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ORIGINAL ARTICLE

Is it mastalgia or myofascial pain? A clinical confusion

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ABSTRACT

Objectives: This study aims to investigate the frequency of myofascial pain syndrome (MPS) and its characteristics in mastalgia patients.

Patients and methods: The localization of pain, age, education, menopausal status, hormone replacement and employment status, and existence of comorbid diseases were reviewed on consecutive 131 female mastalgia patients (mean age 43.3±9.4 years; range, 18 to 75 years) in this prospective study conducted between June and December 2019. A total breast pain index (IBP) was obtained and mastalgia was classified according to these scores as mild, moderate, and severe. Patients were divided into four diagnostic groups of MPS, cyclic mastalgia, fibrocystic breast disease, and mastitis.

Results: The total IBP was significantly higher in MPS group (129.2±49.5) than in cyclic mastalgia group (98.3±11.9) ($p<0.05$). However, it was significantly higher in mastitis group (230.7±17.6) compared to MPS group ($p<0.05$). The fibrocystic disease group was similar to MPS group in terms of total IBP ($p>0.05$). Considering the localization of pain according to the quadrants where the pain was felt, 57.1% of the patients who felt pain in the upper quadrants were from MPS group ($p=0.001$) and 45.3% of the patients who felt pain in the lower quadrants were from cyclic mastalgia group ($p=0.001$). Myofascial pain was observed particularly in upper quadrants and almost all was unilateral; however, cyclic mastalgia was observed bilaterally in the majority, particularly in lower quadrants.

Conclusion: Myofascial pain syndrome should be kept in mind as an extramammary disorder in the differential diagnosis of particularly unilateral upper quadrant mastalgia. It may be for the benefit of patients complaining of mastalgia with no primary breast disorder to be consulted with a physiatrist.

Keywords: Breast pain index, mastalgia, myofascial pain syndrome.

Breast pain, called as mastodynia or mastalgia, is the most common complaint of patients with breast disorders with a reported prevalence of 66 to 80%.[1,2] Breast pain is mostly associated with benign disorders; however, sometimes it results in malignancies as well.[3,4] It presents itself usually as cyclic mastalgia, which is due to premenstrual exacerbations.[5] The non-cyclic type is not related with menstrual cycle and has various etiopathogenesis; it may be due to several conditions such as infection, idiopathic mastitis, malignancy, and extramammary causes like nutritional and psychological factors.[6] When a certain etiological factor cannot be identified, nutritional, hormonal, and psychological causes are blamed.[6] Mastalgia may be severe and may cause diminished quality of life (QoL) and depression with anxiety.[6,7] Musculoskeletal components that are beneath the breast may have disorders mimicking and/or confused with mastalgia.[8,9] Myofascial

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pain syndrome (MPS) may be a possible reason of mastalgia for patients without primary breast disorder. To our knowledge, there is no study in the literature regarding the relationship between MPS and mastalgia. Therefore, in this study, we aimed to investigate the frequency of MPS and its characteristics in mastalgia patients.

PATIENTS AND METHODS

Between June and December 2019, consecutive 131 female patients with mastalgia (mean age 43.3±9.4 years; range, 18 to 75 years) who admitted to the general surgery outpatient clinic of Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital were included in this prospective study. The study protocol was approved by Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital Ethics Committee (no: 2019-05/313). A written informed consent was obtained from each patient. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Patients who have known organic disease, received breast surgery before, irregular menstrual cycle, or those who were pregnant or in lactation period were excluded. They were recorded according to their age, education, menopausal status, hormone replacement and employment status, and existence of comorbid disease (such as diabetes mellitus, hipertension, etc.) by the same interviewer. Patients with pain for the last week were included. The same general surgery expert performed physical examinations on the patients and evaluated the radiological imaging techniques to establish the diagnosis of primary breast diseases. Breast ultrasonography was performed on all patients, and mammography and magnetic resonance imaging were performed when required. The localization of the pain was recorded as upper or lower quadrant. Locomotor system examination of each case was carried out by the same physiatrist.

