parameters of the patient at admission

	On first application	Normal range
Hemogram		
Hemoglobin (g/dL)	12.2	11.2-15.7
Hematocrit (%)	35.6	34.1-44.9
Erythrocyte (10^6/mmv)	4.31	3.93-5.22
Leukocyte (10^3/mm^3)	10980	3.98-10.04
Neutrophil (10^3/mm^3)	9890	1.56-6.13
Neutrophil (%)	90.2	34-71.1
Lymphocyte (10^3/mm^3)	740	1.18-3.74
Lymphocyte (%)	6.7	19.3-51.7
Monocyte (10^3/mm^3)	1.80	0.24-0.86
Platelet (10^3/mm^3)	207	180-370
Biochemistry		
Blood glucose (mg/dl)	164	70-105
Urea (mg/dl)	60	13-43
Creatine (mg/dl)	0.84	0.57-1.11
Na (mEq/L)	142	136-145
K (mEq/L)	3.2	3.5-5.1
AST (U/L)	24	5-34
ALT (U/L)	25	<55
Indicators		
CRP (mg/L)	324.3	0-5
Pro-BNP (pg/ml)	113.3	0-100
Coagulation		
aPTT	25.7	25.4-38.4
PT (min)	13.3	8-13.5
INR	1.01	0.8-1.2
Urine analysis		
Density	1.022	1.005-1.03
pH	6.0	5-9
Leukocyte esterase	1 Positive	Negative
Protein	2 Positive	Negative
Erythrocyte	1	0-3
Leukocytes	10	0-5
Blood gas		
pH	7.478	6.3-8
PO_2 (mmHg)	57.3	80-100
HCO_3 (mEq/L)	25.7	22-26
PCO_2 (mmHg)	33.6	35-45
SO_2 (%)	91.3	94-98

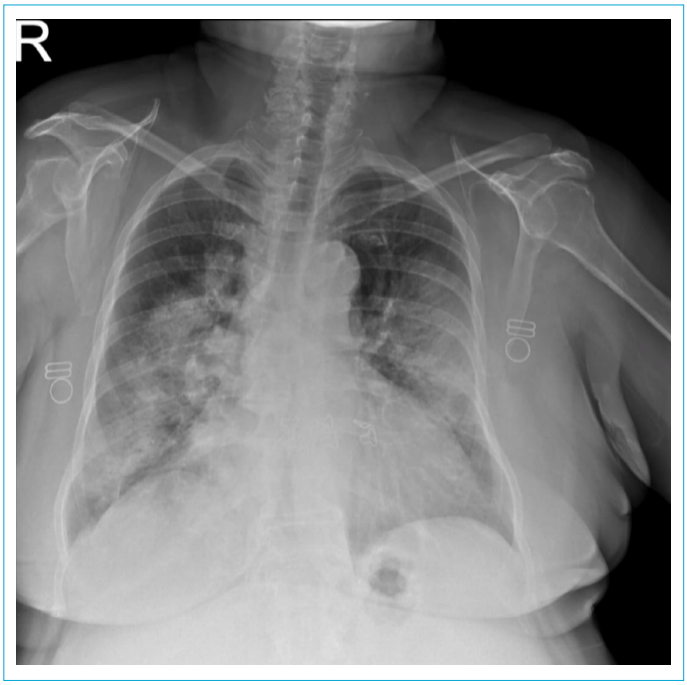

Figure 1. Chest X-ray of the patient at the time of admission.

and dyspnea continued despite bronchodilator treatment, 40-mg methylprednisolone was started parenterally on the 3rd day of treatment. Considering the fact that the clinical course was severe and other typical pneumonia agents could also play a role in the pneumonia picture, ampicillin–sulbactam (4×1 g) was started parenterally to expand the spectrum of Gram-positive bacteria.

