



Mastalgia - The Burden Beneath

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ABSTRACT

Objective: Mastalgia is the most common breast-related complaint. A multitude of hormonal changes and lifestyle associated factors have been implicated in its causation. A long list of treatment modalities have been tried with varying success rates. To identify the most common risk factors and the most effective management strategies for mastalgia in our clinic population.

Materials and Methods: A total of 100 women between 18–65 years of age presenting to the breast clinic with mastalgia were followed throughout their course of diagnosis and management. Stepwise treatment was provided, starting with reassurance and breast support and progressing to include pharmacological measures, when necessary. The risk factors and outcomes of treatment were analysed.

Results: The majority (66%) were aged 25–47 years and the left breast was found to be most frequently involved. Involvement of the upper outer quadrant was significantly more common. Lump/nodularity was the most prevalent risk factor. Most patients showed a positive response to non-steroid anti-inflammatories (NSAIDs) in addition to reassurance, breast support and dietary changes.

Conclusion: A detailed history and clinical examination helps to identify the risk factors and the best approach for the management of mastalgia. Educating women regarding breast self-examination at regular intervals helps in early presentation and diagnosis of the underlying condition. Reassurance, breast support and lifestyle changes are the first line treatment and have good results in a significant number of patients. In our practice topical and oral NSAIDs, evening primrose oil and vitamin E were frequently used as additional treatments to non-pharmacological methods.

Keywords: Centchroman; mastalgia; menarche; risk factors

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Key Points

- Majority of the patients were premenopausal, in the age group of 25–47 years.
- Lump/nodularity was the most prevalent risk factor.
- The diagnostic accuracy was 84.9% on the basis of history and clinical examination alone.
- The pretreatment average pain score was 4.45 ± 1.59 and after treatment was 0.69 ± 0.88 .
- Reassurance, breast support and lifestyle changes are the first line treatment followed by topical and oral NSAIDs, EPO and vitamin E as needed.

Introduction

One of the cornerstones of the diagnosis of breast disease and management is an accessible dedicated breast clinic. It not only heightens awareness about breast cancer but also educates the patients about the various risk factors and the benefits of breast self-examination (BSE) so that they can themselves note any changes and approach the healthcare system whenever required. It also provides an emotionally secure environment for the patients when the examination is carried out by female doctors.

“Mastalgia”, “mammalgia” or “mastodynia” is the most common breast-related complaint with a prevalence in working women and may be defined as “pain in the breast of sufficient severity for a woman to seek medical advice” (1, 2). Although mastalgia can be broadly classified as cyclical or non-cyclical, various conditions such as costochondritis (Teitze’s or Tiitze’s disease), herpes zoster infection and cervical spondylitis cause extramammary (non-breast) pain that can mimic mastalgia (3), as can pain due to non-chest wall pain causes such as ischemic heart disease, peptic ulcer or biliary colic. A well localized

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pain precipitated by touch, known as “trigger point pain”, may be seen in patients with duct ectasia or periductal mastitis (2).

Increased estrogen production along with deficient progesterone production and hyperprolactinemia leads to changes in breast tissue that may precipitate mastalgia (4). Aberrations of normal development and involution (ANDI) may also lead to mastalgia in the reproductive age group (5). Mastalgia is also linked to certain lifestyle associated factors, such as high dietary lipid intake (6), obesity (BMI >30 kg/m²) (7, 8), smoking (9) and excessive consumption of methylxanthine-containing products such as tea, coffee and chocolate (4, 7). Mastalgia has been considered to be a part of psychosomatic disorder (10), as demonstrated by Hafiz et al. (7), where depression and anxiety scores were higher in mastalgia patients.

Reassurance, breast support, topical and oral non-steroidal anti-inflammatory drugs (NSAIDs), evening primrose oil, vitamin E, tamoxifen, centchroman, danazol, bromocriptine, lisuride maleate, oral and topical progesterone are, to name a few, among the long list of tried and tested treatments across the world, each with a varying success rate and a rather unpredictable side effect profile (7, 11). The objectives of this study were to investigate the most common risk factors and the most effective management strategies for mastalgia in our clinic population.

Materials and Methods

This was a prospective study which included 100 women, aged between 18–65 years who came to the Breast Clinic, Government Medical College and Rajindra Hospital, Patiala with a complain of mastalgia. After a detailed history and clinical examination using visual analogue scale (VAS) scores, Cardiff breast pain charts, and Hamilton anxiety and depression scores, patients were given treatment sequentially while evaluating the cause of mastalgia and modifying the treatment accordingly.

