

Demographics and ultrasonography findings of mastalgia in a tier 2 city of India



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ABSTRACT

Background: Breast pain is the second most common breast symptom (after breast lump) for which women seeks medical attention. Breast pain can affect daily life, including sleeping, or physical, social, and work-school life. Mastalgia is one of the common causes for women in tier 2 city visiting health care facility but there are only few studies which focus on demographic findings and ultrasonographic findings in mastalgia. **Aims and Objectives:** The objective of this study was to study demographics of breast pain in a tier 2 city and ultrasound evaluation of mastalgia. **Materials and Methods:** In this prospective study, 143 patients presenting with mastalgia irrespective of focality, duration, or cyclical nature were included. In these patients, we studied demographic profile and ultrasonographic findings in mastalgia. **Results:** About 37% women were in 20–29 years of age group and least number was in 70–79 years of age group. About 86% of women in our study were in reproductive age group. Most patient with mastalgia have associated palpable lump (58%) followed by 43% patients with mastalgia and nipple discharge, only 27% of patients have mastalgia alone whereas 4% women have pain with skin changes. The majority (49%) of mastalgia cases fall under the breast imaging-reporting data system (BI-RADS)-I category while cases in BI-RADS-IV and V category were 2 and 1, respectively. **Conclusion:** Women in their reproductive age group and in their 3rd decade of life are more prone for mastalgia. Ultrasonography is also helpful in detecting cancers in setups where routine mammography is not possible.

Key words: Mastalgia; Breast imaging-reporting data system; Ultrasonography; Breast lump; Breast imaging

INTRODUCTION

Breast pain is a common problem that affects 70–80% of women at some point in their lives.¹ Breast pain is the second most common breast symptom (after breast lump) for which women seeks medical attention, even in older age groups.² The incidence of cancer in patients presenting with breast pain is reported to be 0–3.2%³ and in one study up to 7%.⁴ Breast pain is usually self-limited and is not typically a symptom of malignant pathologic disease. Breast pain is defined as discomfort and pain in one or both breasts or nipples.⁵ Breast pain can be divided into cyclical breast pain and non-cyclical breast pain. Most common of these two is cyclical breast

pain which accounts for about 70% of mastalgia.⁶ The incidence of mastalgia increases among women over 30 years old.⁷ Breast pain can affect daily life, including sexuality, sleeping, or physical, social, and work-school life.⁸ Mastalgia is one of the common causes for women in tier 2 city visiting health-care facility but there are only few studies which focus on demographic findings and ultrasonographic findings in mastalgia. Our study is aimed to fill the knowledge gap in this regard.

Aims and objectives

The aims and objectives of this study are as follows:

1. To study demographics of breast pain in a tier 2 city
2. Ultrasound evaluation of mastalgia.

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MATERIALS AND METHODS

This prospective study was performed between March 1st, 2021, and January 31st, 2023, at a tertiary care academic institution of a tier 2 city of central India after approval by the Institutional Ethics Committee and after patients consent.

All patients presenting with mastalgia irrespective of focality, duration, or cyclical nature were included in the study. Patients were evaluated as per department protocol. All patients underwent clinical examination by a surgeon. Then, patients are referred for ultrasonography (USG) and/or X-ray mammography (MMG) depending on age. Women <30 years of age are ordered USG alone while above 30 years of age undergo both USG and MMG. In India, there are no national guidelines for population-based screening MMG. Women may visit a medical center and request for a regular screening MMG.

Imaging technique and interpretation

The sonographic examination of breast and axilla was performed using high-frequency linear probe (7–12 MHz). The patients were positioned supine with the arm on the side of interest relaxed up by the side of the head. Both the breasts were exposed, and all quadrants were examined while sweeping the transducer in radial and anti-radial direction to see the abnormality. Both the axilla was also examined for any mass extension or lymph node. Lesions were also examined under color Doppler ultrasound and results were noted. Examinations were interpreted by radiologists using the American College of Radiology breast imaging-reporting data system (BI-RADS) lexicon.⁹ Histologic samples for pathologic diagnosis were obtained under ultrasound guidance if indicated.

