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EDITORIAL

Dear Readers,

It is with a mix of pride and bitterness that we present to you the third and final issue of 2024, as I prepare to step down from my role as Editor-in-Chief. After a journey full of hard work, unforgettable experiences and cherished friendships, I now pass the torch to Sıla Ece Tiryaki, whose editorial vision and leadership will bring Turkish Medical Student Journal (TMSJ) to new heights. Her immaculate work ethic and dedication have been inspirational to us all, which made her an invaluable member of our editorial board throughout her time in TMSJ.

As October is both when we publish our last issue of the year and Breast Cancer Awareness Month, I would not like to leave without sharing some final reflections on the matter. Breast cancer is the second most diagnosed cancer worldwide and the most common non-skin malignancy in women, which is expected to affect one in eight women in their lifetime and claim the lives of one in 43 (1, 2). There have been 2.3 million new cases and 670,000 deaths in 2022 globally, representing a public health issue "no ministry of health can overlook" (2, 3). As breast cancer continues to put tremendous strain upon healthcare providers, patients and their families, it is vital to take the necessary preventive measures and be aware of the risk factors associated with this malignancy. Since only 10-20% of breast cancers are caused by inherited gene mutations such as *BRCA1 and BRCA2*, and many hormone-related risk factors such as age of menarche, age of menopause, history of pregnancy and history of breastfeeding are mostly not modifiable, the majority of breast cancer cases cannot be prevented through primary prevention (2). Therefore, a more sensible approach would be to invest in early-detection programs in order to detect and treat breast cancer in its early stages (stages I and II), ensuring the implementation of the most effective, tolerable and cost-effective treatment regimens available (2).

It has been suggested that breast self-examination has possible utility in low-income countries where access to mammography is not widely available. Although data regarding the effectiveness of breast self-examination in the developing world is limited, self-examination education and its role in decreasing the burden of breast cancer still appear as a matter of debate (4). Despite this controversy, it should also not be overlooked that patients who are aware of the symptoms of breast cancer and are familiar with their own anatomy may be more likely to seek treatment in the earlier stages of the disease.

Mammography screening has substantially reduced the mortality associated with breast cancer. A reduction of 41% in breast cancers fatal within 10 years after diagnosis among women who underwent mammography screening, and a 25% reduction in the incidence of advanced breast cancer have been reported. Early detection of breast cancer through mammography screening leads to a significant reduction in the risk of death from the disease (5). Therefore, the American College of Radiology recommends breast cancer screening for all average-risk women from the age of 40 (6).

The importance of breast cancer awareness, which we highlight in this final issue of 2024, remains a crucial subject for public health. As healthcare providers, patients and their families continue to face the hardships caused by this disease, early detection through mammography and education on breast self-examination could be vital tools for preventing its devastating consequences.

As I bid farewell to my role as Editor-in-Chief, I wish to express my deepest gratitude for the opportunities, experiences, and friendships that have made my time here a truly treasured one. With Sıla Ece Tiryaki taking the helm, I am confident that TMSJ will continue to thrive, inspiring young researchers with the same passion and dedication that has guided us thus far. Thank you for your never-ending support, and I look forward to seeing TMSJ flourish in the years to come.

Yours truly,

Eylül Şenödeyici

Editor-in-Chief, Turkish Medical Student Journal

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ORIGINAL ARTICLE

EVALUATION OF THE RELATIONSHIP BETWEEN HIP FRACTURES AND PRESSURE ULCERS IN PATIENTS AGED 65 AND OVER

Aybüke Yiğittürk[1], Ceydanur Sarı[1], Burakcan Bıçakçı[1], Fatima Bayer[1], Yusuf Başpınar[1], Selin Alaybeyoğlu[1], Turan Alper Demir[1], Mert Çiftdemir[2]

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ABSTRACT

Aims: The aim of this study was to evaluate the relationship between hip fractures and pressure ulcers in patients aged 65 and over, and to determine the risk factors associated with pressure ulcer development.

Methods: Patients aged 65 and over treated for femur neck fracture and pertrochanteric femur fracture at Trakya University School of Medicine, Department of Orthopedics between January 2021 and December 2022 were included in this retrospective, cross-sectional study. Patients' age, gender, type of fracture, date of fracture, date of hospital admission, surgery date, comorbidities, medications, use of anti-decubitus mattresses, body mass index, location of pressure ulcers, grade, and Pressure Ulcer Scale for Healing scores according to the National Pressure Ulcer Advisory Panel were obtained.

Results: Pressure ulcers developed in 21 (7.6%) of the 276 patients, and multiple pressure ulcers developed in 6 (2.2%) patients. The mean preoperative waiting time was 9.1 days for patients who developed pressure ulcers. No significant relationship was found between gender, presence of comorbidities, and pressure ulcer development, including multiple ulcers. A significant relationship was found between the type of fracture and pressure ulcer development.

Conclusion: Etiology, pathophysiology, risk factors, and preventive measures against the development of pressure ulcers are well described. This study emphasizes the relationship between the type of hip fracture and the development of pressure ulcers.

Keywords: Femur neck fracture, hip fractures, pressure ulcer

INTRODUCTION

Pressure ulcers, or decubitus ulcers, are injuries to the skin or soft tissue caused by prolonged pressure on specific areas of the body. These ulcers most commonly occur in the bony regions of the body, such as the ischium, greater trochanter, sacrum, heel, lateral malleolus, and occiput (1). They often cause pain, prolonged hospital stays, increased healthcare costs, and lead to serious complications such as osteomyelitis, septic arthritis, gangrene, and sepsis (2). Given that deep tissue injuries take an average of 23 days to fully heal and 40% of pressure ulcers never heal completely, identifying and preventing the causes of these ulcers is crucial for avoiding complications in elderly patients (3).

With the increasing elderly population worldwide, the prevalence of hip fractures is increasing, especially in higher-income countries (4). Hip fractures are a serious threat to elderly patients due to reduced quality of life, dependency, disability, and mortality they cause (2, 5). The prevalence of pressure ulcers among patients suffering from hip fractures has been previously reported to be 36.1%, which highlights the need for close follow-up and meticulous wound care for such patients (2).

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Considering that 86% of all hip fractures occur in patients 65 years or older and the one-year mortality risk for patients who develop pressure ulcers is 2.5 times that of patients who do not, determining the risk of pressure ulcer development is important in preventing the occurrence of such complications (6, 7).

The aim of this study was to evaluate the relationship between hip fractures and pressure ulcers in patients 65 years and over and to determine the risk factors associated with pressure ulcer development.

MATERIAL AND METHODS

This retrospective, cross-sectional study was approved by the Ethical Committee of Trakya University School of Medicine (protocol code: TUTF-GOBAEK 2023/251, approval number: 11/02, date: 03.07.2023). Written consent was obtained from all 276 patients. Patients 65 years and over treated for femur neck fracture (S72.0) and pertrochanteric femur fracture (S72.1) at Trakya University School of Medicine, Department of Orthopedics between January 2021 and December 2022 were included in the study. Patients' age, gender, type of fracture, date of fracture, date of hospital admission, surgery date, comorbidities, medications, use of anti-decubitus mattresses, body mass index (BMI), location of pressure ulcers, grade, and Pressure Ulcer Scale for Healing (PUSH) scores according to the 2019 International Pressure Ulcer/Injury Guideline by the National Pressure Ulcer Advisory Panel (NPUAP) were obtained from the unit of pressure ulcer nursing follow-up forms and patient records (8). The evaluation scale from the 2019 NPUAP guideline was used to assess pressure ulcers (9).

Statistical Analysis

Data were analyzed using R version 4.2.1 (R Foundation for Statistical Computing, Vienna, Austria) software. Nominal variables were expressed as total count and percentage. Age was expressed as mean ± standard deviation. Demographic variables were evaluated with descriptive statistical tests. Chi-square test was used to evaluate the relationship between categorical variables. For continuous variables, Student's t-test was applied in cases of normal distribution, and Mann-Whitney U test was used in non-parametric distribution. Logistic regression analysis was performed to assess the comorbidities causing pressure ulcers. A p-value threshold of <0.05 was set for statistical significance.

RESULTS

A total of 276 patients were included in our study, with a mean age of 80±7.538 (65-98) years. Of these, 85 (30.8%) were male, and 191 (69.2%) were female. The mean time from fracture to surgery was 8±6.223 (0-64) days. All patients included in the study had at least one comorbidity. Patients used a mean of three different medications for their comorbidities, and polypharmacy (use of at least five medications) was present in 61 (22.1%) patients. The mean BMI was 26.71±4.44 (17-35 kg/m^2). All patients used anti-decubitus mattresses. The number of patients with femur neck fractures was 133 (48.2%), and 143 (51.81%) patients had trochanteric fractures.

Pressure ulcers developed in 21 (7.6%) of the 276 patients, and multiple pressure ulcers developed in six (2.17%) patients. A total of 34 pressure ulcers were recorded. Five (23.8%) patients who developed pressure ulcers were male, and 16 (76.19%) were female. Pressure ulcers developed most commonly in the coccyx (n=8, 22.22%). Pressure ulcer locations are shown in Table 1 and Figure 1. The median grade of pressure ulcers was grade 2 (Table 2). The mean preoperative waiting time was 9.1±4.8 (3-24) days for patients who developed pressure ulcers. The mean PUSH score was calculated as 6.9±2.68 (2-10).

