

Analysis of the types of breast pain-a retrospective study

Krishnamurthy S.R¹

¹Associate Professor, Department of General Surgery, Madha Medical college and research Institute, Porur road
Corresponding author: Krishnamurthy S.R

Abstract: Purpose: To determine the most common type of breast pain and presence of malignancy in breast pain patients.

Methods: We conducted a retrospective analysis of the symptoms, clinical examination findings and breast imaging results among 260 breast pain patients. These were patients between 15-45 years who had presented to the General Surgery OPD from March 2017-March 2018.

Results: A majority of mastalgia patients were between 25-35 years (58.3%). Cyclical mastalgia was more common in the 25-35 years group (71.8%) with p value <0.00001 . Bilateral mastalgia was also more in the 25-35 years group (69.7%) with p value <0.0001 . 172 (66.2%) patients demanded imaging due to cancerophobia. In imaging only 15% patients had dense breasts, 67.2% patients with dense breasts had history of unilateral mastalgia while 59.6% of patients with normal breasts had bilateral mastalgia ($p < 0.01$).

Conclusion: Cancerophobia is very high among our patients although no malignancy was detectable. Mastalgia is most common in the 25-35 year age group and tends to be bilateral and cyclical.

Date of Submission: 02-04-2018

Date of acceptance: 17-04-2018

I. Introduction:

All over the world breast pain is the second most common reason for subjecting women to breast imaging, routine screening being the first¹⁻⁸. In India Breast pain is one of the most common symptoms for which female patients of all age groups present to a surgeon^{7,9-17}.

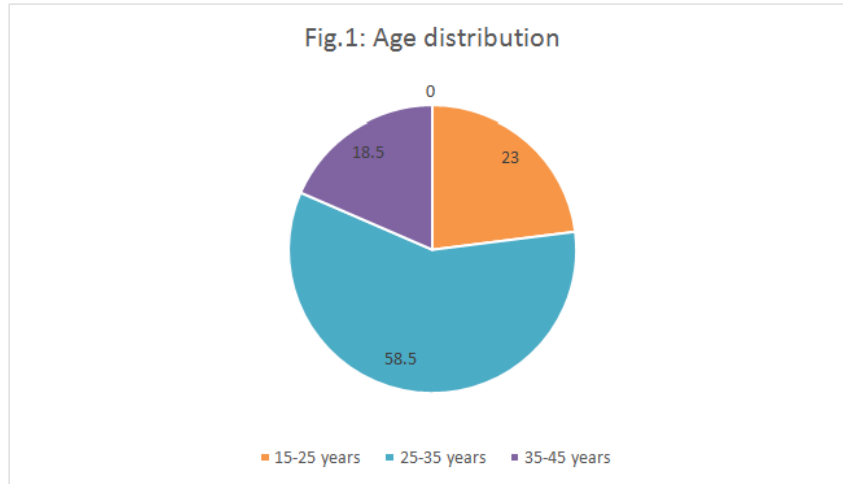
The causative factors for breast pain are not well understood. Several possible causes have been studied. We undertook this retrospective study primarily to determine the most common type of breast pain and also the possible incidence of malignancy among our breast pain patients.

II. Materials And Methods:

260 patients who presented with breast pain to our General Surgery OPD from 2017 March to 2018 March were analysed retrospectively. Patients with breast pain, already detected to have breast cancer, and those with pain due to other causes like rib cage pain, pectoral myalgic pains, referred pain, and costo-chondritis were not included in the study. In the same way, patients whose pain was suggestive of pre-pubertal syndrome were also excluded. Patients below 15 years and above 45 years were also not considered. This study included only patients whose pain originated in the breast. Those patients aged from 15-45 years were included. We analysed the following: the age of occurrence of the pain, fear of cancer among the patients, family history of malignancy, symptoms of discharge from the nipples, clinical presence and type of breast lump and radiological images. On account of fear of malignancy, 172 among the 260 patients demanded for breast imaging. Statistical analysis was done using chi square test and a p value of <0.05 was considered significant.

III. Results:

Among 260 patients, the age distribution was as follows: 60 patients (23%) were aged between 15-25 years (Group 1), 152 patients (58.5%) were aged 25-35 years (Group-2) and 48 patients (18.5%) aged 35-45 years (Group-3).