Data collection statistical analysis

The data of the present study were recorded in Microsoft Excel sheet. Descriptive statistics and Z test was used to compare patient demographics, pain characteristics, and imaging modality between all patients/cases and those with breast cancer. All analysis was performed using SPSS software. $P < 0.05$ was considered statistically significant.

RESULTS

During the study period, 143 women came with complain of mastalgia. In these patients, 15 women did not undergo ultrasonographic examination and 28 women did not give their consent for the study. In final cohort, 100 women were studied with ultrasonographic examination for the mastalgia. In this study, we observe that 37% women were in 20–29 years of age group and least number was

in 70–79 years of age group (Table 1). Most women in 20–29 years of age have solitary complaint of mastalgia not associated with any other symptom (Table 1).

Mastalgia was associated with the parity of women that we observe that 41% women affected were multiparous while women with only single child were 31% and 28% women were nulliparous.

We find that the prevalence of mastalgia was 57% in women who breastfed their offspring.

Mastalgia was frequent in reproductive age group with 86% of women in our study which was in reproductive age group and only 13% women were in postmenopausal age.

We observe that cyclical mastalgia was more common (55%) and diffuse pain was more common (54%) in comparison to focal pain (Table 2).

Most patient with mastalgia have associated palpable lump (58%) followed by 43% patients with mastalgia and nipple discharge, only 27% of patients have mastalgia alone whereas 4% women have pain with skin changes.

In our study, the following findings were there when mastalgia cases were evaluated using USG that 52% cases had ultrasound findings whereas no ultrasound findings were found in 48% cases. Among 52% of cases with

Table 1: Age-wise distribution of mastalgia cases

Age group	Mastalgia cases number	Cases with solitary complain of pain
10–19	8	1
20–29	37	13
30–39	25	5
40–49	20	7
50–59	5	0
60–69	3	1
70–79	2	0
Mean age	34.82±12.98	31.89±10.84

Table 2: Type of mastalgia

Type of pain	Laterality	Number of cases	Percentage	
Cyclical pain	Unilateral			
	Focal	3	45	
	Diffuse	11		
	Bilateral			
Non-cyclical pain	Focal	2	55	
	Diffuse	29		
	Unilateral			
	Focal	28		
	Diffuse	5		
	Bilateral			
	Focal	13	9	
	Diffuse	9		

ultrasound finding, 32.6% had solid mass lesions, 17.3% had cystic lesions, 15.38% had ductal changes 5.7% had intramammary lymph nodes, 5.7% had hyperemia, and 23.07% had non-mass lesions. Among cases with solid lesions, 76.47% were fibroadenomas. Among cases with cystic lesions, 33.33% were simple cysts while 66.66% were complex cyst (Table 3).

We found that the majority (49%) of mastalgia cases fall under the BI-RADS- I category while cases in BI-RADS- IV and V category were 2 and 1, respectively (Figure 1).

Mastalgia was associated with non-mass lesions in 12 cases out of which nine cases were of benign etiology while three cases were with malignant features.

Most of the benign looking non-mass lesions had heterogenous echotexture (55.55%), focal in distribution (66.66%), few with calcifications (33.33%), and 77.77% showed duct changes (Table 4).

Out of three malignant non-mass lesions, 66.66% had hyperechoic echotexture regional in distribution (83.33%), few with calcifications (66.66%), and all showed duct changes (100%).

DISCUSSION

In this study, the mean age of patients with complaint of mastalgia was 34.82±12.98 years with 70% of patients younger than 40 years which was lower than the study conducted in Turkey where majority of patients were more than 40 years of age.¹⁰ Another study conducted in Southeast Asian women also have majority of women with mastalgia with mean age of presentation 31.9±5 years.¹¹ This shows that there are some geographical, racial, and ethnic factors that can lead to early onset of mastalgia in Southeast Asian women. This also tells that mastalgia presents early in Southeast Asian women as compared to their western counterparts.

Mastalgia was common in women who have offspring and breastfeeding their children as compared to the nulliparous women; this tells that breast feeding and pregnancy do not prevent mastalgia on the other hand it associated with complaint of mastalgia.

Cyclical mastalgia was present in 55% of cases and diffuse pain was seen in 56% of cases. About 27% presented breast pain as the solitary complaint.