Statistical analysis revealed no significant relationship between pressure ulcer development and BMI (p=0.195), multiple pressure ulcer development and BMI (p=0.49), age (p=0.344), and the number of medications used (p=0.532). Additionally, no significant relationship was found between gender, presence of comorbidities, and pressure ulcer development, including multiple ulcers (p>0.05).

Logistic regression analysis did not reveal a significant relationship between comorbidities and pressure ulcer development (p>0.05). Preoperative waiting duration was not significantly related to pressure ulcer development (p=0.219). However, a significant relationship was found between the type of fracture and pressure ulcer development (p=0.008). 16 (76.2%) patients with pressure ulcers had a femur neck fracture, and five (23.8%) patients had a trochanteric fracture. No significant relationship was found between fracture type and the development of multiple pressure ulcers (p=0.627). No significant relationship was found between preoperative waiting duration and the grade of the pressure ulcer (p=0.483). Additionally, no significant relationship was observed between BMI and the grade of the pressure ulcer (p=0.204).

Table 1: Locations of pressure ulcers.

Location of Ulcers	Number of Ulcers (n, %)
Left Scapula (5)	1 (2.77%)
Right Scapula (4)	1 (2.77%)
Left Elbow (7)	1 (2.77%)
Spine (8)	1 (2.77%)
Sacrum (9)	3 (8.33%)
Coccyx (10)	8 (22.22%)
Left Trochanter (14)	1 (2.77%)
Right Glute (15)	8 (22.22%)
Left Glute (16)	2 (5.55%)
Right Knee (19)	1 (2.77%)
Left Knee (20)	1 (2.77%)
Left Leg (22)	3 (8.33%)
Left Lateral Malleolus (24)	1 (2.77%)
Right Heel (25)	2 (5.55%)
Left Heel (26)	2 (5.55%)
Total:	**36 (100%)**

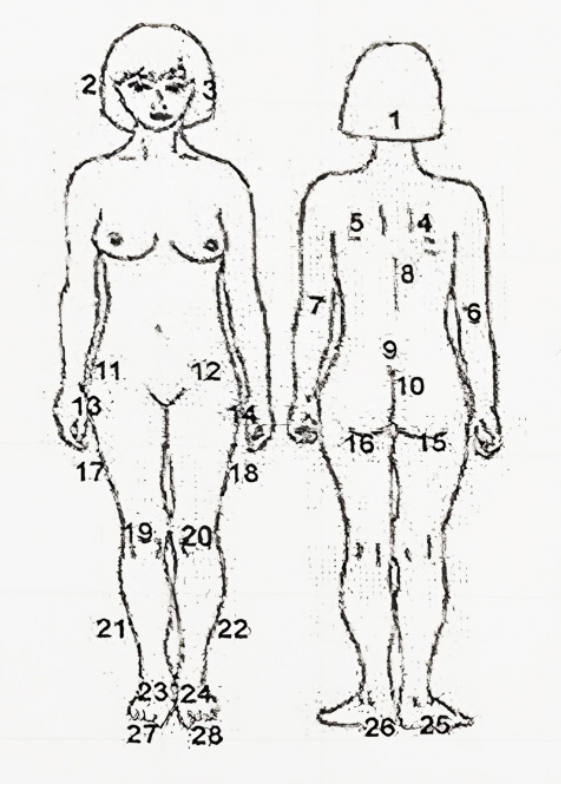

Figure 1: Pressure ulcer location diagram.

Table 2: Grades of pressure ulcers.

Grade	Number (n, %)
1	4 (11.11%)
2	16 (44.44%)
3	11 (30.55%)
4	5 (13.88%)
Total:	**36 (100%)**

DISCUSSION

The rate of pressure ulcer development in patients over 65 years of age with hip fractures has been reported as 3.8% by Haleem et al. (10), 5.15% by Galivanche et al. (11), 36.1% by Baumgarten et al. (2), and as high as 53% by Houwing et al. (12), while in our study this rate was found to be 7.6%. The variability of this rate may have been related to previously non-standardized definitions of pressure ulcers or differences in wound care practices. It has been stated by Galivanche et al. (11) that the development of pressure ulcers due to hip fractures is more common in female patients with a rate of 63.24%, and our study is in line with this statement with a rate of 76.19%. However, Tzen et al. (6) reported a predominance of male patients in their study examining the clinical risk factors of perioperative pressure ulcers.

Preoperative waiting time and consequent immobilization have been highlighted as important factors for the development of pressure ulcers. Haleem et al. (10) underline the timeframe between the fracture and surgery as the most important risk factor for pressure ulcers, reporting a mean delay of 93.9 hours in their study. The mean preoperative waiting time in our study was nine days for patients who developed pressure ulcers and eight days for those who did not. While this duration is approximately twice as long as the aforementioned time frame, the reason surgical delay was not a significant risk factor in our study may have been the implementation of preventive measures such as using anti-decubitus mattresses and changing the position of the patients frequently until surgery. Houwing et al. (12) on the other hand, highlighted the effects of prolonged surgery on the development of pressure ulcers. While our study did not investigate this parameter, it is worth noting that prolonged immobilization of any kind may pose a risk of pressure ulcer development.

We have found the type of fracture to be a significant risk factor for pressure ulcer development. While previous studies have compared the pressure ulcer development following fractures in various parts of the body, our study focused on hip fractures alone (13). Chiari et al. (5) reported that 56.6% of patients suffering from hip fractures who developed pressure ulcers had femur neck fractures. In our study, the number of patients with either type of fracture was distributed evenly. However, while our findings also suggest the majority of the patients with pressure ulcers had femur neck fractures as well, the ratio we report (76.2%) appears much higher than the aforementioned study. Although studies present in the literature do not focus on the effect of the type of hip fracture on pressure ulcer development and possible underlying reasons for this potential correlation, differences in treatment procedures might shed light on this issue. Generally, the mainstay of treatment for femur neck fractures in elderly patients is total hip arthroplasty (THA) while proximal femoral nailing (PFN), a closed intramedullary fixation method, is the frequent choice of treatment for pertrochanteric femur fractures in the same age group (14). Compared to PFN, THA is a more complex surgical procedure with more blood loss (15). On the other hand, PFN includes a smaller incision, less wound-related complications and patients in this treatment group show better results of hip joint function regarding Harris Hip Score which might be the reason that pertrochanteric femur fractures are less likely to lead to pressure ulcer development in comparison to femur neck fractures (14).

The most common sites of pressure ulcers in our study were the coccyx (22.22%) and right gluteal area (22.22%), accounting for approximately half of all pressure ulcers. Haleem et al. (10) reported that the sacral area was the most commonly affected area, accounting for more than half the cases, while these ulcers made up only 8.33% of all pressure ulcers in our study. Similarly, Baumgarten et al. (2) reported the sacrum and posterior iliac crest as the most common sites of pressure ulcers, with a rate of 47.3%. Reporting a rate of 63.9%, Chiari et al. (5) also showed

that the sacral area was the most commonly affected body region.

The majority of the pressure ulcers in our study were grade 2. Baumgarten et al. (2) have also reported grade 2 ulcers as the most common, albeit with a much higher rate (88.4%) than our study (44.44%). Lindholm et al. (13), on the other hand, reported an 87% rate of grade 1 ulcers in their study. More than 70% of all pressure ulcers developing in adult patients are superficial injuries such as grades 1 and 2, which are easier to treat. Lower-grade pressure ulcers are also less likely to cause systemic complications and are preventable (16).

BMI was not a significant risk factor for pressure ulcer development in our study, as previously reported (11, 13). Despite these findings, another study reported that obese patients had a significantly lower risk of developing pressure ulcers compared to normal-weight patients, although extreme obesity (BMI greater than 40 kg/m^2) was associated with increased risk (17). There were no patients with a BMI greater than 35 kg/m^2 included in our study, therefore, there may not have been a significantly increased risk. While age was not a significant risk factor in our study, several studies show that the risk of pressure ulcers increases with age (17, 18). It is worth noting that poor skin elasticity, weakened immune system, and lowered mobility can easily increase the pressure on the area and cause damage (18).

Study Limitations

Our limitations were the retrospective and single-center nature of this study. A larger sample size with a greater variety of patients may shed light on the results that are not in line with the current literature, such as the prevalence of pressure ulcers in hip fracture patients, sites most affected by ulcers, and length of preoperative waiting time. The length of surgery may appear as a potential risk factor, while some authors have reported otherwise. Nonetheless, the well-defined pathophysiology of the development of pressure ulcers provides clinicians with many strategies to prevent them.

CONCLUSION

Hip fractures are serious injuries for the elderly due to the morbidity and mortality they cause. Pressure ulcers are common complications of hip fractures and are challenging phenomena for patients and healthcare providers. Being aware of the risk factors associated with such complications and implementing the necessary preventive measures are important.

Footnote

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Ethics Committee Approval: *This retrospective, cross-sectional study was approved by the Ethical Committee of Trakya University School of Medicine (protocol code: TUTF-GOBAEK 2023/251, approval number: 11/02, date: 03.07.2023).*

Informed Consent: *Written consent was obtained from all 276 patients.*

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

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CASE REPORT

CHILAIDITI'S SIGN OBSERVED WITH CHRONIC LYMPHOCYTIC LEUKEMIA: A CASE REPORT

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ABSTRACT

Chilaiditi's sign, defined as the interposition of the colon's hepatic flexure in front of the liver, is a rare condition. Although it is often asymptomatic, Chilaiditi's sign can also present with symptoms and be associated with serious complications. A 65-year-old male patient diagnosed with chronic lymphocytic leukemia, considered as Rai stage 2, was admitted for observation and treatment arrangements following complaints of coughing. The air levels observed in the colonic loops between the liver and diaphragm on the posteroanterior chest radiographs were clinically and radiologically evaluated and presented as Chilaiditi's sign.

