



EVALUATION OF MAMMOGRAPHY: "FINDINGS IN MASTALGIA IN AN URBAN TERTIARY CARE CENTRE"

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ABSTRACT **BACKGROUND:** The objective of any mammography in women who present with local or diffuse breast pain is of significant value, to reassure the patient as well as clinician.

OBJECTIVE: Effect of mammography findings on management of mastalgia in patients who are presenting with mastalgia cyclical or noncyclical; with or without nodularity.

DATA SOURCE: All patients, are proven case of mastalgia, who had come at R G Kar medical College & Hospital from January 2015 to June 2016, are included in the study group.

STUDY DESIGN: This is a descriptive cross sectional study & 67 female patients were selected.

MATERIAL & METHODS: Cross sectional study of 67 mastalgia patients whose age more than 35 years. All patients had got mammographic examination.

RESULT: A total number of 67 patients were selected with mastalgia without a palpable lump, mean age 42.3yrs . Majority patients had shown bilateral mastalgia (47.8%), left sided mastalgia(31.1%) & remaining had right sided mastalgia(20.9%). Majority of the patients had non cyclical mastalgia(64.2%) while the rest had cyclical mastalgia(35.8%)

CONCLUSION: Majority of the patients had a BIRADS score of 1 both right & left (89.5%). None of the patients were diagnosed with malignancy & the BIRADS score not more than 3 in any one of the patients.

KEYWORDS : BIRADS- Breast Imaging Reporting And Database Systems Score, MLO view-Medio Lateral View, C-C view-Craniocaudal view, ANDI-Aberration Of Normal Development And Involution.

1. INTRODUCTION:

Mastalgia is the most common breast symptom causing women to consult with physicians or surgeons. Aside from discomfort & pain, concern about malignancy is the prime reason for most women to seek medical evaluation & treatment for this syndrome (Eberl et al. 2008) though it is rarely a sign of cancer. Both cyclical & noncyclical forms are well established entities (1). Cyclical mastalgia is a breast pain occurring with the menstrual cycle, often few days before menstruation. Non cyclical mastalgia is described as a constant or intermittent pain not related with menstrual cycle. Sometimes musculoskeletal pain like costochondritis represents as mastalgia. Mastalgia is cyclical in two- third of the patients(2). Cyclical pain is often bilateral. According to severity breast pain may be classified as mild, moderate or severe. However cyclical discomfort & nodularity of the breast are so common as to lie firmly within the spectrum of normality. Breast pain & nodularity often coexist, but each may occur independently, both the clinical features are consequences of ANDI that may be more or less prominent according to normal development or involution. Severe cyclical mastalgia needs hormonal treatment. Diagnosis of severe cyclical mastalgia include pain severity >4 cm measured with a 10 cm VAS & pain duration of at least 7 days per month (3). Approximately 8-10% of premenopausal women experience moderate to severe breast pain monthly during premenstrual period(4). Premenstrual mastalgia has been reported to interfere with women's lives, relationships, work & sleep(5). Although cyclic mastalgia is a well known somatic component of the premenstrual syndrome(PMS), >80% of women with premenstrual mastalgia do not meet with the criteria for PMS(5). Mammography should be offered to the patients who are >35, as nonpalpable cancers are sometimes picked up by the mammography(6). It was found in a study that mastalgia was the only indication for mammography in 28% patients & 1.1% of them were projected breast cancer(7). In a study by Tilanus et. Al, whose subjects comprised women referred to a hospital breast unit by GPs, pain was the presenting symptom or reason for mammography in 14.3% & prevalence of breast cancer in these women were 24%(8). Mammography has high sensitivity of 69% (60-78%) & specificity of 94% (93%-96%), a positive predictive value of 8.6%(3%-16%) & a negative predictive value of 99.7% (99.6%-99.9) (9). Thus breast imaging using mammography in women who present

with local or diffuse breast pain is of significant value, to reassure the patient & clinician (10).

2. MATERIALS & METHOD:

In our study 67 female patients, age >35 were selected, who were attending general surgery OPD of R .G. Kar Medical College & hospital with complain of mastalgia. Mammography is a specialized medical imaging that uses a low energy x-ray system to see inside breasts. Here we restricted ourselves to the use of conventional film - screen mammography that uses x-rays to create an image of the breast tissue.

