Relation between Mastalgia and Anxiety in a Region with High Frequency of Posttraumatic Stress Disorder

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ABSTRACT

Objective: Mastalgia, the most important breast-related symptom, refers to the pain that arises from breast tissue. Not only hormonal reasons but also psychogenic factors may cause mastalgia. Mastalgia is a subjective complaint and includes emotional components. The present study aimed to investigate the relation between mastalgia and level of anxiety in females.

Materials and Methods: This case-control study had consisted of premenopausal females over the age of 20 years. Control group consisted of premenopausal females over the age of 20 years without mastalgia participated. The case and control groups each included 70 females. Females who had a previous breast surgery for any reason, were pregnant or in lactation period, or had a family history of breast cancer were excluded. The case and control groups each examined VAS and GAD-7 questionnaires.

Results: The GAD-7 scale was performed for both the case and control groups to assess the level of anxiety. Test indicated that the level of anxiety was significantly higher in the cases with mastalgia than in the controls. The VAS and GAD-7 scale scores were compared in the case group to assess the relation between degree of pain and level of anxiety. There was no significant relation between these scores, which indicated that pain, contrary to expectations, was not increased as the level of anxiety increased.

Conclusion: Psychological factors such as anxiety, stress, and depression should be kept in mind after eliminating organic reasons via physical and necessary radiological examinations. A psychiatrist should be consulted since mastalgia is a condition that influences quality of life.

Keywords: Mastalgia, anxiety, posttraumatic stress disorder

Introduction

Pain is an emotion that has existed since the inception of mankind, which negatively affects all their characteristics in life, reduces or eliminates workforce and results in fear and restlessness (1). Mastalgia defines pain that originates in the breast tissue. It is the most important breast-related symptom and its prevalence is known to be approximately 40-80% (2). Mastalgia is divided into two groups: cyclic and non-cyclic. Mastalgia that emerges 7-10 days before menstruation lasting 1-4 days and causes slight pain is considered cyclic mastalgia and is thought to be influenced by hormones in its etiology (3, 4). It is seen at a rate of 8-10% among premenopausal women. Non-cyclic mastalgia, another type of mastalgia, does not increase before menstruation as in cyclic mastalgia and it is felt throughout the whole month. Non-cyclic mastalgia is not expected to be related to menstrual cycle. Such kind of pain may be due to mastitis and breast cysts while they may also be due to non-breast reasons such as muscular and pleural diseases. Its reason is mostly unknown and it may develop both before and after menopausal in women (5).

The psychosomatic reasons of mastalgia were emphasized in several studies and it was defended that mastalgia could be caused by hormonal reasons as well as psychogenic factors (5). In this study, we investigation the relationship between levels of anxiety and mastalgia among women with symptoms of mastalgia presenting to the General Surgery outpatient clinics due to conditions such as post-traumatic stress disorder, generalized anxiety disorder and panic disorder, which developed in the regional population following 2 big earthquakes of magnitude 7.2 that occurred in the city of Van, where we live, in the year 2011 claiming the lives of 644 people.

Materials and Methods

This study was conducted between January, 2014 and April, 2014 at the outpatient clinics of General Surgery, Radiology and Psychiatry. The authorization for the study was obtained with the approval number 2014/2 from the Ethics Committee of Van Regional Teaching

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and Research Hospital and the study was conducted. While premenopausal women with cyclic or non-cyclic breast pain above the age of 20 agreeing to take part in the study were admitted in the case group, premenopausal women above the age of 20 who came to the hospital for another reason and did not have any breast symptoms were included in the control group. Women who underwent breast surgery for any reason, were pregnant or lactating and had family history of breast cancer were excluded from the study. The case group included 70 people and the control group also included 70 people. The study was conducted with approval from the ethics committee of the hospital. Women in both groups up to the age of 40 received only breast ultrasonography (USG) in terms of radiological imaging while women above the age of 40 received both breast USG and mammography. The patients who were identified to have any organic pathology according to the imaging findings were excluded from the study.

Both groups were given the socio-demographic data form created by us at the outpatient clinic and 4 questions in total were asked to learn their name-surname, age, marital status and educational level. Furthermore, a questionnaire exploring whether their pain was cyclic or non-cyclic, bilateral or not, whether they received hormone replacement therapy, smoked, consumed tea and coffee, had history of hyperlipidemia, their age of menarche and whether they had normal menstruation. In this questionnaire, a visual analogue scale (VAS) was used with a table ranging from 0 to 10 in order to assess the pain of the case group and their pain levels were scored (6, 7). Then, the Generalized Anxiety Disorder-7 (GAD-7) test composed of 7 questions was used in order to measure the anxiety levels of patients (8).