Keywords: Chilaiditi's sign, chronic lymphocytic leukemia, radiology

INTRODUCTION

Chilaiditi's sign is characterized by the anomalous positioning of the right colon between the liver and the right hemidiaphragm (1). Chilaiditi's syndrome encompasses characteristic radiological findings along with symptoms such as nausea, vomiting, anorexia, constipation, and epigastric pain (2).

While often asymptomatic and incidentally discovered, the Chilaiditi's sign can be misinterpreted as conditions such as diaphragmatic hernia, subphrenic abscess, or pneumoperitoneum due to its rarity, despite the presence of characteristic air under the unchanged diaphragm resembling haustra (1). Complications include perforation, colonic volvulus, internal hernia, subphrenic appendicitis, and acute intestinal obstruction (3, 4).

Management depends on the symptomatology. Asymptomatic cases generally require no treatment, whereas mild to moderate symptoms typically respond to conservative measures, such as cessation of oral intake, intravenous fluids, and bowel decompression. Persistent symptoms or complications such as ischemia or perforation necessitate surgical intervention (5, 6).

This case report highlights the potential for the Chilaiditi's sign to present with non-specific symptoms and to mimic more serious conditions.

CASE REPORT

A 65-year-old male with untreated chronic lymphocytic leukemia (CLL), classified as stage 2 according to the Rai staging system, presented for advanced treatment (7). His medical history includes a prior right inguinal hernia repair and current use of atorvastatin 10 mg/day. Family history is notable for Alzheimer's disease in siblings and hypertension in a brother.

On examination, the patient appeared to be well-oriented and cooperative. Physical findings were unremarkable, except for

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splenomegaly that was palpable 6 cm below the costal margin. Respiratory examination revealed equally reduced aeration in both hemithoraces without adventitious sounds. There was no orthopnea.

Laboratory tests were performed (Table 1). The urinalysis was normal. The peripheral blood smear showed mature lymphocytes and basket cells without atypical findings.

A pre-admission chest X-ray revealed elevation of the right hemidiaphragm with air between the right hemidiaphragm and liver (Figure 1).

The presence of colonic haustral patterns was supported by thoracic computed tomography (CT) findings (Figure 2).

Thoracic CT confirmed multiple parenchymal nodules with air bronchograms in the lower lobes of the lung and anterior positioning of the liver hepatic flexure.

During the hospitalization period, the patient remained asymptomatic for tumor lysis syndrome, with appropriate nutritional and treatment guidance provided in case symptoms developed.

DISCUSSION

Anomalous placement of the colon at the hepatic flexure, though rare, can range from asymptomatic to symptomatic with potential for serious complications, as demonstrated in this case (1). Diagnosis in suspected cases, as illustrated here, can be straightforwardly confirmed by chest X-ray showing gas patterns crossing colonic haustral bands (3). CT serves as a valuable tool for supportive and differential diagnosis. Management focuses on symptomatic relief with close monitoring for potential complications (4). Given the absence of a documented association between CLL and Chilaiditi's sign in literature, this case underscores the importance of recognizing and managing this condition independently.

Table 1: Laboratory test results of the patient.

Hemoglobin	7.1 g/dL (12-16 g/dL)
Hematocrit	23.8% (40-54%)
Leukocytes	207.02x10^3/µL (4-10x10^3/µL)
Platelets	140x10^3/µL (100-450x10^3/µL)
Blood glucose	141 mg/dL (70-105 mg/dL)
Sodium	140 mEq/L (136-145 mEq/L)
Calcium	7.5 mg/dL (8.4-10.2 mg/dL)
Potassium	4.2 mEq/L (3.5-5.1 mEq/L)
Phosphorus	3.7 mg/dL (2.3-4.7 mg/dL)
Aspartate transaminase	21 IU/L (5-34 IU/L)
Alanine transaminase	22 IU/L (<55)
Uric acid	5.8 mg/dL (2.6-6.0 mg/dL)
Creatinine	1.26 mg/dL (0.72-1.25 mg/dL)
Alkaline phosphatase	144 IU/L (40-150 IU/L)
Total protein	56.8 g/dL (64-83 g/dL)
Albumin	35.9 g/dL (35-50 g/dL)
Blood urea nitrogen	19.16 mg/dL (6-20 mg/dL)

IU: International unit

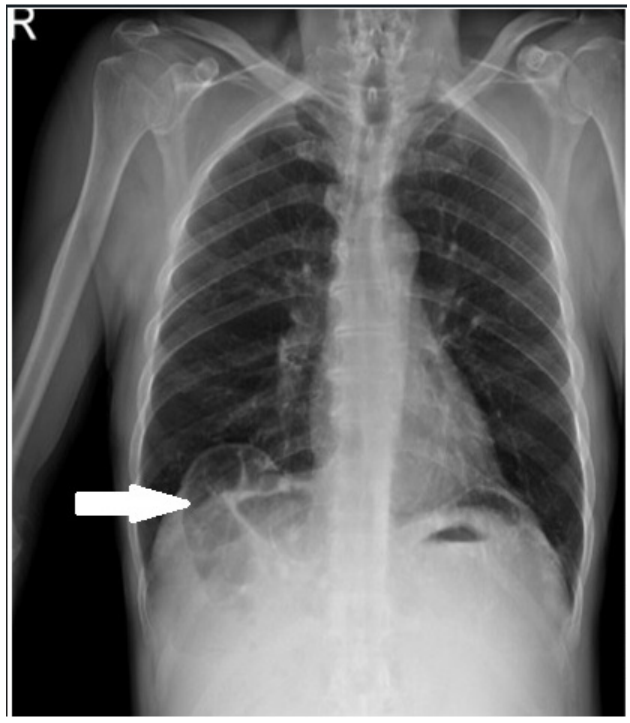

Figure 1: Chest X-ray, revealing the elevation of the right hemidiaphragm with air between the right hemidiaphragm and the liver (white arrow).

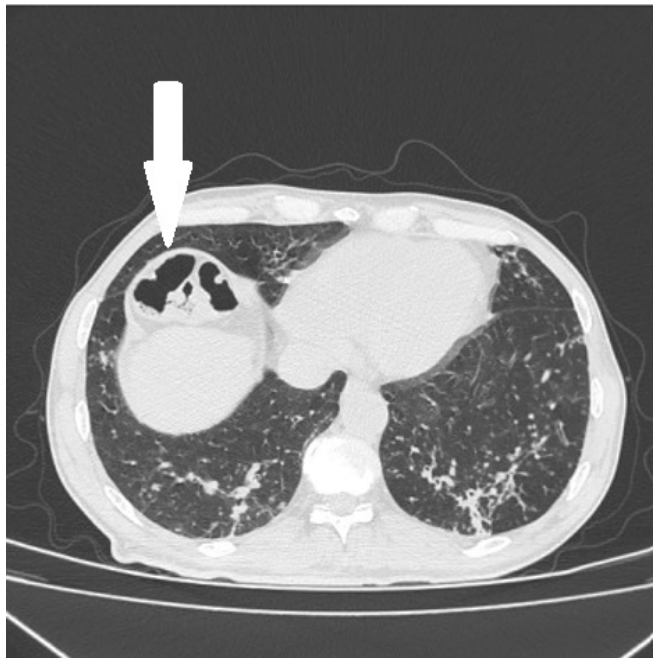

Figure 2: Thoracic CT showing the colonic haustral pattern (white arrow), multiple parenchymal nodules with air bronchograms in the lower lung lobes and anterior positioning of the liver hepatic flexure.
CT: Computed tomography

Footnote

Ethics Committee Approval: *N/A*

Informed Consent: *Informed consent was obtained from the patient.*

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

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CASE REPORT

GIANT DESMOID TUMOR LOCALIZED ON THE ABDOMINAL WALL: A CASE REPORT

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ABSTRACT

Desmoid tumors develop from musculoaponeurotic tissues. They are locally aggressive, but they cannot metastasize. In this case report, we evaluated a patient with a desmoid tumor and the approach to the tumor. A 28-year-old female patient presented with an abdominal mass. She underwent a partial nephrectomy operation on the same side as the mass. Computed tomography revealed a 65x70 mm solid mass on the left abdominal wall. The desmoid tumor was diagnosed by a tru-cut biopsy, the patient was operated on, and the mass was removed. No complications were observed.

Desmoid tumors can be classified as extra-abdominal, abdominal, and intra-abdominal according to their location and may cause different symptoms according to their localization. Treatment options should be determined according to the increase in the size of the mass and the symptoms in the patient.

Keywords: Abdominal wall, desmoid, fibromatosis, rectus abdominis

INTRODUCTION

Desmoid tumors are benign but locally aggressive mesenchymal tumors that develop from musculoaponeurotic tissues, usually arising from the abdominal wall muscles but also frequently seen in the extremities and abdominal mesentery (1, 2). They are also known as aggressive fibromatosis, deep fibromatosis, musculoaponeurotic fibromatosis, and desmoid fibromatosis. These tumors have a solid, smooth, and mobile structure. They are usually adherent to the surrounding tissues and do not affect the skin on them (3, 4).