On the 7th day of the treatment, the respiratory tract bacterial PCR evaluation was concluded, and it was reported that *Legionella* was detected. There was no growth in blood and sputum cultures. Laboratory parameters of the patient during treatment are summarized in Table 2. Due to steroid use, leukocytosis was observed to persist, however, improvements were seen in C-reactive protein and other laboratory data including neutrophil, lymphocyte, and monocyte percentages. On the 7th day of the treatment, the patient's radiograph revealed almost complete regression on the right and partial regression on the left. Chest X-ray in 7 days during the treatment of the patient is shown in Figure 2. As a result, at the end of the 8th day, it was determined that

Table 2. Laboratory parameters of the patient during treatment

	On the 7th Day of Treatment	On the 21st Day of Treatment	Normal Range
Hemogram			
Hemoglobin (g/dL)	11.4	11.5	11.2–15.7
Hematocrit (%)	34.5	34.3	34.1–44.9
Erythrocyte (10^6/mm^3)	4.07	4.18	3.93–5.22
Leukocyte (10^3/mm^3)	14950	5790	3.98–10.04
Neutrophil (10^3/mm^3)	10550	3220	1.56–6.13
Neutrophil (%)	70.7	55.6	34–71.1
Lymphocyte (10^3/mm^3)	3710	2000	1.18–3.74
Lymphocyte (%)	24.8	34.2	19.3–51.7
Monocyte (10^3/mm^3)	5.80	0.33	0.24–0.86
Platelet (10^3/mm^3)	278	396	180–370
Biochemistry			
Blood glucose (mg/dL)	149		70–105
Urea (mg/dL)	58		13–43
Creatine (mg/dL)	0.7		0.57–1.11
Na (mEq/L)	141		136–145
K (mEq/L)	3.3		3.5–5.1
AST (U/L)	25		5–34
ALT (U/L)	19		<55
Indicators			
CRP (mg/L)	160	7.50	0–5
Procalcitonin (µg/L)	0.35		0–0.5

CRP: C-reactive protein.

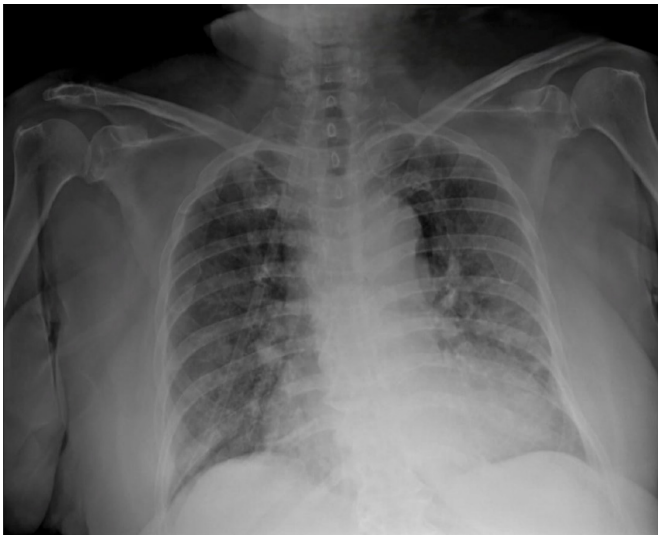

Figure 2. Chest X-ray in 7 days during the treatment of the patient (withdrawn to bed).

the patient could be discharged from the hospital due to the improvement of the clinical picture, the control of the fever, the improvement of the physical examination findings, and the disappearance of the oxygen requirement. Oral moxifloxacin (400 mg 1×1) was prescribed for seven more days to the patient, and she was discharged from the hospital. In the radiograph taken 21 days after the start of the treatment, a complete improvement was observed in the infiltrates. Chest X-ray in 21 days during the treatment of the patient is shown in Figure 3.

