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The significance of cervical discopathy diagnosis in patients with mastalgia

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Abstract. – OBJECTIVE: The primary aim of this study was to explore the involvement of cervical discopathy in the development of non-cyclic mastalgia by employing cervical magnetic resonance imaging (MRI).

PATIENTS AND METHODS: A total of 407 patients were included in the study. Individualized management plans were developed for each patient. Pathological findings in MRI results were assessed by specialists in physical therapy and neurosurgery, and appropriate treatment was administered. Visual assessments of patients were conducted. The Analog Scale (VAS) scoring system was used at the initial presentation, and patients were evaluated at 1 and 3 months following the treatment.

RESULTS: In the MRI examinations of the patients included in the study, simultaneous cervical disc protrusion was observed in 29% (n: 124) of those with annular bulging. Comparing the VAS scores of patients before treatment, at the 1st and at the 3rd month showed a significant decrease in mastalgia pain ($p < 0.001$).

CONCLUSIONS: The diagnosis of cervical discopathy holds significant importance in the treatment of mastalgia patients. Therefore, clinicians should keep the cervical spine in mind as a potential contributing factor to mastalgia.

Key Words:
Mastalgia, Cervical discopathy, Breast.

Introduction

Mastodynia, also known as mastalgia, is a medical term typically denoting a condition commonly known as "breast pain"[1]. This term encompasses symptoms such as pain, tension, sensitivity, and occasionally nipple pain occurring in one or both breasts[2]. Mastodynia is associated with hormonal changes, particularly during the menstrual cycle, pregnancy, or the menopausal process, correlating with the normal alterations in the breast tissue of women[3].

Mastalgia was the most common symptom in patients attending a breast clinic. The two most common types of mastalgia were cyclical and non-cyclical[4]. In addition to the aforementioned factors, mastalgia may manifest as a symptomatic expression of various diseases, irrespective of specific breast pathologies. The clear identification of the type of pain is critical for determining an effective assessment and treatment strategy.

Mastalgia, characterized by breast pain, exhibits diverse etiologies, including fibroadenoma, cysts, periductal mastitis, trauma-induced fat necrosis, fibroadenosis with nipple discharge, abscess, cancer, Mondor's disease, and diabetic mastopathy. Medications such as digitalis, methyldopa, spironolactone, chlorpromazine, and hormone contraception, alongside non-breast pain conditions, can contribute to its manifestation[5]. The intricate etiology of mastalgia, particularly the cyclical type, involves endocrine abnormalities, encompassing theories of elevated estrogen levels, progesterone deficiency, and hyperprolactinemia. Literature on serum hormone levels revealed inconsistencies, with lower luteal progesterone levels observed in mastalgia patients, supporting the progesterone deficiency theory. Elevated prolactin levels indicate hormonal implications, warranting a nuanced diagnostic approach for psychoneurosis. Caffeine and methyl xanthine intake may also play a role in overstimulating breast cells[6]. The second contributor to non-cyclical mastalgia involves hormonal changes, which may be part of normal physiological transitions such as puberty, menopause, and pregnancy, as well as fibrocystic changes (ANDI)[7]. Additional factors contributing to non-cyclical mastalgia include alcoholism, likely associated with abnormal steroid metabolism, and breast pathology[5,7,8]. Pain originating from the chest wall may involve conditions such as costochondritis (Teitze's disease), nerve root pain like cervical spondylitis, systemic diseases such as cardiovascular issues like

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ischemic heart disease, gastrointestinal biliary pain and peptic ulcers, respiratory conditions like pneumonitis and pleuritis, musculoskeletal issues, and psychological factors[4]. This study aims to explore the incidence of mastalgia and its clinical and pathological manifestations, covering both cyclical and non-cyclical mastalgia and investigating associations with benign and malignant breast pathology, as well as clinicopathological correlations.

Extramammary breast pain can stem from various sources, including costochondritis, Tietze's syndrome, angina, rib injuries, and cervical root disorders[4,9]. Additionally, cervical disc herniation is recognized as another potential contributor to this type of pain. These diverse etiologies underscore the complexity of factors contributing to pain experienced outside the mammary tissue. The initial documentation on the consideration of cervical root disorders as a potential source of breast pain was provided by Dowle[10]. Subsequently, in our routine clinical observations, we have consistently observed a noteworthy prevalence of concurrent upper extremity neurologic manifestations in women experiencing breast pain, indicative of possible cervical root disorders. In our study, we aimed to investigate the pre-and post-treatment status of mastalgia in patients presenting to the general surgery clinic, who, despite not demonstrating any breast-related issues upon imaging and examination, were identified with cervical discopathy through MRI evaluation. Furthermore, our objective was to examine the significance of cervical discopathy, which is often overlooked in the etiology of mastalgia.