A mastalgia score was obtained as a total breast pain index (total IBP %). The questionnaire provides information about the characteristics of breast pain, such as the pain's pattern, degree, and relationship with menstruation. It is composed of four distinct scores (Q total %, present pain index [PPI] %, Visual Analog Scale [VAS] % and QoL %) for every patient. Q total % is the sum of the sensory and affective scores obtained from each sensory and affective descriptor. PPI % is the calculation of percentage using present pain intensity scale that indicates overall pain intensity over six levels, VAS % is a score obtained using a VAS, and QoL % is a score based on QoL questions. Mastalgia was classified according to these scores as mild (0-100 points), moderate (101-200 points), and severe (>200 points).[10]

Fibromyalgia Rapid Screening Tool (FIRST) was used for every patient for the differential diagnosis of fibromyalgia.[11] Reliability and validity of the Turkish version of FIRST were shown by Celiker et al.[12] It is an easy-to-administer, time-sparing instrument. FIRST includes six items, and a score of 1 is given for the response of "Yes" and 0 if the response is "No" for each item. The total score is calculated as the sum of scores; the cut-off value is designated as 5/6.[11]

Myofascial pain was diagnosed according to the evaluation of myofascial trigger points (MTrPs) as mentioned in Delphi study (taut band, hypersensitive spot, and referred pain) and at least two of the three criteria should be present for a diagnosis of a MTrP.[13] Delphi study was conducted to achieve an international consensus on the cluster of diagnostic criteria needed for the diagnosis of trigger points, to reach a consensus on active and latent TrPs definition, and to clarify different clinical considerations about MTrPs. The main difference between active and latent trigger points is that active trigger points are related to spontaneous and continuous pain over time, whereas latent trigger points are painful only when stimulated.[13] Active trigger point presence was tested in the latissimus dorsi muscle and pectoral muscle groups. Patients with spontaneous pain and active trigger point on examination were included in the study, while those with asymptomatic trigger point were excluded. Patients were divided into four diagnostic groups of MPS, cyclic mastalgia, fibrocystic breast disease, and mastitis.

Statistical analysis

The IBM SPSS version 23.0 software (IBM Corp., Armonk, NY, USA) was used for data analysis. Descriptive analysis was performed for sociodemographical data. The statistical results were presented as the mean ± standard deviation

RESULTS

Demographical characteristics of the patients are given in Table 1. Forty-six (35.1%) patients were diagnosed as MPS, 34 (26%) had cyclic mastalgia, fibrocystic breast disease was diagnosed in 21 (16%) patients, and there was mastalgia due to mastitis in 15 (11.5%) patients. Other etiological factors (such as cancer, hormone replacement therapy, and fibromyalgia) causing mastalgia were present in 15 (11.5%) patients. Body mass index (BMI), educational, menopausal and employment status, comorbid disease, hormone replacement therapy, smoking, coffee, and alcohol intake did not significantly affect patient groups. There were 37 (28.2%) patients with cyclic mastalgia which was related to menstruation cycle. Among all the cases, there were 25 (19.1%) patients with mild, 72 (55%) patients with moderate, and 34 (26%) patients with severe mastalgia. The average age of the MPS group was 49.8±11.4 years, while the average age in the mastalgia group was 39.3±5.0 years. When MPS (n=46) and primary breast disorders which causes mastalgia (cyclic mastalgia+fibrocystic breast disease+mastitis) (n=70) were compared in terms of age, it was statistically significant (p=0.001). There was no patient with breast deformities such as nipple problems or macromastia.

The total IBP % was significantly higher in MPS group (129.2±49.5) than in cyclic mastalgia group (98.3±11.9) (p<0.05). However, it was for metric variables and as frequency (percentage) for categorical variables. Chi-square test was used to compare groups in terms of categorical variables. The significance level was accepted as p<0.05.