During the mammography, we used two projections for the evaluation, that is Cranio-caudal view & Medio-Lateral oblique views.

The mammographic results were interpreted with the description on the basis of -density of breast, any atypical features like mass, cyst, opacity, or nodularity with details of its number, size, shape, position, margins & any architectural distortion. Accordingly BIRADS score develops.

An FNAC was to be considered when indicated, such as in cases with a BIRADS score >3.

3. RESULT & ANALYSIS:

In this series a total of 67 cases of mastalgia without a palpable lump were studied in a time period of one & half years from January 2015 to June 2016. The mean age of the patients was 42.3 years. Of these, majority of the patients had bilateral mastalgia(47.8%), followed by left sided mastalgia (31.1%), while the remaining (20.9%) had right sided mastalgia. It was also found that majority of the patients had non-cyclical mastalgia(64.2%) while rest (38.8%) had cyclical mastalgia. The mean age of menarche in these patients was 12.3 years & most of the patients (97%) had not attained menopause. Majority of the patients had a BIRADS score of 1 both right (89.5%) as well as left(89.5%). None of the patients were diagnosed with malignancy & the BIRADS score not more than 3 in any of these patients.

Maximum number of patient were in the age group between 40-44 yrs

and minimum number of patient were in the 50 or > 50 yrs. While mean age (SD) was 42.3 yrs.

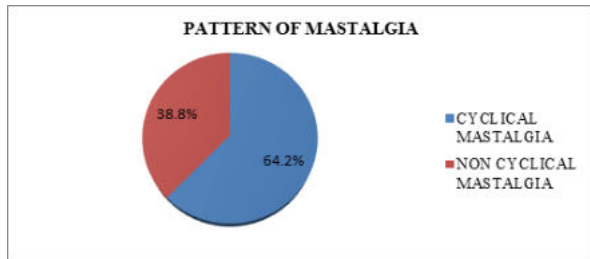


Figure 1: Pie chart showing pattern of mastalgia

Comment : Non-cyclical mastalgia was found to be more common than cyclical.

The age distribution of cyclical vs non cyclical mastalgia is in the following manner.

- I. 35-39 yr age group cyclical mastalgia 33.3% and non cyclical mastalgia 66.6%
- II. 40- 44 yrs age group cyclical mastalgia 28% and non cyclical mastalgia 72%
- III. 45-49 yrs age group cyclical mastalgia 52.9% and non cyclical mastalgia 47.1%
- IV. 50yrs yrs age group cyclical mastalgia 25% and non cyclical mastalgia 75%

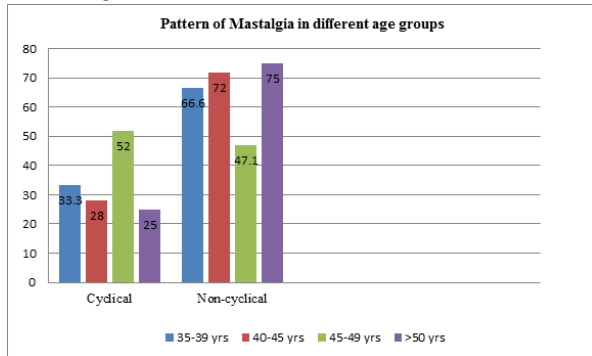


Figure 2: Bar graph showing pattern of mastalgia in different age groups

Comment: Cyclical mastalgia was more common in the age group 45-49 years; otherwise non-cyclical mastalgia was more common in all other age groups.

The incidence of breast affected by mastalgia in case of Right sided breast was 19/67 (28.45%), Left sided breast 31/67 (46.3%), and Bilateral breast 17/67(25.3%).

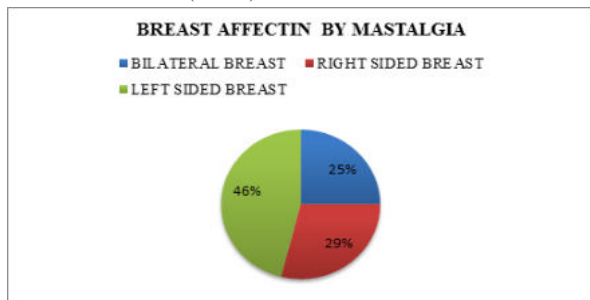


Figure 3: Pie chart showing distribution of laterality of mastalgia in the study population.