Those located intra-abdominally may typically remain asymptomatic until they cause signs of visceral organ compression (2). Such tumors are rarely seen in the literature, and the treatment approach for giant desmoid tumors exceeding 15 cm is controversial. Although their etiology is not exactly known, they have been associated with connective tissue development disorders, familial adenomatous polyposis (FAP) (also known as Gardner's syndrome), abdominal surgery and trauma, pregnancy, and estrogen therapy (3, 4). Although they do not have metastatic potential, desmoid tumors have a high tendency to recur, leading to significant morbidity and mortality (3). In this study, we report a rare case of a desmoid tumor of more than 15 cm located in the abdominal wall.

CASE REPORT

A 28-year-old woman, who was diagnosed with livedoid vasculitis five years ago and had a history of left kidney partial nephrectomy operation due to kidney stones, was consulted by general surgery with the complaint of a palpable hard mass in the upper quadrant of the left abdomen that started about one month ago when she came to the dermatology service for a follow-up visit.

The physical examination of the patient, whose biochemistry analysis and blood values were normal, revealed no other pathological findings except for a painless, palpable, and hard mass on the left anterior abdominal wall. A contrast-enhanced computed tomography (CT) scan of the patient revealed a solid mass of 65x70 mm in size, distorting the fascia into the intra-

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abdominal area on the left anterior abdominal wall, lateral to the rectus muscle and subcutaneous fascia at the level of the iliac wing, caudal to the umbilicus, and increasing heterogeneity around it (Figure 1). However, no finding in favor of metastasis was detected. Four months later, a follow-up magnetic resonance imaging (MRI) showed a mass lesion with T1A hypointense and T2A hyperintense signal properties at the level of the umbilicus on the left side with a size of 115x86 mm (Figure 2). To have detailed information about the cytological properties of the mass, an ultrasonography (USG)-guided tru-cut biopsy was performed in the interventional radiology clinic, and the sample was sent to the pathology laboratory for examination. In the macroscopy sample, four off-white-colored biopsy materials measuring 0.1-1.4 cm were detected. In sample microscopy, the tissues observed in the examined sections were completely tumoral.

The pathology report confirmed that the tissue did not originate from a previous surgical incision scar.

Spindle cells without atypia were arranged as large fascicles or large swirls. Mitosis, atypical mitosis, and necrosis were not observed, and stromal thin collagen structuring was observed in some places. The immunohistochemical markers applied detected a Ki-67 index of 1-2%, suggesting a slow tumor progression. Additionally, CD34 negativity ruled out inflammatory myofibroblastic abdominal tumors, while s100 and SOX10 negativity indicated that malignant melanoma could be excluded from the diagnosis.

Histopathologic examination of the mass, which was mostly well-circumscribed, was evaluated as desmoid fibromatosis.

Considering the findings, surgical resection of the mass was planned. In the laparotomy performed from the level of the left paramedian incision under the umbilicus, the skin and subcutaneous tissues were passed through and the mass invading the fascia from the left lower quadrant (Figure 3), measuring 19x13x11 cm, localized to the anterior abdominal wall, was completely excised and sent to the laboratory for pathological examination (Figure 4). The defect was repaired with a mesh patch.

The operation was completed by placing two Hemovac drains in the excision lodge. The patient had no postoperative complications and was discharged on the third day with a long-term follow-up plan. Histopathological examination reported

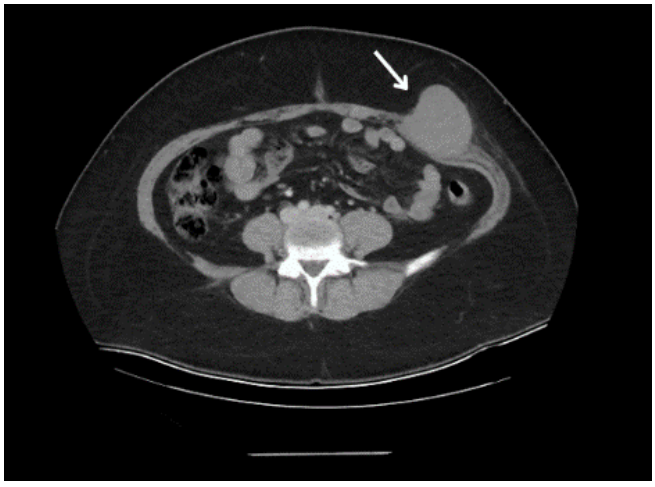

Figure 1: Contrast-enhanced computed tomography of the mass on admission (arrow).

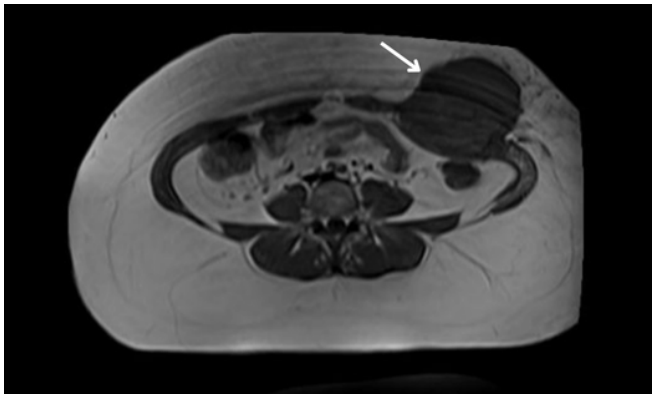

Figure 2: Follow-up magnetic resonance imaging of the mass (arrow).

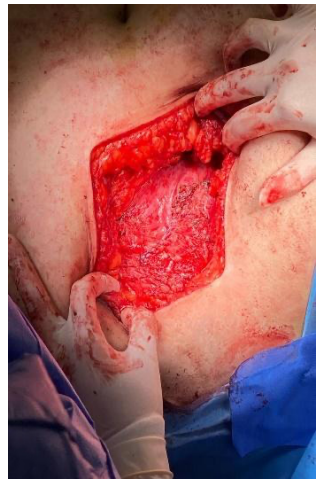

Figure 3: Laparotomy performed during the operation.

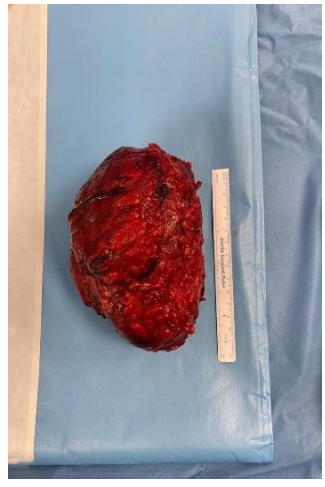

Figure 4: Excised tumoral mass measuring 19x13x11 cm.

that the mass was highly compatible with desmoid fibromatosis, and no recurrence was found in the three-month follow-up of the patient (Figure 5).

DISCUSSION

Desmoid tumors are clonal fibroblastic proliferations arising in deep soft tissues and characterized by infiltrative growth and a tendency for local recurrence but not metastasis (4). Although not malignant, they may cause morbidity and mortality by local invasion (5). It was first described by McFarlane in 1832 and named "desmoid tumor" by Mueller in 1838 (6). They constitute 3% of soft tissue tumors and 0.03% of all tumors. The annual incidence in the general population is 2-4/1000000 (7). It usually occurs in the age range of 20-44 years and is more common in women than in men (8). Our patient was a 28-year-old woman. Desmoid tumors have a high tendency to occur especially in surgical scar areas after trauma, cesarean sections, and previous surgery (3, 9). It is also closely associated with FAP and Gardner syndromes (4, 7). The incidence of desmoid tumors ranging from 1.6% to 17.2% after colectomy operation performed in the treatment of FAP and the fact that desmoid tumors constitute 12% of the causes of death related to FAP indicate the risk and importance of the development of desmoid tumors in patients with FAP (10). Estrogen has also been suggested to be one of the etiological factors in the development of desmoid tumors. Despite evidence indicating estrogen receptor expression in desmoid tumors, an elevated risk of desmoid tumor during and after pregnancy, and higher rates of desmoid tumor development in women of childbearing age and women using estrogen-containing oral contraceptives, the role of hormonal effect is not fully understood due to the limited studies in the literature (9). Our patient had a history of a surgical operation on the same side as the tumor, and since our patient had a diagnosis of livedoid vasculitis, a systemic disease, screening tests for the presence of an accompanying syndromic disease were planned.

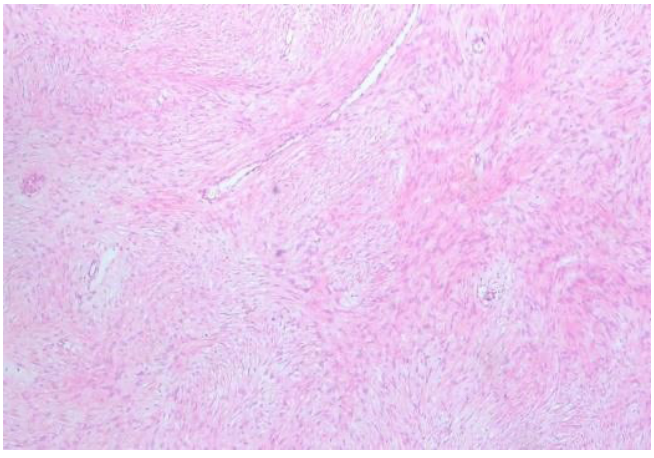

Figure 5: Tumoral lesion consisting of spindle cells without atypia (hematoxylin and eosin at x100 magnification).