Among Group-1, 51 (84.3%) had cyclical and 9 (25.7%) had non-cyclical pain. Among Group-2, 109 (71.8%) patients had cyclical and 43 (28.2%) had non-cyclical pain. Among Group-3, 15 (32%) had cyclical and 33 (68%) had non-cyclical pain. This distribution was found to be statistically significant with $p < 0.00001$.

Table.1: Age-wise distribution of the type of pain

Parameter being analysed	Cyclical pain (n=175)	Non-cyclical pain (n=85)	Total
Age group			
15-25 years (n=60)	51 (84.3%)	9 (15.7%)	60 (23%)
25-35 years (n=152)	109 (71.8%)	43 (28.2%)	152 (58.5%)
35-45 years (n=48)	15 (32%)	33 (68%)	48 (18.5%)
Total	175 (67.3%)	85 (32.7%)	260 (100%)
Chi square = 38.2355	p-value < 0.00001		

Among Group-1, 48 (80%) had bilateral and 12 (20%) had unilateral breast pain. Among Group-2, 106 (69.7%) patients had bilateral and 46 (20.3%) patients had unilateral breast pain. Among Group-3, 9 (18.8%) patients had bilateral while 39 (81.2%) had unilateral breast pain. This distribution was found to be statistically significant with $p < 0.00001$.

Table.2: Age-wise distribution of pain laterality

Parameter being analysed	Bilateral pain (n=163)	Unilateral pain (n=97)	Total
Age group			
15-25 years (n=60)	48 (80%)	12 (20%)	60 (23%)
25-35 years (n=152)	106 (69.7%)	46 (20.3%)	152 (58.5%)
35-45 years (n=48)	9 (18.8%)	39 (81.2%)	48 (18.5%)
Total	163 (62.7%)	97 (37.3%)	260 (100%)
Chi square = 50.5369	p-value < 0.00001		

200 patients (76.9%) among 260 underwent breast imaging (USG breasts for patients < 25 years and Mammography for those between 25-45 years). On analysing the imaging of these 200 patients we found that majority i.e., 170 patients (85%) had normal imaging results while, 30 (15%) had dense breasts radiologically. Further analysis of the 30 patients with dense breasts showed that 20 patients (67.2%) had given a history of unilateral breast pain while 10 (32.8%) had history of bilateral breast pain. Among the remaining 170 (85%) normal patients, 69 (40.4%) had symptoms of unilateral and 101 (59.6%) had reported symptoms of bilateral breast pain. This distribution was statistically significant with a p -value < 0.01.

Table.3: Analysis of imaging and patient symptoms

Radiological finding	History of unilateral breast pain (n=89)	History of bilateral breast pain (n=111)	Total
Normal breasts (n=170)	69 (40.4%)	101 (59.6%)	170 (85%)
Dense breasts (n=30)	20 (67.2%)	10 (32.8%)	30 (15%)
Total	89 (44.5%)	111 (55.5%)	200 (100%)
Chi square=7.0218 p value=0.008052			

IV. Discussion:

Various causes have been described for mastalgia, including a disturbance of hypothalamic control, abnormal hormonal response to stimuli, abnormal end-organ sensitivity, altered local hormone receptors, and disorders of lipid metabolism or fatty acid levels (which may result in exaggerated effects of normal levels of hormones). Hormonal medications, (including hormone replacement therapy, oral contraceptives, and infertility treatments) and selective serotonin reuptake inhibitor form of antidepressants can be a cause of breast pain and tenderness. Psychological factors may also be involved. Breast pain can be associated with diffuse palpable nodularity, but there is no relationship between the extent of nodularity and the severity of pain¹⁰. Twenty-five percent of patients with noncyclical pain are reported to have duct ectasia with periductal inflammation, characterized by an exquisite continuous burning pain, usually behind the nipple, and a hypersensitive breast^{14, 18}. This entity is often associated with heavy smoking. Women with large breasts often have non-cyclical pain simply related to the size of their breasts, which may also be associated with neck, shoulder, and back pain.

Breast pain is usually divided into two main types, cyclical and noncyclical, and should be distinguished from extra mammary pain.