Comment: Left sided mastalgia was found to be most common; followed by right sided mastalgia, followed by bilateral mastalgia.

The co-relation between periodicity and laterally in case of cyclical mastalgia, the unilateral breast affection was 22/67 (91.7%) whereas in bilateral breast affection was only 2(8.3%). In case of non-cyclical breast mastalgia – unilateral breast affection was 28 (65.1%) whereas bilateral breast 15/67 (34.9%).

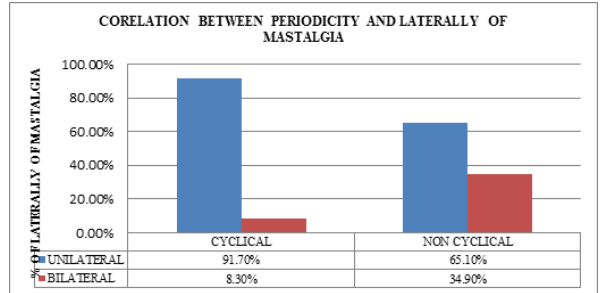


Figure 4: Bar graph showing co-relation between periodicity & laterality of mastalgia

Comment: Unilateral mastalgia was more common than bilateral mastalgia in cyclical as well as non-cyclical mastalgia.

The patient who have experienced mastalgia, among them the hormonal pill used 10/67 (6.7%) whereas 57/67(93.30%) patients had no history of use any hormonal pill

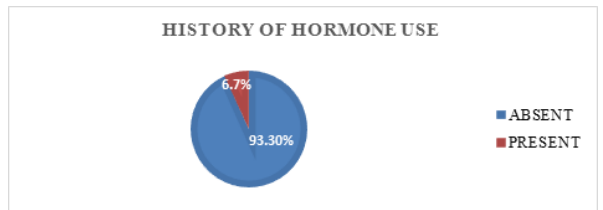


Figure 5: Pie chart showing patients with history of hormone use

Comment: 6.7% of patients in this study had a history of use of some exogenous hormones.

The co-relation between of hormones and periodicity of mastalgia – In case of hormone user ,the patient is being on cyclic phase 4(40%) and non cyclical phase 6(60%) whereas the number of patients had no history of hormonal therapy in cyclical phase 20(35.1%) and non cyclical phase 37(64.90%) .

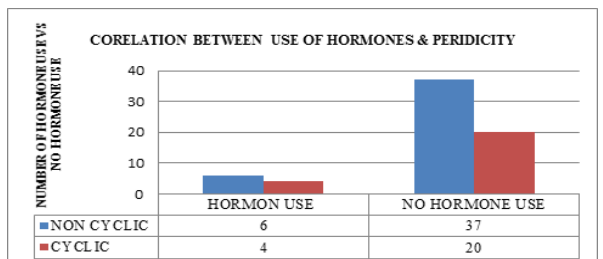


Figure 6: Bar graph showing co-relation between use of hormones & periodicity of mastalgia.

Comment: Non-cyclic was more common than cyclic mastalgia irrespective of the use of hormones.

BIRADS 0,1,2,3,4,5 and number 0,66,9,4,0,0.0 and % (0%, 83.5%, 11.4%, 5.1% 0%, 0%, 0%) accordingly.

All the patients in this study had benign findings on mammography with most of them with BIRADS 1 (83.5%), followed by a BIRADS 2 score (11.4%), followed by BIRADS 3 (5.1%).

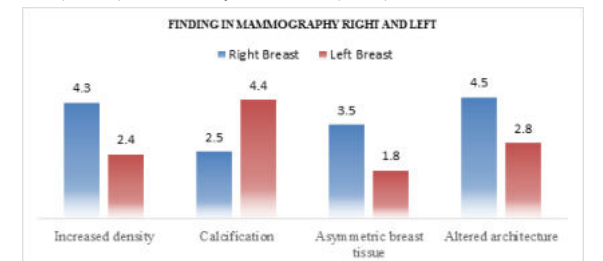


Figure 7: Bar graph showing findings of mammography in right & left breast.