Patients and Methods

After local Ethics Committee approval was obtained (Hitit University Clinical Research Ethics Committee, No.: 2023-36, Date: 16/03/2023), patients who applied to the general surgery outpatient clinic due to breast pain between 1 October 2020 and 30 August 2023 were included in the study. Our data access date is November 2023. Patients diagnosed with mastalgia, aged between 18 and 80, exhibiting non-cyclical mastodynia, and having cervical discopathy observed in magnetic resonance imaging were included. Additionally, patients with normal findings on ultrasound and/or mammography (age > 40), excluding those outside the specified age range, with breast lesions, those for whom data were inaccessible, individuals with a family history of breast cancer, users of oral contraceptives, anticoagulants, or antidepressants, those with a history of hormone replacement therapy or trauma, and those unwilling to participate were excluded. Ultimately, 407 patients met the study criteria.

All patients enrolled in the study underwent assessment with cervical MRI. Patients diagnosed with cervical discopathy in the MRI were consulted with neurosurgeons and referred to physiotherapy and rehabilitation for treatment planning. While some patients received physiotherapy, others were monitored with conservative treatment. In conservative management, patients were prescribed neck exercises for two weeks, along with oral flurbiprofen (2x100 mg/day) and thiocolchicoside (3x4 mg/day) for the initial 5 days. Surgical intervention (posterior cervical discectomy operation) was required for two patients. Visual Analog Scale (VAS) scores for pain were recorded at the initial presentation. Subsequently, VAS score assessments were repeated in the first and third months after treatment.

Statistical Analysis

Analyzes were performed using the statistical program SPSS Statistics 22.0 (IBM Corp., Armonk, NY, USA) for Windows. Descriptive statistics (i.e., mean, SD, median, minimum, and maximum) were reported for numerical variables and frequency distributions for categorical variables. Since VAS score variables do not have a normal distribution, hypothesis tests were performed with non-parametric estimation methods. Friedman tests were used to compare VAS scores. $p < 0.05$ was considered statistically significant.

Results

This study included a total of 8,156 patients with breast-related complaints who visited the general surgery clinic. After excluding patients who did not meet the inclusion criteria, the data of a total of 407 patients were analyzed. The average age of the 407 patients included in the study was found to be 50.86 ± 11.77. The mean age of menarche for the patients was determined as 46.25 ± 10.2. The average parity number was calculated as 2.63 ± 1.05. Three of the participants in the study were nulliparous and had no history of lactation. The mean duration of breast pain was 16.6 ± 21.8 months (Table I).

Table I. Descriptive analysis.

		n	%	Mean	Minimum	Max	Std. Dev.
Age		407		50.86	22	91	11.77
Menarche Age		407		46.25	43	52	10.2
Parity		407		2.63	0	5	1.05
Breast pain duration		407		16.6	12	51	21.80
Breast pain location	Right	148	34.7				
	Left	242	56.7				
	Both	17	4				
Annular Bulging	without cervical disc protrusion	283	66.3				
	with cervical disc protrusion	124	29				

Table II. Fiedman test VAS averages.

Sample 1-2	Test Statistic	Std. Error	Std. Test Statistic	*p*-value	Adj.Sig.
VAS 3-VAS 1	0.967	0.07	13.792	< 0.001	< 0.001
VAS 3-VAS Before treatment	1.982	0.07	28.268	< 0.001	< 0.001
VAS 1-VAS Before treatment	1.015	0.07	14.476	< 0.001	< 0.001

VAS: Visual Analog Scale.

In the cohort of patients included in the study, simultaneous cervical disc protrusion was observed in 29% (n: 124) of those with Annular bulging on MRI examinations. The average VAS scores at the initial outpatient visits for these patients were found to be 6.71 ± 1.57 (min: 3, max: 9). Upon post-treatment assessments, the average VAS scores at 1 month were 3.8 ± 1.44, and 3 months were 1.48 ± 1.14. Among the treatment modalities, 307 patients received both medical and physical therapy, 99 patients received only physical therapy, and 1 patient underwent posterior cervical discectomy surgery.