Desmoid tumors can occur anywhere in the fascia but are particularly common in the muscle (11). The World Health Organization classification recognizes three different subtypes of desmoid tumors: extra-abdominal, abdominal, and intra-abdominal tumors. The first two of these occur mostly sporadically, whereas the last one has an association with FAP (8). The most common subtype is the abdominal type, with an incidence of 50% (11).

Ultrasonography, CT, and MRI play key roles in the diagnosis, follow-up, and evaluation of recurrence. On USG, it is observed as an infiltrative solid mass with variable echogenicity (12). On CT, myxoid parts of the tumor are seen as a hypodense mass compared to muscle tissue, while collagen and fibrotic parts are seen as an isodense or hyperdense mass compared to muscle tissue. On MRI, it is hypointense or isointense compared to muscles on T1-weighted images and hyperintense on T2-weighted images (3, 13). Imaging is also very crucial in the evaluation of the responses to non-surgical treatment options. Especially after systemic treatment, a decrease in CT intensity, a decrease in T2 signal intensity, and a decrease in tumor contrast enhancement are considered signs of response to treatment, even if no reduction in tumor size is observed (14). In our patient, the location of the mass and its relationship with the surrounding tissues were evaluated by CT and MRI. A tru-cut biopsy performed with USG provided information about the histopathological structure of the mass.

Surgical operations were traditionally preferred in the treatment of desmoid tumors. However, considering the general complications of surgery (such as infection, hemorrhage, and thrombosis) and the local recurrence rate, active surveillance (CT or MRI every 3-6 months), which is a more conservative approach, has started to be preferred (15). A "wait and see" approach may be preferred in newly diagnosed and asymptomatic patients. Surgical mass resection should be preferred as a treatment option in patients who refuse observation, have increased mass size, or are symptomatic, and care should be taken to perform resection with negative surgical margins in case of recurrence (1, 15).

Nowadays, cryoablation, which is a minimally invasive method in the treatment of progressive desmoid tumors, has a lower morbidity rate compared to surgery. In elderly patients with small and medium-sized tumors, the probability of controlling the disease with cryoablation, is higher. It has been reported that the risk of local recurrence is higher in patients with tumor size >5 cm and in young patients (16). We did not prefer this treatment option in our patient because the tumor size was 11.5 cm on imaging.

Radiotherapy should also be considered as a treatment option for patients who are not suitable for surgery or if recurrence is observed (15). In systemic treatment, hormonal therapy, non-steroidal anti-inflammatory drugs, chemotherapy, and targeted therapy can be used to ensure

disease stability (1, 17). In our patient, we performed surgical total mass resection and fascia repair procedures due to the rapid increase in the size of the mass on intermittent imaging and the symptomatic state of the mass in the patient. The high recurrence rate of 35% after surgery has made the management of recurrent patients an important research topic (18). The role of surgery in the treatment of recurrent desmoid tumors is controversial. In the studies analyzed, recurrence was observed in 34% after surgery for recurrent desmoid tumors (19). In non-symptomatic and non-progressive desmoid tumors, spontaneous regression and stabilization can be achieved in 50-88% with active follow-up (20). Syndromic diseases, which are etiological risk factors, should be kept in mind in cases of recurrence.

To conclude, desmoid tumors should be kept in mind in abdominal palpable masses, especially in female patients in the fertile period. Long-term follow-up of patients are recommended, considering the possibility of local recurrence.

Footnote

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CASE REPORT

FIVE YEARS FOLLOW-UP OF CONJUNCTIVAL SQUAMOUS CELL CARCINOMA TREATED WITH ADJUNCTIVE INTERFERON ALPHA-2b

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ABSTRACT

Conjunctival squamous cell carcinoma mostly arises from the limbal stem cells of the eye. Some of the risk factors for conjunctival squamous cell carcinoma are male gender, advanced age, ultraviolet radiation, and human papillomavirus. Squamous cell carcinoma can manifest with vision loss, ocular redness, mass-feeling, and pain. We aim to present a case of conjunctival squamous cell carcinoma successfully treated with surgical excision, cryotherapy, keratectomy, partial scleral excision, and topical interferon alpha-2b. An 81-year-old male patient presented to the Trakya University Department of Ophthalmology complaining of redness and pain in his left eye. Our patient was diagnosed with squamous cell carcinoma when the pathological examination and clinical picture were reviewed together. The lesion was completely excised with the no-touch technique, and no complications were observed. Pathology specimen showed tumor-free surgical margins. Even though the surgical margins were tumor-free, due to clinical suspicion for recurrence the patient was prescribed topical interferon alpha-2b drops post-operatively and had no recurrence in 5 years of follow-up. In conclusion, although the gold standard treatment in ocular squamous cell neoplasia is still surgical excision with cryogenic therapy, topical chemotherapeutic agents can reveal a good response in the treatment of conjunctival squamous cell carcinoma.

Keywords: Conjunctival neoplasm, interferon alpha, squamous cell carcinoma

INTRODUCTION

Ocular squamous cell neoplasia (OSSN) comprises a wide spectrum of ocular surface tumors, ranging from conjunctival intraepithelial neoplasia (CIN) to invasive squamous cell carcinoma (SCC) (1). SCC due to OSSN is the most common malignancy of the conjunctiva, and OSSN is the third most common ocular tumor in the older population (1, 2). OSSN can be classified as benign, pre-invasive carcinoma in situ, or invasive SCC. These tumors predominantly occur in white male individuals of older age with a mean age of occurrence of 56 years. Populations living at latitudes closer to the equator than 30° are also at higher risk (1).

The etiology of OSSN is categorized into four important groups: increased solar ultraviolet (UV) radiation exposure, human papillomavirus (HPV), human immunodeficiency virus (HIV), and conditions predisposing the limbal transition zone to dysplasia (1-3). The direct role of HPV is still unclear in the pathogenesis of OSSN, but it can be a cofactor in susceptible hosts (2, 4, 5). Other risk factors associated with OSSN are history of skin cancer, being outdoors for more than half of the first 6 years of life, and phenotypic features such as fair skin, pale irides, and a tendency to get sunburnt when exposed to sunlight (6).

Ocular squamous cell neoplasia tends to emerge from the corneoconjunctival transition zone known as the limbus (5). The most common location is the interpalpebral area involving the bulbar conjunctiva and cornea. Lesions involving only the cornea or conjunctiva are less common and may indicate an aggressive clinical course (1, 4). Macroscopically, lesions can be leukoplakic, gelatinous, papilliform, or nodular. Occasionally, these may coexist (1, 2, 4).

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Most cases of OSSN present with redness, a foreign body sensation, and irritation in the eye; impaired vision on presentation is less common (1, 2). Patients can report a lump on the eye, causing them discomfort and pain. Examination of the lump may exhibit an elevated or flat, characteristic, and the lesion can be discolored from pearly gray to reddish gray, depending on the vascularity of the tumor (1, 2, 4).

Ocular squamous cell neoplasia can be diagnosed accurately based on its clinical features. Imaging methods like anterior segment optical coherence tomography in cases where medical treatment is preferred over surgical excision (7). The degree of involvement of dysplastic epithelium can determine the classification of preinvasive OSSN lesions as mild (CIN grade 1), moderate (CIN grade 2), and severe (CIN grade 3). Invasive OSSN is characterized by a breach of the basal epithelial basement membrane and invasion of the substantia propria (1, 3, 4).

Surgical excision with the "no-touch" technique and additional cryotherapy have been the mainstays of the initial treatment for OSSN (8). However, extensive surgical excision can lead to limbal stem cell deficiency, and excessive cryotherapy can cause iritis, ocular hypotony, and corneal hemorrhage (5, 8). These adverse effects paved the way for alternative pharmacological therapies. The three most effective compounds utilized as neoadjuvants and adjuvants include mitomycin C (MMC), 5-fluorouracil (5-FU), and interferon alpha-2b (IFN-α2b) (8). Although a combination of excision and topical treatment is often very effective, there are many adverse effects associated with these antimetabolites. The main complication of 5-FU is transient conjunctival hyperemia (4, 8). The major adverse effects of topical MMC are pain and corneal epitheliopathy. Its prolonged use can damage the ocular surface, cause allergic reactions and punctal stenosis (3, 4, 8). 5-FU can also cause corneal toxicity, but studies report the pain is not as severe as MMC (9). Complications of both 5-FU and MMC can be alleviated to a certain degree by using concurrent topical steroids and lubricating drops (8).

IFN-α2b is an immunomodulator with antiviral and antineoplastic properties. It can be administered topically or subconjunctivally. Compared to other antimetabolite agents, IFN-α2b is well-tolerated and does not cause ocular surface irritation (4, 8). However, subconjunctival delivery of IFN-α2b can cause systemic adverse effects such as myalgia and fever. As another disadvantage, treatment duration with IFN-α2b is longer than other treatment options for OSSN (4).

Another point to consider on immunomodulator drugs is the cost. 5-FU is notably affordable at 37 US dollars (USD) per cycle, with side effects that are generally manageable. On the other hand, IFN-α2b comes with a higher price tag in the US at 500 USD per month with a 95% success rate. MMC, costs roughly 300 USD per bottle (8). One drawback of topical IFN-α2b is the need for refrigeration, coupled with high compounding costs (approximately 600 USD for a month's supply in the US), though it can be much cheaper in Türkiye since in the US, patients typically bear the cost for compounded medications (10).