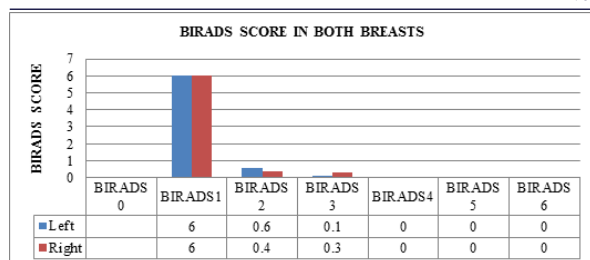


Figure 8: Comparison of BIRADS Score of lesions in both breasts.

Comment: BIRADS 1 was the most common result of mammography followed by BIRADS 2 & BIRADS 3 respectively. None of the patients had BIRADS score 0, 4, 5 or 6.

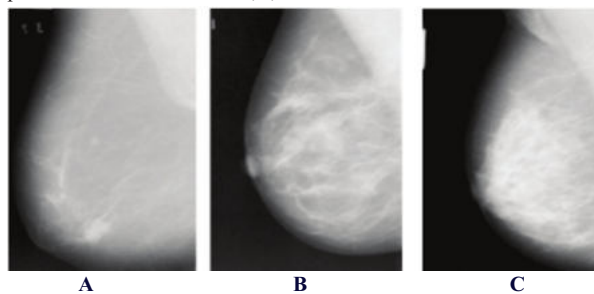


Figure 9. Mammograms showed A – BIRADS 1 (entirely fatty breast tissue), B- BIRADS 2(scattered fibro-glandular density), C- BIRADS 3 (heterogeneously dense breast obscuring small masses)

4.DISCUSSION

This was a descriptive cross sectional study done in a tertiary care center with the objectives of comparison of mammographic findings in patients presenting with mastalgia in the absence of a palpable lump; with or without nodularity. The results being obtained, are discussed as follows:

AGE:

In the present study, the mean age of the patients presenting with mastalgia was 42.3 years. This was close to the mean age of 48.7 years as in the study group of Rebecca et al (11). Naz et al also had a mean age of 40+-5 years in their study (7). Mebrahtu et al however had majority of their patients younger than 30 years of age (12). This discrepancy however could be due to the fact that patients younger than 35 years old were not offered mammography & hence were not included in this study.

PERIODICITY:

In the present study noncyclical mastalgia (64.2%) was found to be more common than cyclical mastalgia (35.8%) however cyclical mastalgia was found to be more common than non-cyclical mastalgia in the age group of 45-49 years. However several other studies non-cyclical mastalgia is found to be more common in 4th & 5th decade of life (2, 13, and 14). Davis et al also had contradictory findings to this with cyclical mastalgia more common in the 3rd & 4th decade of life (15). These differences could be attributed to the possibility of patients not aware of such periodicity of pain as no visual analogue scale or breast pain charts were maintained by the patients in this study group & patients history was the only source of information to evaluate the periodicity of pain.

(a) LATERALITY

In the present study, unilateral (74.7%) mastalgia is more common than bilateral mastalgia (25.3%). Amongst the unilateral mastalgia left sided mastalgia (46.3%) was more common than right side (28.4%). This was in accordance with the study of Mebrahtu et al in which pain was in 72.4% & bilateral in 27.6% patients (12). Similarly Naz et al had 77.5% patients with unilateral & 22.5% with bilateral mastalgia (7). Lucein et al also had a similar data of 76% cases with unilateral & 24% cases bilateral mastlgia (16). According our study, unilateral breast pain was more common than bilateral breast pain in cyclical as well as non-cyclical mastalgia though this difference was seen more profound in cyclical mastalgia. Also similar to this study, Rebecca et al found left sided mastalgia (53%) to be more common than right sided mastalgia (39%) when it came to unilateral mastalgia (11).