The GAD-7 test was originally developed by Kessler et al. (9) in 2001 and it was adapted to Turkish by Konkan et al. (10) in 2013 with its validity and reliability having been proven. GAD-7 is a short test completed by self-reporting, which was improved by Spitzer et al. according to DSM-IV-TR criteria to assess generalized anxiety disorder. The 7-point fourfold Likert scale, which is used to assess the experience questioned in the scale points within the last 2 weeks, (0=None, 1=Multiple days, 2=More than half the days, 3=Almost every day) is a paper & pencil type of scale. Based on the total scores obtained in the scale, the cut-off points set for mild, moderate and severe anxiety were 5, 10 and 15, respectively. The GAD diagnoses for patients with a total score of 10 or more need to be investigated and verified through other methods. With the total score threshold selected as 10, its sensitivity for GAD diagnosis was identified as 89% and its specificity as 82% (11).

Our study is a randomized case-control study. The factors preventing a full understanding of the questionnaire by participants were as follows: the level of education in the area where the study was conducted was low and almost all of the study participants did not speak Turkish at a mother tongue level.

Statistical analysis

All of the data were statistically analyzed using the 20.0 version software program. Depending on the type and distribution of data; Independent Student-t, One-way ANOVA, Two-way ANOVA, Chi-Square, Pearson's Correlation, Mann-Whitney U and Spearman Correlation tests were used as appropriate. Findings with a statistical value of $p < 0.05$ were considered significant.

Findings

In our study, the average age of the patient group (32.14 ± 8.5) and the average age of the control group (32.63 ± 8.4) were not significantly dif-

Table 1. Comparison of mastalgia-related control groups with respect to demographic data

	Case group n=70	Control group n=70	p
Age (years)	32.14 ± 8.5	32.63 ± 8.4	0.734
Coffee (cups/day)	0.14 ± 0.69	0.24 ± 0.69	0.392
Tea (glasses/day)	6.33 ± 5.29	7.43 ± 4.55	0.189
Smoking (packs/day)	1.69 ± 5.64	1.54 ± 4.27	0.866
Age of menarche (age)	13.51 ± 1.11	13.29 ± 1.11	0.228
Number of menstrual cycles	65.70	72.90	0.360

The data are illustrated in line with average $\pm$ standard deviation.

ferent. (Independent Student- T-test, $p=0.734$). When we compared smoking, tea and coffee consumption between control and case groups and statistically analyzed the parameters (Independent Student-T test), the results were as follows: $p:0.866$ for smoking, $p:0.189$ for tea and $p:0.392$ for coffee. We have not identified any significant differences between the case group and control group (Table 1). Since cyclic pain was under hormonal control, we felt the need to examine the menstruation and menstrual cycle since cyclic pain is under the control of hormones. For the age of menarche (Independent Student-T test), the result was $p:0.228$ and for menstrual cycle (Chi-Square analysis), it was $p: 0.360$ and we did not identify any statistically significant difference between the case and control groups. We used the GAD-7 test in order to assess the level of anxiety, which could be reason for mastalgia in patients apart from oncological pathologies. Therefore, we administered the GAD-7 test in both the case and control groups. In both groups, it was assessed whether the GAD-7 scores were in line with normal distribution by using visual (Histogram, branch - leaf) and analytical (Kolmogorov-Smirnov (Kolmogorov-Smirnov, Shapiro-Wilk) methods. Since the distribution was not normal, the Mann-Whitney U test, a non-parametric test, was used to compare the two independent groups. The GAD score of case group was identified as 8.06 ± 3.8 (Average $\pm$ standard deviation) and the GAD score of the control group as 3.96 ± 2.7 (MWU, $p < 0.001$). This value is statistically significant and it shows that patients with mastalgia among those who took part in the study had noticeably higher anxiety levels as compared to those who were not ill (Figure 1). After that, the relationship between the level of pain and level of anxiety were examined. The average VAS score of the patient group was 7.33 and the average GAD-7 level was 8.06. Since the GAD-7 scores did not have normal distribution, Spearman correlation test was used. (Spearman rho, $r=0.006$ $p=0.962$ $n=70$). As a result of this analysis, no correlations were identified between the VAS score and GAD-7 score in the case group (correlation co-efficient= 0.006). We saw that those with increased anxiety did not have increased pain. When we examined the relationship of VAS score with other factors in the case group, no significant correlations with smoking, tea, coffee and age of menarche could be identified (Regression co-efficient = 0.091 with p values of 0.211, 0.556, 0.195, 0.65, respectively). No significant correlations could be found during the analysis of correlation with other categorical variables, either (cyclic pain and menstrual cycle). (Figure 2, 3).