Table 1. Demographical characteristics of patients (n=131)

	n	%	Mean±SD
Age (year)			43.3±9.4
Body mass index (kg/m^2)			26.7±4
Marital status			
Single	106	80.9	
Married	25	19.1	
Educational status			
Primary school	26	19.8	
Secondary school	8	6.1	
High school	65	49.6	
University	32	24.4	
Employment status			
Housewife	85	64.9	
Employed	46	35.1	
Menopausal status			
Premenopausal	106	80.9	
Postmenopausal	25	19.1	
Comorbid disease	24	18.3	
Hormone replacement therapy	14	10.7	
Smoking	58	44.3	
Coffee	32	24.4	
Alcohol	6	4.6	

SD: Standard deviation.

Table 2. Distribution of mastalgia characteristics according to patient groups

	MPS		Cyclic mastalgia		Fibrocystic breast disease		Mastitis	
	n	%	n	%	n	%	n	%
Severity of mastalgia								
Mild	7	15.2	11	32.4	5	23.8	0	0
Moderate	29	63	16	47.1	13	61.9	4	26.7
Severe	10	21.7	7	20.6	3	14.3	11	73.3
Frequency of mastalgia								
Hourly	6	13	0	0	9	42.9	13	86.7
Daily	32	69.6	0	0	11	52.4	2	13.3
Weekly	8	17.4	0	0	1	4.8	0	0
Monthly	0	0	34	100	0	0	0	0
Localization of mastalgia								
Upper quadrant	36*	78.3	10	29.4	9	42.5	8	53.3
Lower quadrant	10	21.7	24**	70.6	12	57.1	7	46.7
Unilateral	45	97.8	4	11.8	20	95.2	15	100
Bilateral	1	2.2	30	88.2	1	4.8	0	0

MPS: Myofascial pain syndrome; * p=0.001; ** p=0.001.

significantly higher in mastitis group (230.7±17.6) compared to MPS group ($p<0.05$). The fibrocystic disease group was similar to MPS group in terms of total IBP % ($p>0.05$). Mastalgia frequency was daily in 69.6% of the MPS group where the daily rate was 52.4% in fibrocystic breast disease patients. Mastalgia frequency was monthly in all of the cyclic mastalgia patients. Of mastitis group, 86.7% felt mastalgia hourly. Table 2 shows mastalgia characteristics according to patient groups. Considering the localization of pain according to the quadrants where the pain was felt, 57.1% (n=36) of the patients who felt pain in the upper quadrants were from MPS group, 15.9% (n=10) were from cyclic mastalgia, 14.3% (n=9) were from fibrocystic disease and 12.7% (n=8) were from mastitis group. Of the patients who felt pain in the lower quadrants, 18.9% (n=10) were from MPS group, 45.3% (n=24) were from cyclic mastalgia group, 22.6% (n=12) were from fibrocystic disease group, and 13.2% (n=7) were from mastitis group. The findings were statistically significant in terms of myofascial pain ($p=0.001$) and cyclic mastalgia ($p=0.001$). Myofascial pain was observed particularly in upper quadrants and almost all was unilateral; however, cyclic mastalgia was observed bilaterally in the majority, particularly in lower quadrants.

DISCUSSION

Among the investigated parameters, age, the total IBP %, mastalgia frequency, and the localization of pain were significant in MPS group. MPS was the cause of unilateral upper quadrant mastalgia for older patients who felt it on a daily basis and mastitis caused severe and hourly mastalgia as it had highest total IBP %.