As a general approach surgical excision of OSSN with or without an additional cryotherapy process is still commonly performed; additionally, topical chemotherapy or immunotherapy are other popular monotherapy options (2-4, 8).

CASE REPORT

An 81-year-old male patient presented to the outpatient clinic with redness, increased lacrimation, and pain in his left eye for the past 3 months and was referred to Trakya University Hospital with a lesional finding on his left eye in the corneoscleral, limbal region (Figure 1). His physical exam showed ocular hyperemia, epiphora, and discomfort in his left eye. Biomicroscopic examination revealed corneoscleral invasion of the lesion approximately at the 5-7 o'clock position in his left eye, a large feeding vessel through the lesion, and conjunctival hyperemia (Figure 2). The patient showed no lymphadenopathy. Intraocular pressure was 13 mmHg in his right eye and 12 mmHg in his left, and fundus examination was normal in both eyes.

An excisional biopsy was performed. The pathology report described prominent atypical epithelium and stated a strong likelihood of invasive carcinoma at the lower limbus 5-7

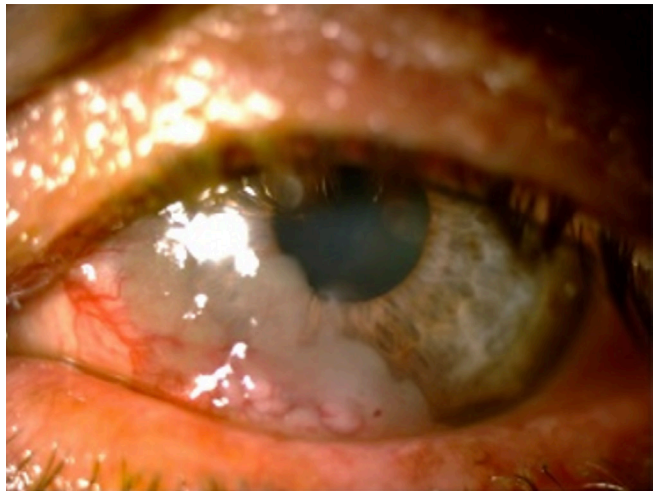

Figure 1: Left eye on presentation to clinic, corneoscleral lesion on limbus.

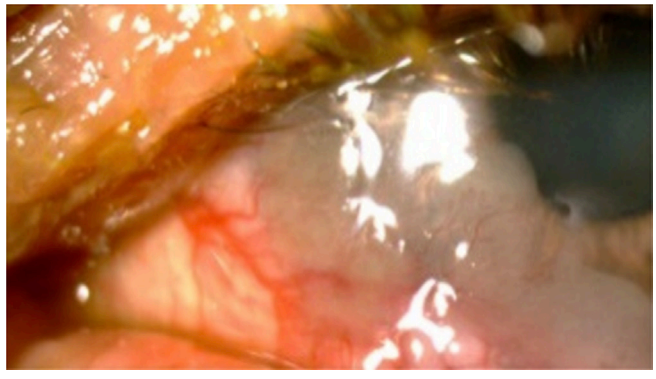

Figure 2: Large feeding vessel through the lesion, and conjunctival hyperemia.

o'clock position (Figure 3). In immunohistochemical staining, the surface epithelium was positive for Ki-67, p63, S-100, and CK-5 markers, revealing that the tumor is an invasive SCC, compatible with the patient's clinical picture.

During surgery under local anesthesia, the "no-touch" technique was performed, which allows the excision of lesions without any contact with the malignant tissue. This method is the most accepted modality for localized lesions to avoid the potential risk of seeding (11).

The management of OSSN involves alcohol-assisted de-epithelization of the lesion in the surgical bed, along with cryotherapy to the conjunctival margins. The patient underwent cryotherapy using the double-freeze thaw method. Following this, alcohol keratoepitheliectomy was performed to remove corneal components; scleral invasion was addressed with lamellar sclerectomy. Surgical margins were confirmed to be tumor-free in the pathology specimen, post-operatively. Additionally, a cryopreserved amniotic membrane was used to cover the resulting defect and reduce inflammation and fibrosis. The patient was discharged the same day after the operation. Moxifloxacin (w/v 0.5% eye drops, solution), dexamethasone (0.1% eye drops, suspension), and carboxymethylcellulose sodium (0.5% artificial tear drops) were prescribed four times per day for one week. IFN-α2b complements surgical excision for SCC, effectively targeting residual neoplastic cells to minimize recurrence risk and improve long-term outcomes (6). Therefore, the patient was administered topical IFN-α2b drops (1 million units/mL) four times a day for six months and followed up in the outpatient clinic every month. The medication is generally administered four times a day continuously, extending for one to two months after the lesion has clinically resolved. On average, clinical resolution takes approximately four months, which provided our rationale for using IFN-α2b for 6 months (9).

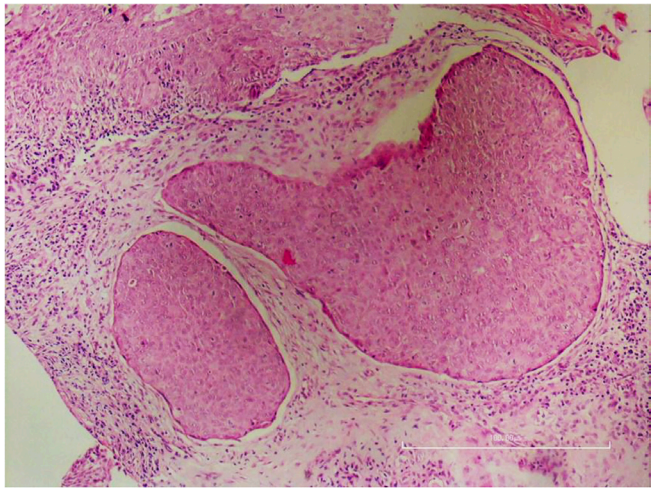

Figure 3: Excisional biopsy specimen, atypical epithelium at lower limbus 5-7 o'clock position.

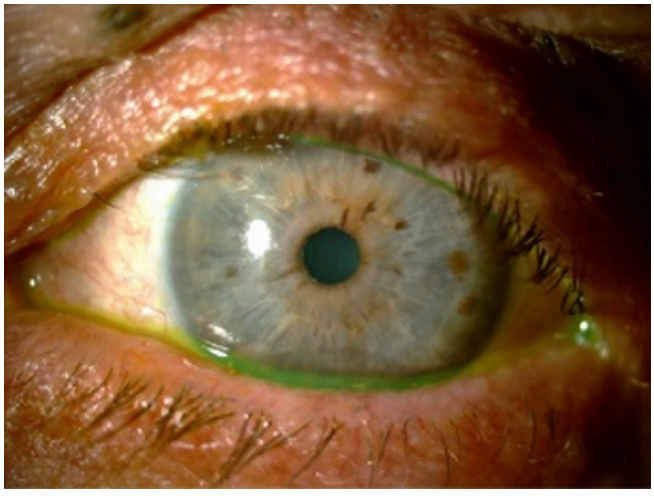

Figure 4: Left eye on the fifth year of follow-up.

The patient remained free of any topical or systemic side effects throughout the duration of the treatment. After using IFN-α2b for 6 months in the postoperative period, the lesion demonstrated total remission and no recurrence in five years of follow-up (Figure 4).

DISCUSSION

SCC is a variant on the OSSN spectrum, ranging from mild dysplasia to invasive carcinoma. Most frequently, it arises from the limbus, where malignant cells penetrate the basement membrane and invade the conjunctival subepithelium (3). Pai et al. (8) reported an SCC case arising from the palpebral conjunctiva as a rare presentation.

Ocular squamous cell neoplasia is a multifactorial pathology: advanced age, male gender, UV radiation exposure, viruses like HPV type 16, and HIV are some of the causes. As a key disease mechanism, UV radiation's mutagenic nature on the p53 tumor suppressor gene has been reported (2). OSSN is also associated with smoking, pale skin and iris color, immunosuppression, and vitamin A deficiency (2, 3).

Studies also suggest exposure to chemicals such as trifluridine, beryllium, petroleum products, and arsenic as other possible risk factors for OSSN (1, 3). Additionally, Hayashi et al. (12) reported a case of SCC caused by the long-term usage of an ocular prosthesis that originated from the upper palpebral conjunctiva. Our patient is known to use inhaled budesonide as an immunosuppressant drug due to chronic obstructive pulmonary disease. Therefore, this could serve as a predisposing factor for the development of SCC, besides the age and gender of our patient.

The clinical findings of OSSN can include ocular mass, pain, and redness, as well as vision loss and increased lacrimation. Lesions can be described in five different forms as gelatinous, papilliform, leukoplakic, nodular, or diffuse (2). Necrotizing scleritis has also been reported as an uncommon manifestation in some cases (13, 14).

Immunohistochemical markers such as MIB-1 (Ki-67), p16, p53, and p63 provide prognostic details about conjunctival SCC (12). We found that MIB-1 and p63 were positive in the patient's pathological specimen.