(b) RELATION WITH HORMONAL USE:

In the present study, 6.7% of the patients had a history of use of exogenous hormones in the form of oral contraceptive pills or hormone replacement therapy. Mebrahtu et al also had 10.5% of their subjects with a history of hormonal use (12). Callantine et al had a higher figure of 25% of patients on hormonal therapy at the time of presentation (17). McNicholas et al had an even higher figure of 36.3% of patients on hormonal therapy at the time of presentation (18). This suggests that exogenous hormonal use may be a cause of mastalgia. Though our present study does not have a high percentage of patients with a history of hormonal use, this can be due to the fact majority of the patients in this study were premenopausal (97%), so hormone replacement therapy is not indicated in these patients.

(c) MAMMOGRAPHY FINDINGS:

In the present study, all the patients had benign findings on mammograms with 68.7% patients with normal mammograms while 31.3 % patients with benign findings on mammography. Robert J McKenna also did not detect any pathognomic appearance on the mammogram of the patients with non palpable breast lesions who had undergone mammography for the evaluation of breast pain (19). Duijm et al also did not find any radiological abnormality in patients with mastalgia (16). Similarly, Tumyan et al found 95% patients of mastalgia with negative or benign findings on mammogram (20). Mebrahtu et al found that imaging findings on the painful breasts showed 72.4% normal, 25.7% benign & 1.9% suspicious findings of malignancy (12).

(d) INCREASED DENSITY:

In the present study, 10.5% patients had increased density on mammogram. This was similar to findings of Rebecca et al who found dense breast in 10.7% of their study (11). Mebrahtu et al also had a similar rate of 13.3% patients with mild alteration in breast density (12). Leinster et al found in their study that women with mastalgia, cyclical or non-cyclical, had a higher incidence of increased breast density on mammogram than in women with no or minimal pain. Further they concluded that longer the duration of breast pain, had a high incidence of breast density in their mammogram. They described dense & homogenous stromal pattern without prominent duct pattern as a dominant feature as a high risk breast pattern (21). Robert J McKenna also considered it difficult to identify cancer in dense breast in dense breasts unless there were suspicious microcalcifications or architectural distortion (19). Therefore though considered benign in absence of other suspicious findings, patients with increased density should be considered for follow up & taught proper self examination of breast.

(e) CALCIFICATION:

In the present study, 9% of the patients had benign calcifications in their mammogram consisting of 33.3% of the benign findings in the total study group. Mebrahtu et al on the other hand found only 1.9% of patients with benign calcification which consisted of 7.4% of the benign findings overall (12). Sickles described two subtypes of widely distributed tiny calcifications: discrete clusters of calcifications & numerous bilateral scattered & randomly clustered calcifications. He found 38.8% patients with clusters of tiny round or oval calcifications in which 0.1% was found to be malignant & 3% with discrete clusters of tiny calcifications none of which were malignant & 16.4% with scattered or randomly clustered tiny calcifications out of which 0.2% were found to be malignant (22). Robert J McKenna found that calcification when associated with fibrocystic changes could mimic those seen in malignancy & in an unavoidable false-positive report (19). Therefore, though microcalcifications are usually benign, it needs proper description to distinguish between benign calcifications & calcification associated with malignancy.

(f) ASYMMETRIC BREAST TISSUE:

In the present study, 4.5% patients were found to have opacity & 6% patients were found to have nodularities on mammography while none of them were found to have any mass or cyst in their mammogram. Khanzada et al found small cysts, fibrocystic disease, mastitis, ductal ectasia or fibroadenoma, amongst which, fibrocystic changes were the most common & frequent benign breast disease (23). Duijm et al found small cysts or mastopathy as the most common benign finding in their study (16). Though Taber et al considered large cysts as a cause of local tenderness (24). Brenner et al gave an opinion that non-palpable cysts were unlikely to cause pain (25). Sickles found 18.5% patients with localized non-calcified well defined solid nodules amongst which 2% were found to have malignancy. He found another 7.9% patients with

generalized non-calcified well defined solid nodules amongst 0.4% were found to be malignant (22). Homer et al found masses on mammography of their study group which included calcified degenerating fibroadenomas, intramammary lymph nodes, lipid containing masses such as lipomas, some hamartomas & oil cysts. All of them considered benign findings (26). Therefore, though many of the studies found masses & cysts as common benign findings in mammography, non-palpable masses & cysts are unlikely to cause pain.