Extramammary diseases due to various conditions may present themselves as mastalgia.[6] In such cases, sometimes the diagnosis may remain unclear and most females use simple analgesics or get no treatment at all. The differential diagnosis for mastalgia is extensive. One of them is MPS, a disease related to hyperirritable spots known as MTrPs, located within taut bands of skeletal muscle.[14] MPS presents itself with pain as well as muscle spasm, tenderness, locomotor, and autonomous dysfunction.[15] Direct or indirect trauma, spine pathology, exposure to cumulative and repetitive strain, postural dysfunction, and physical deconditioning are the possible etiologies for MPS.[15,16] Regional MPS is one of the most common causes of musculoskeletal related pain. MPS was diagnosed in 30% of the patients who admitted to outpatient clinics with pain.[15,17] As there is no diagnostic laboratory tool or imaging technique for MPS, according to the current view, MPS is diagnosed by physical examination such as palpation of a taut band, identification of an exquisitely tender nodule in the taut band, and reproduction of the patient's symptomatic pain with sustained pressure.[13]

To our knowledge, there is no other study in the literature on the same topic. Of course, this provides the advantage of contributing to the literature; however, it has the disadvantage of not being able to perform comparisons to other studies. In our clinical practice, we observed that many MPSs due to pectoral muscles are considered as mastalgia because of the referred pain. As a matter of fact, the findings in our study did not mislead us. We diagnosed MPS in 35.1% of our patients who admitted to general surgery outpatient clinic with mastalgia. This finding is similar to the study in which MPS was diagnosed in 30% of the patients who admitted to outpatient clinics with pain.[17] Exclusion of other etiological factors in the differential diagnosis of MPS is an appropriate approach. In clinical practice, MPS can be confused mostly with fibromyalgia. We applied FIRST, a reliable screening test for the differential diagnosis of fibromyalgia, to all of our cases with mastalgia. Fibromyalgia was detected in only four cases. In the two recent studies, the high rate of fibromyalgia and mastalgia coexistence was concluded.[8,9] However, the weakness of both studies was that they did not exclude MPS in the differential diagnosis of fibromyalgia. Thus, some cases diagnosed as fibromyalgia may actually be MPS.

In our study, there was no difference between the diagnostic groups in terms of BMI, educational, menopausal and employment status, comorbid disease, hormone replacement therapy, smoking, coffee, and alcohol intake. The effects of coffee intake and smoking on mastalgia are controversial.[18,19] Eren et al.[20] showed that coffee intake and smoking were significantly related with mastalgia, and postmenopausal status decreased mastalgia incidences. However, in our study,

we did not observe any relationship between such parameters and mastalgia; actually, we investigated whether there is a difference between the diagnostic groups leading to mastalgia in terms of those parameters.

In the present study, the most severe mastalgia and the highest total IBP % score were observed in mastitis group as expected. Although the severity of mastalgia and the total IBP % score were similar in MPS, cyclic mastalgia, and fibrocystic breast disease, the localization of mastalgia was different statistically. Of the patients who felt pain in the upper quadrants, 57.1% were from MPS group and the pain was mostly felt unilaterally on a daily basis. Another remarkable finding in our study was that cyclic mastalgia was felt particularly in the lower quadrants, mostly bilaterally and on a monthly basis.

The three disease groups in this study (cyclic mastalgia, fibrocystic breast disease, and mastitis) are the most common causes of mastalgia; however, there are other rare etiological factors (such as cancer, hormone replacement therapy, and fibromyalgia) which causes mastalgia and they were present in only 15 patients in our study. Since the number is low, this group was not included in the statistical analysis and this situation constitutes the limitation of the study.

In conclusion, mastalgia requires comprehensive assessment and exclusion of an organic cause. Patients with mastalgia may benefit more from symptomatic treatment only by the establishment of the correct diagnosis. In clinical practice, myofascial pain that seems like mastalgia is too common to be underestimated. Therefore, we believe that to determine the differential diagnosis and appropriate treatment options, patients complaining from mastalgia with no primary breast disorder should be consulted with a physiatrist. Furthermore, for patients aged older than fifty years, MPS should be kept in mind as an extramammary disorder in the differential diagnosis of upper quadrant mastalgia, particularly unilateral and felt on a daily basis.

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