OSSN may be treated with chemotherapeutic agents like MMC and 5-FU or immunotherapeutic agents like IFN-α2b as well as surgical interventions. These agents exert their effects through distinct mechanisms, inhibiting tumor proliferation and facilitating resolution. MMC, through its action of cross-linking DNA strands, disrupts DNA synthesis, while 5-FU impedes thymidylate synthase, hindering DNA synthesis. In contrast, IFN-α2b modulates the immune response, augmenting anti-tumor activity. Clinical studies have demonstrated the efficacy of all three agents in treating ocular surface neoplasias, with resolution rates ranging from 75% to 100% for MMC, approximately 85% for 5-FU, and about 76-100% for IFN-α2b (9). While not as painful as MMC, 5-FU is associated with significant corneal toxicity. Although MMC may entail higher expenses and potential side effects like punctal stenosis, 5-FU presents as a relatively economical option. Notably, IFN-α2b eye drops generally exhibit minimal to no side effects (6, 9). Nevertheless, despite its effectiveness, MMC presents a significant burden of side effects. Therefore, if feasible, it is recommended to consider IFN-α2b or 5-FU as preferred treatment modalities (9). Topical chemotherapeutics can serve as neoadjuvants to reduce lesion size prior to surgery, offering the potential advantage of minimizing the excision area and thereby helping to prevent limbal stem cell deficiency (8). Additionally, anti-vascular endothelial growth factor agents have shown promise in the treatment of OSSN, both as primary therapy and as adjuncts to surgical excision (9). Özcan et al. (15) conducted the first study on the use of topical bevacizumab in the management of conjunctival neoplasms.

Adjuvant and neoadjuvant therapies serve to mitigate the risk of recurrence (6, 9). Microscopic subclinical residual disease is believed to contribute to recurrence rates, ranging from 33% with negative surgical margins to as high as 56% when margins are positive (6). Furthermore, Lee and Hirst (1) indicated that SCC has a higher recurrence rate than the milder grades of OSSN. Here, we demonstrated that despite the possibility of recurrence, our patient showed no recurrence through 5 years of follow-up after no-touch surgery and IFN-α2b treatment.

Footnote

Ethics Committee Approval: *N/A*

Informed Consent: *Informed consent was obtained from the patient.*

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Author Contributions: *Surgical and Medical Practices: H.G., Concept: H.G., Design: S.E., Y.H.E., İ.K., H.G., Data Collection and/or Processing: S.E., Y.H.E., İ.K., H.G., Analysis and/or Interpretation: S.E., Y.H.E., İ.K., H.G., Literature Search: S.E., Y.H.E., İ.K., H.G., Writing: S.E., Y.H.E., İ.K., H.G.*

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CASE REPORT

A CONCEALED MALFORMATION FOR QUINQUAGENARIAN: DEXTROCARDIA

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ABSTRACT

Dextrocardia is a rare congenital malformation in which the heart is located in the right hemithorax, with an incidence of around 1 in 12,000. Dextrocardia usually remains asymptomatic until accidentally diagnosed through echocardiography and chest radiography, which are mostly performed for other reasons. The complex heart anatomy in dextrocardia can pose great challenges, particularly in patients requiring surgical interventions. In this case presentation, we aimed to emphasize that a multidisciplinary approach is recommended in managing patients with dextrocardia. A 54-year-old female patient arrived with nausea, vomiting, fatigue, and tremor complaints. Medical evaluations revealed bradycardia, which developed after the use of propranolol for a panic attack. The patient underwent an angiography due to the existence of non-ST elevation myocardial infarction and Wenckebach's atrioventricular block, which showed the deviation of the left coronary artery to the right and of the right coronary artery to the left, raising suspicion of dextrocardia. Chest radiography confirmed the presence of dextrocardia. The patient received the necessary treatment, since dextrocardia poses minimal risk, the patient was discharged with follow-up recommendations.

Keywords: Arrhythmia, bradycardia, dextrocardia

INTRODUCTION

Dextrocardia is a rare congenital malformation in which the heart is located in the right hemithorax with its apex-base axis shifted towards the right, having an incidence of around 1 in 12,000 pregnancies (1, 2). Not all cases of the heart being located in the right thoracic cavity are referred to as dextrocardia (3). In cardiac dextroposition, the heart is also located in the right thoracic cavity; however, it should be distinguished from dextrocardia. In dextroposition, the heart shifts to the right thoracic cavity due to extracardiac factors, whereas in dextrocardia, the heart develops in the right thoracic cavity due to intrinsic factors (1). A heart in the right thoracic cavity with a leftward axis indicates a mechanically shifted heart rather than dextrocardia (3).

On a simple basis, the primitive cardiac tube, which consists of consecutive sections of sinus venosus, atrium, ventricle, bulbus cordis, and truncus arteriosus, develops into the human heart (1). The primitive cardiac tube later loops to the right (forming D-loop) or to the left (forming L-loop) on approximately the 23rd day of gestation (1, 4). The morphologic right and left ventricles develop from the bulbus cordis and the bulboventricular loop, respectively. Therefore, the direction of the loop determines the position of the ventricles (1). Incomplete rotation of the L-loop to the right hemithorax and failure of the D-loop to migrate to the left hemithorax result in dextrocardia.

Dextrocardia is mostly asymptomatic by its own; therefore, it is mostly detected incidentally through echocardiography (2, 3). Dextrocardia is frequently associated with other congenital visceral anomalies (3). The term situs is used to express both the asymmetric configuration of the viscera and the heart itself and its chambers by their asymmetric configurations. Focusing on the orientation of viscera in the case of dextrocardia, 3 types of situses have been defined: situs solitus, situs inversus totalis, and situs ambiguous (1). *In situs* solitus, all viscera are in their

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normal place, but the heart is located in the right hemithorax. Whereas in the situs inversus totalis, the thoracic and abdominal viscera are the mirror image of normal. On the other hand, *in situs* ambiguous, the viscera are randomly distributed in the abdomen and thoracic cavity (5). Situs solitus with dextrocardia is frequently referred to as isolated dextrocardia (6). The prevalence of congenital heart anomaly is more common in patients with isolated dextrocardia than those with situs inversus totalis (7). Dextrocardia is also a finding in patients with Kartagener syndrome, apart from the anomalies previously mentioned. Kartagener syndrome is a disorder of ciliary motility with an autosomal recessive inheritance. In 50% of cases, it is accompanied by situs inversus totalis, suggesting that dextrocardia may be an outcome of abnormal arrangement of viscera during the embryonic period (2).

The aim of this case report is to represent a patient with isolated dextrocardia.

CASE REPORT

A 54-year-old female patient was admitted to the emergency room after complaining of nausea, vomiting, fatigue, and tremors. However, she didn't complain from chest pain. Medical evaluations revealed that bradycardia developed after using propranolol for panic attacks. Physical examination revealed rhythmic first heart sound (s1) and second heart sound (2) without murmurs and symmetrical chest expansion at respiration. The patient was observed to be well-oriented and fully cooperative. An electrocardiogram (ECG) was performed in the emergency department, revealing intermittent Wenckebach's atrioventricular (AV) block and sinus bradycardia with normal sinus rhythm (Figure 1). Therefore atropine 1 mg was administered. The patient was then transferred to the coronary care unit (CCU) due to suspicion of non-ST elevation myocardial infarction (NSTEMI). Sequential troponin tests revealed values of 25 pg/mL, 257 pg/mL, and 637 pg/mL, respectively. While the initial value was within the normal range (<40 pg/mL), the elevated subsequent values and upward trend indicate NSTEMI (8).

Wenckebach's AV block was observed during monitoring in the CCU. The 24-hour Holter monitoring recorded minimum, mean, and maximum heart rates of 55, 78, and 92 beats per minute, respectively. The transthoracic echocardiogram revealed moderate tricuspid regurgitation, and the estimated pulmonary artery pressure was measured at 55 mmHg, indicating elevated pressure. Due to the presence of Wenckebach's AV block and NSTEMI, the patient underwent angiography. Spontaneous coronary artery dissection (SCAD) was seen on the distal part of the left anterior descending artery (LAD). Angiography revealed no stenosis in the coronary arteries that could lead to myocardial infarction (MI). Nevertheless, it was observed that the left coronary artery deviated to the right and vice versa, raising suspicion of dextrocardia (Figure 2). The chest radiography confirmed the presence of dextrocardia (Figure 3). Due to the remission of life-threatening conditions and dextrocardia posing minimal risk, the patient was discharged (2). However, due to the onset of epigastric pain and dyspnea, another ECG was performed, revealing a negative T wave in leads V1 and V3. Newly developed symptoms were remitted, and the patient was discharged with a prescription for perindopril-hydrochlorothiazide, benidipine, and atorvastatin, along with a follow-up recommendation.

The right anterior oblique view shows the occluded LAD and a non-critical stenosis of the diagonal artery.

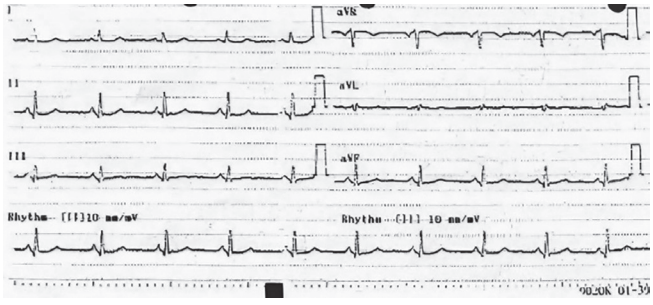

Figure 1: ECG performed in the emergency room showing that ST-T wave changes in leads V1-V3. ECG taken at 25 mm/s, 10 mm/mV.