DISCUSSION

Legionella has been detected in artificial water ecosystems, including wastewater purifying installations, cooling towers, and drinking water systems. It is found in higher concentrations, especially in drinking water and building installation systems.[5] *Legionella* is not only found in nature, but also in waterborne biofilms commonly found in medical and dental equipment, and it may even cause epidemics.[7]

In a 56-year-old male case reported in the literature, due to such symptoms and signs as high fever, dry cough, hypoxia, speech disorder, and difficulty in cooperation and orientation, the patient was hospitalized, examined, and treated.[8] His lifestyle and history of habits were deepened since he used oral amoxicillin/clavulanate for 4 days because of fever and cough a week before his history and as his complaints did not improve. It was found out that the patient stayed at the hotel for a few days due to travel a week before the start of his complaints, and *Legionella* was detected in the water samples taken from the hotel where he stayed. In this case, just as in our case, *Legionella* was not considered the primary diagnosis, and the patient had to be hospitalized and diagnosed as there was no positive response to the treatment. However, upon deeper investigation of the medical history, it was determined that Legionella, which lives in stagnant water, originated from the pool.

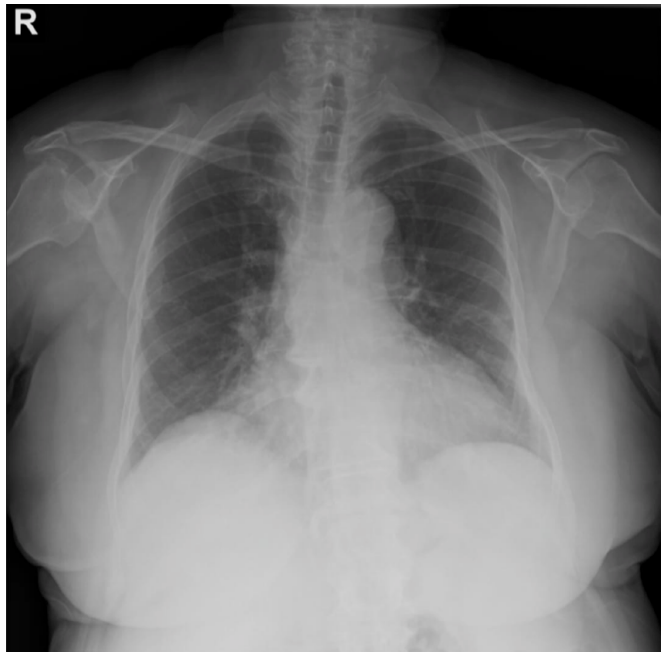

Figure 3. Chest X-ray in 21 days during the treatment of the patient.

Legionnaire's disease may present with different clinical courses and result in a poor prognosis.[9] In the literature, two cases have developed acute respiratory illness syndrome after hospitalization. The first case was a 54-year-old male tourist with diabetes. He applied to the hospital with complaints of high fever and diarrhea. The second case is an 82-year-old female patient with diabetes who had complaints of respiratory distress, high fever, diarrhea, and altered consciousness. In the first case, fever response was obtained on the 11th day and healing was obtained, whereas the second case passed away on the 7th day.

In another case report, as a result of worse cardiac functions, a diagnosis of acute myocarditis was made in an 81-year-old male patient who applied to the emergency with high fever, cough, unsteadiness in walking, and confusion, and *Legionella* antigen test positive was detected in his urine.[10] The patient, whose complaints regressed with antibiotic treatment, was transferred to his country by air ambulance on the 10th day and was discharged from the hospital in his country with recovery.[10]

As in these case reports, *Legionella* pneumonia may present in different clinical manifestations such as diarrhea and confusion, the disease may be treated or may progress so severely that it may result in death.[11] Early diagnosis and

treatment will be lifesaving. Various objective criteria and indices have been defined to minimize diagnosis and treatment difficulties, assess the severity of pneumonia, and determine indications for hospitalization in severe clinical pictures. In our case report, the CURB-65 score was determined as 2 due to high urea level and age criteria, and hospitalization was found appropriate.

CONCLUSION

Legionnaire's disease, which has a false but permanent status as an exotic plague, cannot be diagnosed mostly due to a lack of clinical awareness.[3] This case report draws clinical attention to *Legionella* pneumonia, which can lead to serious clinical consequences and public health problems. *Legionella* pneumonia, which may also cause regional endemics due to the increased risk of contact with an infected water source in the spring and summer seasons, is a disease that should be kept in mind in the distinguishing diagnosis of atypical pneumonia. Although it is possible to treat the disease in a primary care institution, in severe clinical cases it is extremely important to refer the patient to secondary or tertiary care institutions and, if possible, to isolate the agent.