After ultrasonographic evaluation, 52% of patients have ultrasonographic findings in these patients with ultrasonographic findings that most common was solid mass lesion (32.6%). In patients with mastalgia and solid

Table 3: Ultrasonographic features in mastalgia cases

Findings	USG features	Number of cases (%)	Percentage cases of mastalgia
Present	Solid mass lesion		52
	Fibroadenoma	13 (25)	
	Others	04 (7.6)	
	Cystic lesion		
	Simple	3 (5.7)	
	Complex	6 (11.6)	
	Non-mass lesion	12 (23.07)	
	Intra mammary lymph node	3 (5.7)	
	Only ductal changes	8 (15.38)	
	Only hyperemia	3 (5.7)	
Absent		48	48

USG: Ultrasonography

Table 4: Echotexture and location in mastalgia cases

Benign non-mass lesion (9)	Number of cases	Percentage
Echotexture		
Anechoic	2	22.22
Hyperechoic	0	0
Hypoechoic	2	22.22
Heterogenous	5	55.55
Location		
Focal	6	66.66
Focal linear	0	0
Segmental	2	22.22
Regional	1	11.11
Calcification		
Few	3	33.33
Many	0	0
With duct changes	7	77.77
With other changes (vascularity, skin changes)	2	22.22

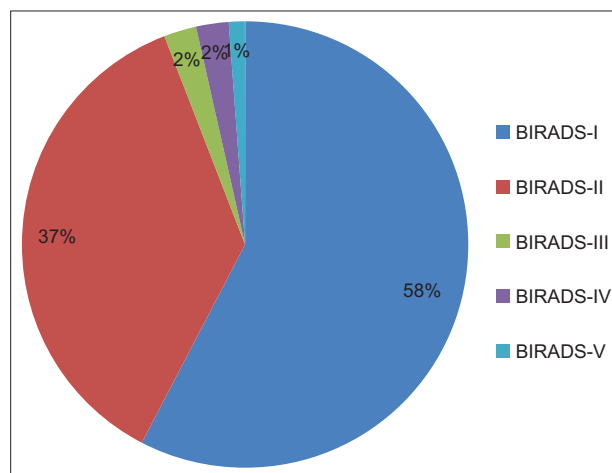


Figure 1: Breast imaging-reporting data system classification of mastalgia cases

mass lesion, fibroadenoma remains the most common causative pathology (76.47%).

We encountered 3% malignant non-mass lesions during ultrasonographic evaluation. These patients present with only mastalgia as their complaint. This finding of malignant non-mass lesion in mastalgia can be missed if only clinical examination was performed in these patients. This signifies the importance of ultrasonographic evaluation of mastalgia in places where routine screening using MMG is not feasible and where due to logistic and economical constraints MMG is not possible.

Our study puts emphasis on the ultrasonographic evaluation of mastalgia patient to detect malignant changes in patients where routine screen for breast cancer is not feasible.

Limitations of the study

Our study has several limitations. As it was conducted at a tertiary academic institution of tier 2 city, results may not be generalizable. Referral bias is another limitation, as general practitioners and hospitalists do not always refer that patients with mastalgia and MMG both in women over 30 years were done at the discretion of surgeon/radiologist and a very small number of patients underwent both examinations. Although it is one of the largest studies performed in India, our cancer detection rate was low. Study would have been more significant in terms of which imaging modality to prefer if both USG and MMG were done in all patients and few cancers were missed in one modality but detected on other. This would tell us how many cancers were missing by USG.

This study was a hospital based study, so observations drawn from this cannot be directly applied at the community level.

CONCLUSION

This study concludes that women in their reproductive age group and in their 3rd decade of life are more prone for mastalgia. USG is also helpful in detecting cancers in setups where routine MMG is not possible. This study also concludes about most common ultrasonographic findings in women with mastalgia.

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ST- Definition of intellectual content, literature survey, prepared first draft of manuscript, implementation of study protocol, data collection, data analysis, manuscript preparation and submission of article; **RA-** Design of study, statistical analysis and interpretation, review manuscript; **HS-** Statistical analysis and interpretation, review manuscript; **ASP-** Concept, design, clinical protocol, manuscript preparation, editing, and manuscript revision

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