Cyclical Breast Pain: The cyclical form of mastalgia, which is by far the most common, is diffuse unilateral or bilateral pain or tenderness, often accompanied by swelling, that waxes and wanes with the menstrual cycle. This accounts for up to 70% of women with breast

pain^{4, 7, 19-22}, most of whom do not meet the commonly accepted criteria for premenstrual syndrome²³, suggesting that it is a distinct entity. Patients are typically in their third decade of life. Our study also shows increased prevalence of cyclical breast pain in the second and third decades. In one study, pain was unilateral in 38% (usually in the breast with more parenchyma), and 61% of those with bilateral pain had pain in one breast more than the other. Many patients had a history of low physical activity and a low rate of breast-feeding, and 87% were multiparous²⁴. The pain is most pronounced in the luteal phase and is most likely hormonal in origin. However, no consistent abnormalities in basal hormone levels have been found in most studies, suggesting an increased sensitivity to normal hormone levels as the aetiology. Cyclical pain is usually treated symptomatically, because the likelihood of breast cancer is extremely low in the absence of other signs or symptoms. Approximately 14% to 20% of these patients have spontaneous resolution within 3 months^{4, 19}, and most have decreasing severity of pain over time¹⁹. However, at least 60% of cases recur within 2 years. Some women have increasing severity of symptoms until menopause, at which time about 40% experience resolution. Women who start having cyclical pain before age 20 usually have a prolonged course²¹. Women with cyclical mastalgia tend to undergo more frequent breast investigations (consultations, mammograms, needle and surgical biopsies) than do women without cyclical breast pain^{1, 3}, and more commonly engage in self-treatment.

Non-cyclical Breast Pain: Non-cyclical breast pain accounts for up to 25% of the cases of breast pain²¹. It is predominantly inflammatory in nature, rather than hormonal in origin. It is usually unilateral and tends to be more focal than cyclical breast pain. The site of the pain is often precisely localizable and reproducible by the patient and physician. This type of pain has no predictable chronological pattern but may be worse in cold weather. It is more commonly persistent and is often located in the sub areolar area or nipple and in the lower inner breast. Noncyclical mastalgia is more common in women in their fourth decade of life,

although 10% to 15% present after the age of 50⁶. Our study also shows predominance of non-cyclical mastalgia in the fourth decade. Non-cyclical mastalgia tends to be of shorter duration than cyclical mastalgia, with spontaneous resolution occurring in up to 50% of patients⁶. Most cases of non-cyclic mastalgia do not respond to hormonal

manipulation. This type of pain, even without additional signs or symptoms of breast disease, may need additional evaluation to exclude an underlying benign or malignant breast lesion²⁵. Mammography may show duct ectasia or secretory calcifications at the site of pain. Non-cyclical breast pain due to various medications is poorly understood and has various presentations. Mastitis or breast abscess can be a cause of focal pain, which may precede induration, redness, warmth, and fever. Breast pain may also be the initial presentation of

Mondor disease (thrombophlebitis, usually of the thoracoepigastric vein). Noncyclical breast pain can be related to trauma in approximately 10% of cases. Pain related to a previous surgery is more common in patients who had postoperative infection or hematoma or in patients in whom the surgeon cut across Langer lines of tension. Breast implants, especially

those placed in a sub-pectoral location, can be associated with pain. Postsurgical pain may be due to scar pain, nerve regeneration, or focal nerve injury due to ischemia, radiation, lymphedema, or implant capsule formation. Some degree of non-cyclic breast pain and tenderness associated with pregnancy and breast-feeding is common and is usually of short duration, resolving spontaneously. Rarely, breast pain is one of the first symptoms of pregnancy. Breast pain can also occur physiologically at the larche. Breast pain during exercise may occur in many women due to movement of breast tissues. Various other causes of pain that are perceived to be within the breast, or referred to the breast, have been described, accounting for 10% to 15% of the cases of "breast pain." The nerve supply to the breast is from the antero-lateral and antero-medial branches of the intercostal nerves from T3 to T5, and irritation anywhere along their course can lead to breast or nipple pain. The extra-mammary (non-breast) causes of pain include Tietze syndrome (costochondritis); other musculoskeletal chest-wall conditions, such as pectoral muscle strains or spasms, entrapment of the lateral cutaneous branch of the third intercostal nerve, fibro myositis, fibromyalgia, myalgia and rib fracture, spinal (cervical or thoracic) nerve root syndrome, coronary ischemia, oesophageal disease (i.e., achalasia, hiatal hernia), pulmonary disease (i.e., pleurisy, pulmonary embolus, tuberculosis), gallbladder pathology, peptic ulcer disease, gastro-oesophageal reflux, shingles, and sickle cell anaemia. Even infected teeth have been reported as a cause of breast pain.