Results

The majority of the patients with mastalgia were aged 25–47 years (66%) whereas the least affected age group was aged 58–65 years (6%). The left breast was found to be involved more than the right breast with overall incidence of mastalgia being higher than lump/nodularity. Most of the women (41%) had diffuse breast pain and the most commonly involved quadrant was the upper outer quadrant (UOQ; 36%). Around 75% of patients had a parity of 2 or less. Various risk factors were found to be associated with mastalgia and are listed in Table 1. Table 2 shows the findings of clinical examinations while Table 3 shows the various final outcomes of provisional diagnoses. The Kappa value of 0.849 signifies that the accuracy between the provisional and final diagnosis was 84.9% on the basis of history and clinical examination alone. Among the 32% of patients with a discrete lump, 19% had a lump <2 cm in size whereas lump >5 cm was seen in only 4% of the women, of which 2% had a giant fibroadenoma and 2% had histologically confirmed carcinoma. Patients having fibroadenoma underwent excision whereas those having carcinoma underwent modified radical mastectomy. Table 4 shows the various treatment modalities given to patients on the basis of their symptoms, pain scores and investigations.

Discussion and Conclusion

Mastalgia is one of the most common complaints in women worldwide. A variety of risk factors have been implicated in the causation of

mastalgia and varying treatment strategies have been attempted for its resolution in the past. We found that most of the women suffering with mastalgia were premenopausal, and tended to be in the second or third decade of life. Similar results were seen in studies done by Memon et al. (5), Kalyanasundarabharathi (4), Koçoğlu et al. (8) and Sabry et al. (12). This can mostly be attributed to the increased estrogen to progesterone ratio, and hyperprolactinemia leading to changes in the breast tissue, especially the mammary stroma, that leads to mastalgia.

Breast asymmetry and right sided predominance lead to frequent screening of the left breast. Due to this, unilateral involvement of the left breast is a frequent presentation among women, as was seen in our study where, 76% patients had unilateral left breast pain. Similar trends were seen in study done by Ayaprasad (13). In study done by Khanna et al. (14) 45.8% patients had bilateral breast pain compared to 24% in the present study. The most common manifestation

Table 1. Comparison of risk factors causing mastalgia

Risk factor	n	%
Lump/nodularity	72	72
History of cyclical mastalgia	41	41
Parity and lactation frequency >2	28	28
History of wearing ill-fitting bra	27	27
Weight gain in last 5 years	24	24
Age at menarche <12 years	22	22
Similar illness in the past	21	21
Psychiatric illness (anxiety/depression)	21	21
Excessive caffeine intake	17	17
History of OCP consumption	15	15
Nipple discharge/retraction	14	14
Family history	14	14
History of smoking	0	0

Table 2. Findings of clinical examination

Examination	Percentage involvement		
	Lump	Nodularity	Absent
Lump/nodularity	32	40	28
Nipple involvement	Discharge	Retraction	
	13	1	
Skin involvement	Present	Absent	
	10	90	
Temperature	Raised	Normal	
	4	96	
Tenderness	Present	Absent	
	25	75	
Axillary lymph nodes	Palpable	Not palpable	
	6	94	
Arms and thorax involvement	Present	Absent	
	0	100	

Table 3. Various outcomes of provisional diagnoses

Provisional diagnosis Benign breast disease	Final diagnosis					
	Cancer	Idiopathic mastalgia	Infection	Traumatic		
Benign breast disease	67	62	5	0	0	0
Cancer	3	0	3	0	0	0
Idiopathic mastalgia	21	1	0	19	1	0
Infective	7	0	1	0	6	0
Traumatic	2	0	0	0	0	2
Total	100	63	9	19	7	2
Kappa	0.849					
p-value	<0.001					

of ANDI is mastalgia with or without associated nodularity (10). Kalyanasundarabharathi (4), Koçoğlu et al. (8) and Khanna et al. (14) have demonstrated a correlation between pain and the presence of lump/nodularity. In the present study, the majority had an associated lump/nodularity, with nodularity (37%) being slightly more common than a discrete lump (32%).

Pain can also be due to dilated milk ducts (9) and nipple involvement and was seen in 14% of the patients in the present study. Peters et al. (15) and Memon et al. (5) investigated the correlation between mastalgia and duct ectasia and prolactin levels, respectively. A positive family history plays an important role in the causation of breast disorders, and this is especially true in breast carcinoma, where genetics and syndromic associations are known to play an important role. Colak et al. (16) reported that 11.7% of women with mastalgia had first-degree relatives with a history of breast cancer whereas a positive history of similar breast disease was found among 14% women in our study.

Studies done by Jhonson et al. (17), Kanat et al. (18), Eren et al. (19) and Katar and Başer (20) have shown a positive correlation between psychological factors, such as stress, anxiety, and depression and mastalgia. In the present study, 6% had a history of psychiatric illness, 18% were found to have anxiety and 9% were found to have depression. Psychoeducation has been shown to be effective in patients with severe pain refractory to any form of treatment (2015) (21).