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Short Communication

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Monkeypox and Men Who Have Sex with Men: A Heightened Risk Connection

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ABSTRACT

Monkeypox outbreaks have been reported across different parts of the world. The major cause of concern for the international welfare agencies and public health authorities is that the outbreak has been reported in non-endemic nations and that most of the diagnosed cases had no history of travel to the endemic nations. In the recent outbreak, the initial cases were reported among men who have sex with men (MSM) and who came to sexual health clinics to seek treatment for their illnesses. Thus, the general initial impression was that Monkeypox infection is more common among MSM. In conclusion, the 2022–2023 outbreak of Monkeypox in non-endemic nations has posed a significant challenge for public health authorities. Even though initial cases are reported among MSM, it does not mean that they are only vulnerable to acquiring the infection, rather anyone who is in close contact with the infected person is at the risk to get the disease. The need of the hour is to strengthen prevention, create awareness, and not stigmatize one section of the community.

Keywords: Men who have sex with men, Monkeypox, sexual activity

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INTRODUCTION

Monkeypox (Mpox) is a viral infectious disease that is endemic in the tropical rainforests of central and west Africa.[1] Since 1970, when the first outbreak was reported, the disease has been reported in 11 African nations, with occasional detection of cases in non-endemic nations due to the travelers' visit to the endemic nations.[2] It is worth noting that since December 2021, multiple outbreaks of Monkeypox have been reported in Cameroon, the Central African Republic, the Democratic Republic of the Congo, Liberia, Nigeria, and the Republic of the Congo.[1] The global outbreak of the infection that was reported in 2022–2023 was caused by the clade II of the Mpox.[3-6] Even though the disease is self-limiting and tends to resolve within 2–4 weeks of the onset of illness, some deaths have been reported, with newborns, children, and individuals with immunodeficiency being at higher risk of developing complications.[7]

TRANSMISSION OF THE INFECTION

Humans can acquire the infection after they come in contact with an infected animal (namely, monkey, squirrels, etc.), which is either sick or dead, including their meat and blood.[1,7] Human-to-human transmission usually occurs while people are symptomatic through close contact with skin lesions, body fluids such as pus or blood, scabs, saliva, and respiratory droplets.[1] In addition, the infection can also spread from the pregnant woman to the fetus through

the placenta or from the infected parent to the newborn through skin contact.[3] Further, the used objects (such as clothes, bedding, and utensils used for eating) by the infected person also carry a risk for potential transmission of the infection. Moreover, people who are in close contact with infected persons such as health-care professionals, family members, or sexual partners are also quite vulnerable to acquiring the infection.[2,7]

MONKEYPOX OUTBREAK AND MEN WHO HAVE SEX WITH MEN

As already mentioned, the disease tends to get transmitted by close physical contact with the infected persons, including sexual contact.[1] As the research continues about the scope of transmission of infection through semen or vaginal fluids, nevertheless, it is quite possible that skin-to-skin contact with the lesions during sexual activities can play a significant role in the transmission of the infection.[1] In the recent outbreak, the initial cases were reported among men who have sex with men (MSM) and who came to sexual health clinics to seek treatment for their illnesses.[1,8,9] This could be also due to the clinical presentation of Monkeypox rash, which is quite similar to other sexually transmitted infections, such as herpes and syphilis. Thus, the general initial impression was that Monkeypox infection is more common among MSM.[9]

REALITY AND NEED TO NOT ENCOURAGE STIGMATIZATION

However, we must understand that the risk of acquisition of infection is not limited to only MSM, rather any person who is in close contact with the infected patients is at risk of getting the infection.[9] Hence, it is not a scientific or a rationale thing to label that MSM is more at risk of infection and stigmatize one specific group of people. It is our responsibility to understand and accept that irrespective of who we are, what we do, sexual preferences, or even any other attributes, if we are in close contact with an infected person, we will get the infection if we do not take standard precautions.[9,10] Moreover, the stigma will become a major hindrance to our goal to end the current outbreak at the earliest, as people will stop availing of health care (on account of being targeted and discriminated against) and, thus, will continue to spread the infection.[4,8,9] The need of the hour is to support all individuals who are diagnosed with the infection and help them to get better.