ECG: Electrocardiogram

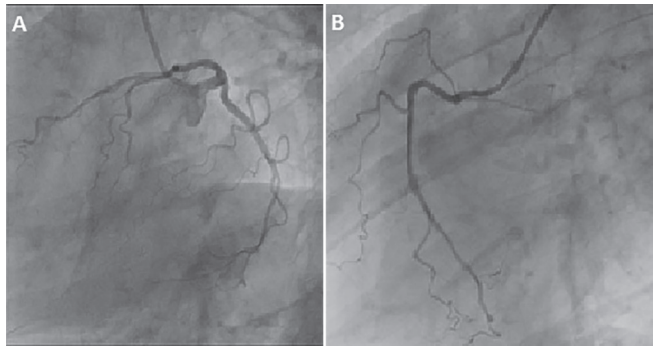

Figure 2: Left coronary angiogram (A) and right coronary angiogram (B) showing deviated coronary arteries.

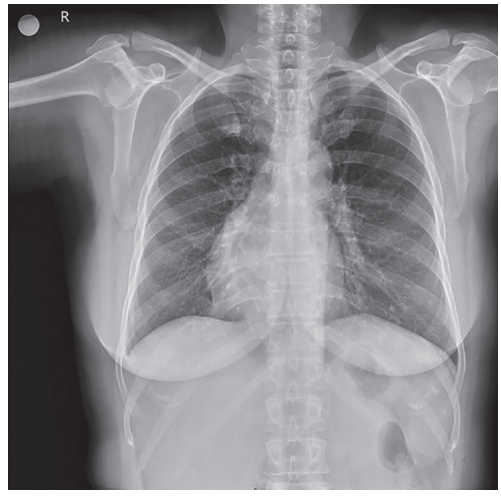

Figure 3: Radiography of the patient showing the heart located in the right thoracic cavity.

DISCUSSION

Dextrocardia can remain asymptomatic throughout life and generally has a good prognosis (2, 9). Notably, there is a case in the literature of a patient being diagnosed after the age of 100 (9). In this case, our patient remained unaware of her condition until the age of 54 years. Moreover, in cases of dextrocardia accompanied by other congenital anomalies, symptoms may vary depending on the associated anomalies (2). Since most cases are asymptomatic, patients are typically diagnosed incidentally through echocardiography and chest radiography performed for other reasons (9). The altered anatomy of the heart in dextrocardia can pose great challenges, particularly in patients requiring surgical interventions such as cardiac catheterization, transcatheter aortic valve replacement, ablation for arrhythmias, pacemaker insertion, or placement of defibrillators. This situation necessitates that physicians consider the abnormal positioning of the heart and other organs during invasive and surgical procedures. Therefore, a multidisciplinary approach is recommended in managing patients with dextrocardia, emphasizing the importance of extra attention in planning the treatment (10).

The malpositioning of the heart can increase susceptibility to specific arrhythmias, such as atrial fibrillation and atrial flutter, which may lead to later-onset complications (11). Naaraayan et al. (10) reported that according to the National Inpatient Sample database, the prevalence of arrhythmia in patients presented to the hospital with dextrocardia is 44.62%, whereas in patients without dextrocardia, this prevalence is 26.69% with a p-value of <0.001. Therefore, it is important that physicians further examine patients with arrhythmias to determine if dextrocardia is present.

Beta-blockers are the most common cause of bradycardia, causing the production of slow action potentials and conduction of atrioventricular impulses (12). A retrospective cohort study (13) revealed that the most common reason for unplanned hospitalizations among elderly patients due to adverse drug reactions was bradycardia, with beta blockers and digoxin being the most common culprits. In another study (14), it was reported that cardiac iatrogenic complications are a significant factor in admissions to intensive cardiac care units, as was the case with our patient. They reported that 91% of these cases were associated with bradyarrhythmia caused by anti-arrhythmic agents such as beta-blockers. Whereas beta-blockers are known to be responsible for arrhythmias in 9.5% of cases and ischemic heart diseases in 38.8% of cases, our patient suffered from both arrhythmia and NSTEMI (15).

The development of MI does not necessarily require an obstruction or stenosis in coronary arteries (16). MI occurring with less than 50% stenosis in the coronary arteries is referred to as myocardial infarction with non-obstructive coronary arteries (MINOCA), responsible for 10% of acute coronary syndrome cases. Conditions such as coronary spasm, SCAD, and coronary microvascular dysfunction may lead to MINOCA (17). SCAD was observed in this patient, leading to MI. SCAD cases are predominantly observed in females, with a rate of 90% (18). MI was responsible for elevated troponin levels in our patient. However, elevated troponin levels do not specifically indicate MI. Several conditions, such as sepsis, hypovolemia, atrial fibrillation, and renal failure, can also cause an elevation in troponin levels (19). This was not the case with our patient. However, other causes of elevated troponin levels should be considered during diagnosis.

In patients with isolated dextrocardia, no treatment or lifestyle changes are required, and they can lead a normal life. However, in cases of dextrocardia accompanied by other congenital anomalies such as tetralogy of Fallot, severe valvular abnormalities, and structural heart defects, surgical intervention should be considered (2). In this case report, we presented a patient with undiagnosed dextrocardia until the age of 54 years. Since dextrocardia is often asymptomatic, it may be overlooked in radiography if not specifically assessed. Such cases are relatively common in the literature. Consequently, physicians should consider dextrocardia in their patients and be aware of its important role in the diagnostic and treatment process.

Footnote

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Conflict of Interest: *One author of this article, Dengiz Koray Şahintürk, is a member of the editorial board of the Turkish Medical Student Journal. However, he did not take part in any stage of the editorial decision of the manuscript. The editors who evaluated this manuscript are from different institutions. The other authors declared no conflict of interest.*

Author Contributions: *Concept: D.K.Ş., Y.B., E.B., S.A., Design: D.K.Ş., Y.B., E.B., S.A., Data Collection and/or Processing: D.K.Ş., Y.B., E.B., S.A., Analysis and/or Interpretation: D.K.Ş., Y.B., E.B., S.A., Literature Search: D.K.Ş., Y.B., E.B., S.A., Writing: D.K.Ş., Y.B., E.B., S.A.*

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LETTER TO THE EDITOR

MYOCARDIAL BRIDGING-A CONUNDRUM?

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Dear Editor,

The case study published by Yıldız and Altay (1) in this journal with the title "Cause of persistent chest pain: two myocardial bridges in a young woman" was particularly intriguing. The primary issues were the patient's young age and gender, coupled with the presence of two myocardial bridges (MBs) in the same artery causing a critical 95% stenosis during systole, a phenomenon called the "milking effect" (1). The successful clinical control was by discontinuing statin and acetylsalicylic acid and adjusting the metoprolol daily dosage with base on her blood pressure and heart rate (1). The authors also suggested further research involving similar cases, which might better clear the general spectrum of MBs, favoring the management strategies (1). Therefore, their case report was very illustrative, focusing on uncommon clinical and pathophysiological aspects of this challenging condition, and deserves to be emphasized. Considering the scarcely described cases of MB in females, one can presume that short comments on more recent literature data may increase reader interest in this topic (2-5).

A 62-year-old female without known cardiovascular risk factors was evaluated due to progressive dyspnea and chest pain for 14 years; she presented a complete left bundle branch block, with diffuse hypokinesis and left ventricular function at 40% (2). Coronary angiography showed MB at the middle of the left anterior descending (LAD) artery, and the magnetic resonance study revealed a left ventricular non-compaction (2). The patient was clinically controlled with success, utilizing bisoprolol, ramipril, furosemide, dapagliflozin, besides rivaroxaban because of the thrombo-embolic risks (2). Dugal et al. (3) presented a 60-year-old female with an antecedent of coronary disease admitted because of dyspnea, chest pain, and the suspicion of a non-ST elevated myocardial infarction. The initial level of troponin was 243 ng/L, and control determination showed 114 ng/L. The left ventriculogram disclosed a hypokinetic mid-anterior wall, consistent with a mid-ventricular variant stress cardiomyopathy or Takotsubo cardiomyopathy. Associations of MB with apical Takotsubo cardiomyopathy may range from 11% to 76%, and the authors emphasized their case report as the first at the mid-anterior wall site (3). Additionally, a 45-year-old female presenting complaints of recurrent angina for two years, without obstructive coronary artery disease was diagnosed with MB and low endothelial shear stress (ESS) in the LAD artery distal to the first diagonal branch (4). The hyper-reactive vasoconstrictive responses to acetylcholine observed might be due to a thinner intima beneath the MB and a higher number of vascular smooth muscle cells (4). The authors emphasized the contradictory findings of a region with high ESS and without any

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atherosclerosis where the MB and coronary artery spasm (CAS) were located, being indicative of possible different etiology of CAS in the presence of MB and high ESS (4). In a study of Indonesian patients (n=1029) with MB, it was found that 44.3% had the LAD artery more often affected (99.6%), with the middle portion of the bridging vessel was the most common site of stenosis (n=269) (5). Stenosis was more often moderate (30-50%), and factors such as female gender, older age, symptomatic status, and a higher coronary artery calcium score were associated with stenosis (5). The degree of stenosis was higher in the proximal site than in the middle site group, with the authors suggesting that MB may prevent atheromatosis of the distal segment and trigger the development of atherosclerosis in the proximal segment of the bridge (5).

Case studies contribute to a better understanding of uncommon and challenging entities.

Footnote

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