Association of Breast Pain with Breast Cancer and Benign Breast Disease:

Although pain is not a common symptom of breast cancer, some studies have suggested that cyclical mastalgia may represent an independent and useful clinical marker of increased breast cancer risk^{26,27}, especially in pre-menopausal women. One study²⁸ reported a 2.1 to 3.6 increase in relative risk for breast cancer and a 5-fold increase in breast cancer in women with symptoms persisting for more than 97 months. Another study²⁶ reported a 5-fold increase in breast cancer after 37 months of pain. These authors suggested increased tissue sensitivity to estrogen as the cause. However, other authors have implied a protective effect of breast pain by causing patients to seek medical attention early²⁹ and reported no overall increase in breast cancer risk^{27, 30-32}. Several studies have reported that premenopausal women with severe pain of long duration during their menstrual cycles more commonly had very dense breasts mammographically⁵, which has recently been cited as a risk factor for breast cancer. Our analysis showed mammographically dense breasts in patients with unilateral breast pain more commonly, than bilateral cases, who may be at a risk of malignancy. Advanced cancers may present with breast pain as the only symptom³³, especially if they are present deep in a large breast or have chest-wall invasion. Invasive lobular carcinoma³⁴ and anaplastic carcinoma³⁵ are disproportionately associated with mastalgia compared with other cancer types. Pain has also been described with adenoid cystic carcinoma³⁶.

V. Conclusion:

There is an increased fear of breast cancer among our study population. Most patients with breast pain fell in the 25-35 years age group. Mastalgia was mostly bilateral and cyclical below the age of 35 years. Majority of patients with breast pain had normal breast imaging results (85%) while only few (15%) had dense breasts. Most patients with dense breasts had history of unilateral breast pain.

References

- [1]. Ader DN, Browne MW. Prevalence and impact of cyclic mastalgia in a United States clinic-based sample. *Am J Obstet Gynecol* 1997;177:126-32.
- [2]. Ader DN, Shriver CD. Cyclical mastalgia: prevalence and impact in an outpatient breast clinic sample. *J Am Coll Surg* 1997;185:466-70.
- [3]. Goodwin PJ, Miller A, Del Giudice ME, Ritchie K. Breast health and associated premenstrual symptoms in women with severe cyclic mastopathy. *Am J Obstet Gynecol* 1997;176:998-1005.
- [4]. Griffith CD, Dowe CS, Hinton CP, Blamey RW. The breast pain clinic: a rational approach to classification and treatment of breast pain. *Postgrad Med J* 1987;63:547-9.
- [5]. Leinster SJ, Whitehouse GH, Walsh PV. Cyclical mastalgia: clinical and mammographic observations in a screened population. *Br J Surg* 1987;74:220-2.
- [6]. Maddox PR, Harrison BJ, Mansel RE, Hughes LE. Non-cyclical mastalgia: an improved classification and treatment. *Br J Surg* 1989;76:901-4.
- [7]. Mansel RE. ABC of breast diseases. Breast pain. *BMJ* 1994;309:866-8.
- [8]. Olawaiye A, Withiam-Leitch M, Danakas G, Kahn K. Mastalgia: a review of management. *J Reprod Med* 2005;50:933-9.
- [9]. Barton MB, Elmore JG, Fletcher SW. Breast symptoms among women enrolled in a health maintenance organization: frequency, evaluation, and outcome. *Ann Intern Med* 1999;130:651-7.
- [10]. Fentiman IS, Hamed H. Assessment of breast problems. *Int J Clin Pract* 2001;55:458-60.
- [11]. Millet AV, Dirbas FM. Clinical management of breast pain: a review *Obstet Gynecol Surv* 2002;57:451-61.
- [12]. Morrow M. The evaluation of common breast problems. *Am Fam Physician* 2000;61:2371-8, 2385.