Discussion and Conclusions

Mastalgia is one of the most frequent breast symptoms and it does not have a clear definition. Mastalgia may develop in approximately half

Figure 1. Comparison of study groups on the basis of GAD-7 scores

Figure 2. Correlation between cyclic pain and degree of pain as per VAS score in the case group

Figure 3. Correlation between the order of menstrual cycle and degree of pain as per VAS score

of women below the age of fifty. Nearly 70% of women presenting to breast clinics have mastalgia symptoms (2, 12). There are several organic pathologies influencing this important symptom. The most important factor influencing mastalgia is menstrual cycle. Cyclic mastalgia is influenced by hormones, develops 7-10 days before menarche and lasts 1-4 days (3, 4). A large part of cyclic breast pain is mild and moderate in degree and considered as part of normal changes occurring during menstrual cycle (13). The best way to assess cyclic pain is to create a pain chart. 2/3 of women with breast pain have cyclic

mastalgia. Non-cyclic mastalgia is generally observed in elderly women and it can generally be categorized in 3 groups as follows: localized pain on the chest wall, reflective pain and diffuse real breast pain (5, 14). We also examined amenorrhea in the case and control groups by keeping this organic reason into consideration; however, we were not able to identify any statistically significant differences between the two groups.

The organic effect of smoking, tea consumption and caffeine intake on mastalgia is not known. People who smoke and excessively consume tea and coffee have a mastalgia risk that is 4-5 times more than in normal people and the definitive reason for this could not clearly be shown in various studies (2). Departing from this theory, we investigated the smoking levels as well as tea and caffeine intakes of both groups. However, we were not able to identify any statistically significant differences between the two groups in this examination, either.

Following these organic pathologies, we studied the stress and psychological factors, which are other important factors influencing mastalgia. In a study conducted in Turkey, Coşar et al. (5) studied a group of women undergoing mammography and stated that the group who had pain did not have any differences in their depression scoring as compared to the group who did not have pain. However, Aksu et al. (16) specified in a similar study that the group included in follow-up due to mastalgia symptom had higher anxiety and worry levels as compared to the other group. Colegrave et al. (17) stated that anxiety and worry levels in patient groups, who had mastalgia and were not identified to have any pathology in physical examinations and radiological results, could be high. Mood disorders such as anxiety are still observed in patients presenting to the psychiatry outpatient clinics in the study area especially in the aftermath of the earthquake of a magnitude 7.2, which occurred in 2011 claiming the lives of 644 and causing thousands of people to be injured and lose their property. Therefore, we thought that this situation could influence mastalgia. Furthermore, we also took into account that women in our region could be suffering from early and involuntary marriage (part of regional customs) as well as the resulting psychological depression. Hence, we administered the GAD-7 test in both groups.

Based on an evaluation of the case and control groups in our study, we identified that we did not detect any organic pathologies with respect to mastalgia, the result of GAD-7 test was statistically significantly higher in the case group in comparison with the control group. In other words, those with mastalgia had higher anxiety levels as compared to those without mastalgia. However, we made a combined assessment of the pain and anxiety levels in the patient group and saw that there were no correlations between them.

In the region where we conducted the study, problems related to ethnic origin and language are frequent and it could have been the case that certain questions were wrongly perceived and inaccurately answered by the patients and physicians. Problems might have occurred especially during the administration of GAD-7 test due to the intellectual level of patients with respect to their understanding of the test and expression of their own anxiety levels even though the test is composed of only seven questions. Furthermore, we are of the opinion that some participants with high levels of anxiety assigned misleading points to the VAS and GAD-scores. Even though we asked every question twice, some participants preferred not to listen, to indicate the shortest and easiest answer they could grasp using sign language and to skip the question. Furthermore, an interesting aspect that we would like to

highlight with respect to female patients, who were generally escorted by their husband or their husband's family given the patriarchal nature of the region where the study was conducted, is the following: the case group and control group did not give any answers below the points of 9 and 10 in the VAS scoring process. One needs to keep in mind that the discrepancy in correlation between VAS and GAD-7 scores in the case group might have arisen out of these reasons.

Mastalgia is the most frequent symptom of breast diseases. After organic reasons are ruled out with physical examination and required radiological studies, psychological factors such as anxiety, stress and depression should definitely be considered. Since this is a condition that influences quality of life, a psychiatrist should also be certainly consulted.

Ethics Committee Approval: Ethics committee approval was received for this study.

Informed Consent: Written informed consent was not obtained due to retrospective nature of the study.

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