(g) ARCHITECTURAL DISTORTION:

In the present study, 1.5% had architectural distortion in the form of small spiculated lesions which however was considered a probably benign finding. Naz et al had a higher figure of 6.8% patients with a probably benign finding on mammogram (7). Kamal et al found mammary duct ectasia, also called periductal mastitis as a positive finding on mammography which could mimic invasive ductal carcinoma clinically (28). This discrepancy could again be attributed to the fact that palpable breast lesions were excluded in this study.

(h) BIRADS SCORE:

In the present study, 83.5% patients had a BIRADS score of one, 11.4% had a BIRADS score of two & 5.1% patients had a BIRADS score of three. None of the patients in this study had a BIRADS score 0 or above 3. This was found similar findings of Rebecca et al who found 81.1% patients with BIRADS category 1 & 2, & 5.3% patients with BIRADS category 3. However they had 13.6% patients with a positive mammogram, that is BIRADS 0, 4 or 5 (15).

Total (21) positive findings patients - Increased breast density 7(33.3%) was found to be the most common positive finding followed by calcification 6 (28.6%) followed by asymmetric breast tissue in which no mass or cyst was found in this study however 3(14.3%) patients had opacity and 4(19%) patients had nodularity. Another 1(4.8%) had architectural distortion. However all these findings were benign with a BIRADS score of one, two or three.

5. CONCLUSION:

In our present study, 67 cases of mastalgia in the absence of palpable lump were evaluated using mammography. The mean age of the patient was 42.3 years. Most of the patients were in the age group of 40-44 years. Non-cyclical mastalgia (64.2%) was found to be more common than cyclical mastalgia (35.8%). However in the age group of 45-49 years cyclical mastalgia was found to be more common than non-cyclical mastalgia (47.1%). Unilateral mastalgia (74.7%) was more common than bilateral mastalgia (25.3%) amongst which left sided mastalgia (46.3%) was more common than right sided mastalgia (28.4%). Also it was noted that according to this study, unilateral mastalgia was more common than bilateral mastalgia in cyclical in cyclical as well as non-cyclical mastalgia. There was a positive history of use of exogenous hormone in the form of oral contraceptive pills at the time of presentation in 6.7% of patients with mastalgia. 31.3 % patients had a positive finding on mammography. All of them are benign. 9% patients in right breast & 10.6% patients in left breast had increased density of breast on mammography. Overall 10.4% patients had increased breast density on mammography. Overall 9% patients were found to have calcification on mammography. Overall, 4.5% patients had opacity & 6% patients had nodularity in their mammogram. The most common positive finding on mammography of this study group increased breast density (33.3%), second most common finding being calcification (28.6%). This was followed by nodularity (19%), followed by opacity (14.3%). 4.8% patients had architectural distortion on mammography. 89.6% patients had a BIRADS score 1, 5.9% had BIRADS score 2 & 4.5% had BIRADS score 3. None of the patients had a BIRADS score 0 or more than 5 implying that all these findings were benign or probably benign. Therefore none of the patients in this study had to be advised for tissue diagnosis or an FNAC. Follow up with repeat mammography being advised that was required at the most in these patients when BIRADS score was 2 or 3 otherwise most of the patients could be reassured on the basis of a mammogram with a BIRADS score of 1.

6. AUTHOR'S CONTRIBUTION: PLC conceived the study and did the literature search, coordinated the write-up, editing and submission of the article. ESK and MM participated in the writing of the manuscript and editing. All the authors read and approved the final manuscript.

7. CONFLICTS OF INTERESTS: There is no conflict of interest,

and. All authors are in agreement with the manuscript. The publication has not been published before and is not under consideration elsewhere.

8. THE DISCLOSURE STATEMENTS: I hereby declare that submission of work requires that the piece to be reviewed has not been previously published. I have the following nonexclusive rights: (1) to use the manuscript in the Author's teaching activities; (2) to publish the manuscript, or permit its publication, as part of any book the Author may write; (3) to include the manuscript in the Author's own personal or departmental (but not institutional) database or on-line site; and (4) to license reprints of the manuscript to third persons for educational photocopying. These exclusive rights run the full term of the copyright, and all renewals and extensions thereof. I hereby accept the terms of the author agreement

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