Other risk factors in decreasing order of frequency were: lactation frequency >2 (28%), history of wearing ill-fitting brassiere (27%) and excess weight gain in the last five years (24%). An early age at menarche is also one of the factors implicated in the pathogenesis of mastalgia. We found that 89% of the women who presented with mastalgia, attained menarche before 15 years of age whereas only a minority (11%) were over 16 years of age, indicating that as age of menarche increases, the incidence of mastalgia may decrease.

Cyclical mastalgia is the onset of bilateral breast pain one to two weeks before menses, owing to the exposure of breast tissue to increased levels of estrogen. Khanna et al. (14), Colak et al. (16), Eren et al. (19), Koçoğlu et al. (8), Katar and Başer (20) all showed that cyclical mastalgia was more common than non-cyclical mastalgia, which is in contrast to the findings of the present study (41% versus 59%, respectively). Yıldırım et al. (22) and Kalyanasundarabharathi (4) showed increased prevalence of non-cyclical mastalgia.

Table 4. Various treatment modalities given

Treatment given	Number	Percentage
NSAIDs	84	84.0
Evening primrose oil	77	77.0
Vitamin E	75	75.0
Surgery	32	32.0
Incision and drainage	6	6.0
Lump excision	21	21.0
Modified radical mastectomy	5	5.0
Antibiotics	8	8.0
Local anaesthetic injection	1	1.0
Centchroman	1	1.0

NSAIDs: Non-steroid anti-inflammatories

The increased number of live births have been associated with a significant decreasing trend in benign breast diseases. This may be attributed to the decline in progesterone levels which, in turn, have been associated with changes in breast structure leading to mastalgia (2). Colak et al. (16) reported the average number of live births to be 1.7 which was similar to the average parity (1.79) in the present study. Wearing of an ill-fitting brassiere and subsequent active breast movement on weak suspensory breast ligaments may also contribute to mastalgia (7, 8). This was the case in almost a third of the women in the present study. Eren et al. (19) and Koçoğlu et al. (8), found that a BMI >30 kg/m², use of excessive salt, weight gain in the last five years, and using a poorly fitted brassiere for their body habitus were risk factors for mastalgia.

A detailed history and appropriate clinical evaluation gives a fair idea to the physician regarding the management of patients presenting with mastalgia. Most patients respond to non-pharmacological treatment approach that include reassurance, breast support with a sports brassiere, weight reduction, regular exercise, reduction in caffeine intake (3) and diclofenac gel massage to the painful area. Pharmacological management may include the use of NSAIDs, evening primrose oil and vitamin E for symptomatic pain relief.

In the present study, while majority of patients were treated using conservative measures such as reassurance, breast support and dietary changes, drugs such as NSAIDs were used liberally to provide symptomatic relief and capsules of vitamin E and evening primrose oil were given to treat the breast pathology, as needed. For patients with severe pain, centchroman was given. Where these measures failed or in cases of breast carcinoma, surgery was the mainstay of treatment.

Koçoğlu et al. (8) reported that women gave a mean VAS pain score of 4.54 ± 2.1 . In the present study, before treatment the average pain score was 4.45 ± 1.59 , similar to that of the earlier study, and after treatment this had reduced significantly to 0.69 ± 0.88 . There was a significant statistical difference between pain scores before and after treatment.

Mastalgia is one of the most common complaints in women of reproductive age. A detailed history helps to identify the risk factors that may be responsible in each individual patient, along with clinical evaluation, which aids the physician in selecting the best approach for the management of the condition. Educating women regarding BSE at regular intervals will help in early presentation and diagnosis of the underlying condition. This can be achieved in a dedicated breast clinic which not only improves the reach among women but also provides a supportive environment to alleviate their stress regarding breast pathologies, especially cancer. Reassurance, breast support and lifestyle changes are the first line treatment and have good results in significant number of patients. Topical and oral NSAIDs, evening primrose oil and vitamin E can be used frequently as an addition to non-pharmacological methods. Visits to the pain clinic may be necessary in patients with persistent refractory mastalgia, despite all measures.

Ethics Committee Approval: Our study was reviewed and was exempted from ERC approval.

Informed Consent: Retrospective study.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: A.A.S., A.K., D.K.P., P.D., G.K.G., A.S., R.J.; Concept: A.A.S., A.K.; Design: A.A.S., A.K.; Data Collection and/or Processing: A.A.S., A.S., R.J.; Analysis and/or Interpretation: A.A.S.; Literature Search: D.K.P., P.D., G.K.G.; Writing: A.A.S., P.D.

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