STRENGTHENING PREVENTION MEASURES

The containment of the ongoing outbreak in non-endemic nations will essentially require creating awareness among the general population about the disease (namely, symptoms, modes of transmission, the nature of the disease, necessity to isolate the infected person, and prevention strategies).[1,10] In addition, we have to strengthen the ongoing prevention activities and encourage the use of medical masks and gloves by health-care personnel or family members who are involved in taking care of the patient.[3] Further, emphasis has been again given to regular hand washing with soap and water or alcohol-based hand rubs to minimize the chances of the spread of the infection.[7,11] Moreover, keeping the zoonotic origin of the disease in mind, it is vital that meat products of animals (especially, if they are sick or dead), should be thoroughly cooked before consumption.[5,6,11] Furthermore, we do have the support of vaccines (such as imvamune) and drugs (such as tecovirimat) for the containment and better management of the disease.[1]

CONCLUSION

The 2022–2023 outbreak of Monkeypox in non-endemic nations has posed a significant challenge for public health authorities. Even though initial cases are reported among MSM, it does not mean that they are only vulnerable to acquiring the infection, rather anyone who is in close contact with the infected person is at risk of getting the disease. The need of the hour is to strengthen prevention, create awareness, and not stigmatize one section of the community.

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Letter to the Editor

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Eye Flu Outbreaks in India, Pakistan, and Vietnam: A Potential Threat

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Dear Editor,

I am reaching out to bring attention to the current outbreak of eye flu in India, Pakistan, and Vietnam.[1] As a health-care professional with expertise in ophthalmology and direct knowledge of this situation, it is crucial to address this urgent issue through your prestigious platform.

According to recent reports, there has been a notable surge in instances of eye flu, commonly referred to as pink eye or conjunctivitis, in India, Pakistan, and Vietnam since September 2023.[1] This development has sparked a range of problematic issues on both personal and broader scales, including economic and national implications.

Conjunctivitis is characterized by inflammation and swelling of the conjunctival tissue, accompanied by engorgement of the blood vessels, ocular discharge, and pain.[2] While the index case is still unknown, eye flu cases of both viral and bacterial etiologies (the former being more common) surged in these countries tracing back to late July and are still seen in a serious number daily. With bacterial conjunctivitis, symptoms, and signs are red eyes, discharge of pus, and pain. With viral, symptoms and signs are watery discharge, red eye, and itching.

It is an indisputable fact, that eye flu is highly contagious, almost all households in specific areas of India had a case or two, and major hospitals reported up to 100 patients per day.[3] In Vietnam, the authorities were concerned about the potential for a vicious epidemic. They were dealing with a substantial number of patients, including newborns and children. Unfortunately, 20% of these patients have been presented with severe complications.[4] While in Sindh, Pakistan eye flu cases started rising in early September affecting public health immensely.

These developing countries attributed this outbreak to several challenges, including heavy rainfall, flooding, subpar air quality, humid environments, inadequate sanitation, densely populated regions, and unclean conditions to name a few.[3]

Some noteworthy obstacles, these countries encountered impacting the economy and public health were difficulty accessing quality healthcare, a lower doctor-to-patient ratio, healthcare centers being far away, decreased turnover of employees, and a shortage of eye drops.[5] This eye flu outbreak is a global concern for its potential to spread to neighboring countries, antibiotic resistance, and severe complications due to delayed treatment, self-medication, and inappropriate prescription.[6]

Interesting questions to be raised are: Are we ready for a potential epidemic? How does this relate to our immunities and the COVID-19 pandemic? Have we become more susceptible to viruses? A healthy debate on these topics awaits.

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