- [13]. Nichols S, Waters WE, Wheeler MJ. Management of female breast disease by Southampton general practitioners. *Br Med J* 1980;281:1450-3.
- [14]. Preece PE, Mansel RE, Bolton PM, Hughes LM, Baum M, Gravelle IH. Clinical syndromes of mastalgia. *Lancet* 1976;2:670-3.
- [15]. Preece PE, Mansel RE, Hughes LE. Mastalgia: psychoneurosis or organic disease? *Br Med J* 1978;1:29-30.
- [16]. Roberts MM, Elton RA, Robinson SE, French K. Consultations for breast disease in general practice and hospital referral patterns. *Br JSurg* 1987;74:1020-2.
- [17]. Vaidyanathan L, Barnard K, Elnicki DM. Benign breast disease: when to treat, when to reassure, when to refer. *Cleve Clin J Med* 2002;69:425-32.
- [18]. Klimberg SV. Etiology and management of breast pain. In: Bland KI, Copeland EM, eds. *The breast: comprehensive management of benign and malignant diseases*. 4th ed 87-96. Philadelphia, PA: Saunders Elsevier; 2009:123-8.
- [19]. Davies EL, Gateley CA, Miers M, Mansel RE. The long-term course of mastalgia. *J R Soc Med* 1998;91:462-4.
- [20]. Tavaf-Motamen H, Ader DN, Browne MW, Shriver CD. Clinical evaluation of mastalgia. *Arch Surg* 1998;133:211-3; discussion 214.
- [21]. Wisbey JR, Kumar S, Mansel RE, Preece PE, Pye JK, Hughes LE. Natural history of breast pain. *Lancet* 1983;2:672-4.
- [22]. Onstad M, Stuckey A. Benign breast disorders. *Obstet Gynecol Clin North Am* 2013;40:459-73.
- [23]. Ader DN, Shriver CD, Browne MW. Cyclical mastalgia: premenstrual syndrome or recurrent pain disorder? *J Psychosom Obstet Gynaecol* 1999;20:198-202.
- [24]. Wetzig NR. Mastalgia: a 3 year Australian study. *Aust N Z J Surg* 1994;64:329-31.
- [25]. Morrow M. Management of common breast disorders: breast pain. In: Harris JR, ed. *Breast diseases*. 2nd ed. Philadelphia: Lippincott; 1991:63-71.
- [26]. Plu-Bureau G, Le MG, Sitruk-Ware R, Thalabard JC. Cyclical mastalgia and breast cancer risk: results of a French cohort study. *Cancer Epidemiol Biomarkers Prev* 2006;15:1229-31.
- [27]. Smallwood JA, Kye DA, Taylor I. Mastalgia; is this commonly associated with operable breast cancer? *Ann R Coll Surg Engl* 1986;68:262-3.
- [28]. Plu-Bureau G, Thalabard JC, Sitruk-Ware R, Asselain B, Mauvais-Jarvis P. Cyclical mastalgia as a marker of breast cancer susceptibility: results of a case-control study among French women. *Br J Cancer* 1992;65:945-9.
- [29]. Khan SA, Apkarian AV. Mastalgia and breast cancer: a protective association? *Cancer Detect Prev* 2002;26:192-6.
- [30]. Duijm LE, Guit GL, Hendriks JH, Zaat JO, Mali WP. Value of breast imaging in women with painful breasts: observational follow up study. *BMJ* 1998;317:1492-5.
- [31]. Locker AP, Manhire AR, Stickland V, Caseldine J, Blamey RW. Mammography in symptomatic breast disease. *Lancet* 1989;1:887-9.
- [32]. Fariselli G, Lepera P, Viganotti G, Martelli G, Bandieramonte G, DiPietro S. Localized mastalgia as presenting symptom in breast cancer. *Eur J Surg Oncol* 1988;14:213-5.
- [33]. Philip J, Wijesinghe DP, Harris WG, Rustage JH. Importance of mastalgia in operable breast cancer. *Br Med J (Clin Res Ed)* 1982;285:58.
- [34]. Preece PE, Baum M, Mansel RE, et al. Importance of mastalgia in operable breast cancer. *Br Med J (Clin Res Ed)* 1982;284:1299-300.
- [35]. Chiedozie LC, Guirguis MN. Mastalgia and breast tumour in Nigerian women. *West Afr J Med* 1990;9:54-8.
- [36]. McClenathan JH, de la Roza G. Adenoid cystic breast cancer. *Am JSurg* 2002;183:646-9.
- [37].

Krishnamurthy S.R "Analysis of the types of breast pain-a retrospective study." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 17, no. 4, 2018, pp 39-43.