In the comparison of VAS scores before treatment, at 1 month and 3 months, a significant reduction in mastalgia pain in this patient group was observed ($p < 0.001$) (Table II).

The data suggest a noteworthy improvement in mastalgia following various treatment interventions, highlighting the effectiveness of medical and physical therapy modalities, as well as surgical intervention in specific cases. These findings contribute valuable insights into the management of mastalgia associated with Annular bulging and cervical disc protrusion, providing a basis for further investigation and clinical application.

Discussion

Our study revealed that cervical discopathy should not be overlooked in non-cyclic mastalgia patients. In fact, through assessments, it was found that treating cervical discopathy also alleviated the existing mastalgia condition. In our literature review, there was limited literature on this specific topic. However, proportionally, the importance of neurophysiological examination and assessment in mastalgia patients was highlighted.

Mastalgia or breast pain is a complex and often challenging clinical condition that can have various underlying causes. In the evaluation of mastalgia patients, one aspect that has gained increasing importance is the diagnosis of cervical discopathy[4]. Cervical discopathy refers to degenerative changes in the intervertebral discs of the cervical spine, and its association with mastalgia has emerged as a notable consideration in clinical practice.

Understanding the potential link between mastalgia and cervical discopathy is crucial for several reasons. Firstly, accurate diagnosis is fundamental for effective and targeted treatment. In the cohort of mastalgia patients, the presence of cervical discopathy, particularly identified through imaging modalities such as MRI, can provide valuable insights into the underlying mechanisms of pain[11].

Approximately two-thirds of women in their reproductive age experience mastalgia. Mastalgia is classified into two primary categories: cyclic and non-cyclic. Thorough assessment, physical examination, and specific imaging techniques play crucial roles in identifying the root

cause of mastalgia, thereby facilitating informed decisions about treatment options[12]. Cyclic mastodynia is more commonly observed in individuals from the mid-twenties to the age of 30. It typically manifests as widespread bilateral pain. Cyclic breast pain is believed to be associated with hormonal changes[13]. Non-cyclic pain is not related to the menstrual cycle. Non-cyclic mastodynia represents approximately 25% of mastodynia cases. It is more commonly observed in women aged 40 and above. In patients without organic breast pathology, the likelihood of extramammary pain is higher[14].

Cervical discopathy has an incidence rate of 18.6 per 100,000[15,16]. In our clinical observations, we observed a coexistence of cervical discopathy and breast pain in many women, which served as the primary motivation for our study. In the study conducted by Alimoğullari et al[9], a significant relationship was established between breast pain and cervical discopathy, similar to our findings. In that study, the presence of cervical discopathy was detected in 88.4% of the patients.

In our study, we noted a significant benefit from cervical discopathy treatment in non-cyclic mastodynia patients who exhibited pathological findings on cervical MRI. The limitation of our study lies in its retrospective nature.

The strength of our article lies in the greater number of cases compared to similar studies and the scarcity of comparable research, as well as the objective criteria utilized in the follow-up procedures and assessments.

Conclusions

In summary, the diagnosis of cervical discopathy holds considerable importance in the management of mastalgia patients. Not only does it provide a more comprehensive understanding of the underlying pathology, but it also enables the implementation of tailored treatment strategies. Clinicians should, therefore, consider the cervical spine as a potential contributor to mastalgia, conducting thorough assessments and employing diagnostic modalities such as MRI to optimize patient care and outcomes.

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Ethics Approval
The study was approved by the Hitit University of Ethics Committee, No.: 2023-36 (Date: 16.03.2023).

Informed Consent
The written informed consent was obtained from patients included in this study prior to their participation.

Conflict of Interest
The authors declare that there are no conflicts of interest, financial or otherwise, related to the material presented herein. The authors have no conflicts of interest to declare.

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Authors' Contributions
Bahadır Kartal: study design, data collection, analysis, and data interpretation; drafting the article, critical revisions related to the relevant intellectual content of the manuscript. İbrahim Tayfun Şahiner: study design, making critical revisions related to the relevant intellectual content of the manuscript. Veysel Barış Turhan: data analysis and interpretation. Ertugul Gazi Alkurt: data collection. Bahadır Kartal: drafting the article.

Data Availability
The datasets generated and/or analyzed during the current study are available from the Hospital Information Management System and the corresponding author upon reasonable request.

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