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Frequency of Ultrasound Findings in Patients with Mastalgia and Its Association with Age in Gujranwala District

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ABSTRACT

Background: *Ultrasound is the best-known modality used for screening and diagnosis of breast pathologies. This study determine the ultrasound findings in patients with Mastalgia and its association with age.****Aims and Objective:****To determine the ultrasound findings in patients with Mastalgia and its association with age in Gujranwala, Pakistan.* ***Material and methods:*** *A retrospective cross sectional study was conducted at Medcare International Hospital Gujranwala, Pakistan. A total of 121 female patients with the history of breast pain were enrolled in present study. The duration of this research work was from July 2021 to December 2021. All patients visiting us with the history of breast pain more than one month were included in the study. Pregnant women, those with hormonal therapy and previously diagnosed and treated cases of breast cancer were excluded. All patients were advised breast ultrasound after history and physical examination. Predesigned questionnaire form was used to collect the data. SPSS was used to analyze the data. Frequency of different findings and their associations were found out using the chi square test. These were then graphically portrayed in the form of tables and graphs. P value < 0.05 was considered as significant.****Result:*** *The mean age of the patients was 30.03±8.02 years with age range 10-53 years. Among 121 females who presented with breast pain, maximum frequency 50 (41.3%) was seen in age range of 21-30 years. Fibrocystic changes were seen in 22 (18.2%) patients, parenchymal changes in 20 (16.5%), mass Duct ectasia in 13 (10.7%), lymphadenopathy in10 (8.3%), Solid lesion in 8 (6.6%) and fibro adenoma was seen in 4 (3.3%) females respectively. we had four parameters i.e fibro cystic changes, solid lesion, adenosis and parenchymal changes who were linked significant with age with p-value 0.02, 0.001, 0.012 and 0.009 respectively. Most patients were classified as either BI-RADS 1 (53.7 %) or BI-RADS 2 (27.3%).*

Conclusion: *Patient presenting with mastalgia may have different pathologies. Ultrasound can help to determine the exact cause of mastalgia specially breast diseases in young females for whom mammography is contraindicated.*

Keywords: Mastalgia, Ultrasonography, Breast diseases, BI-RADS

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INTRODUCTION

Mastalgia is a condition that is under-reported and under-diagnosed, but it is the most common reason for breast consultations in general practise.[1] Tension, discomfort, and pain in one or both breasts are known as mastalgia.[2] This ache usually affects both sides of the body and is located in the upper outer quadrant.[3] Mastalgia affects 50 to 80 percent of women at some point in their life. Breast pain that lasts one to four days before menstruation is considered typical. Mastalgia can be

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so severe that it affects everyday activities like work, social, sexual, and family life.[4, 5] Breast pain not only makes women's daily lives difficult, but it also makes them question if they have breast cancer.[6] In Pakistan, the risk of breast cancer has increased, with one in every nine women having a lifetime risk of being diagnosed with the disease.[7] Breast cancer is the most frequent cancer in women, with one out of every four women being diagnosed with the disease. Breast cancer claimed the lives of 626,679 people worldwide in 2018, according to the Global Factsheet.[8] Asia has the highest incidence rate (43.6%), death (49.6%), and prevalence (38.2%) of breast cancer in the world.[9] Mammography is required for women with breast masses or lesions, however substantial breast tissue, particularly in young women, might impair the sensitivity of mammography. Ultrasound mammography is an appropriate diagnostic technique for detecting breast cancer in these situations. Apart from measuring palpable breast mass, breast ultrasonography, also known as sonomammography, can extract cysts from solid masses and detect irregularities in the peripheral view that mammography cannot detect.[10]

It is a non-invasive, radiation-free approach that is especially beneficial to nursing and pregnant women. It's a good way to check post-surgical, irradiated breasts, and uncomfortable conditions where mammography isn't recommended.[11, 12] There are two forms of breast pain in clinical terms: cyclical pain that waxes and wanes with the menstrual cycle and appears to be hormonal in origin, and noncyclic pain.[13] Noncyclic and cyclic breast discomfort may have different underlying physiology.[14] According to Gum et al., there are three types of breast pain: cyclical, noncyclical, and some extra-mammary pain that is usually connected with chest wall inflammation.[15] It's frequently unilateral, with a sharp or burning sensation and a focus in the breast. Because of the extremely low possibility that diffuse breast pain (without further signs or symptoms) is an indication of cancer, diffuse breast pain (unilateral or bilateral) is frequently treated on a clinical basis. However, even if there are no other indications or symptoms, focal breast pain is routinely investigated to rule out underlying breast illness.[16] It’s because it's been linked to organic breast lesions in the past. Breast pain is a common symptom that causes women to seek medical help.[17]

Mastalgia's exact cause has yet to be determined.[18] On the other hand, increased sensitivity of breast tissue to hormonal changes during the menstrual cycle is a crucial element in the development of cyclic mastalgia.. Furthermore, this cyclic pain often goes away after pregnancy or menopause, implying that hormone shifts are involved in the aetiology. Anatomical changes, such as the development of a breast cyst, prior breast trauma or surgery, injury to the chest wall, muscle, or joint, intercostal neuralgia, Tietze syndrome, and other spinal and paraspinal disorders, can all cause referred breast discomfort.[19] Breast pain has been connected to some medicines, such as OCPs (oral contraceptive pills), oestrogen and progesterone hormone therapy, antidepressants like SSRI (selective serotonin reuptake inhibitors), and antihistamines. Anxiety, stress, and sadness have all been suggested as contributory factors in various studies, while caffeinated beverages, a fatty diet, and smoking have also been included.[20]

Conducting a thorough history and physical examination is the first and most crucial step in determining the course of investigation and therapy. The use of a pain diary to track the cyclic or noncyclic pattern of pain, as well as a history of the nature of pain, its location, severity, and onset, can provide critical information that can lead to an accurate diagnosis. The physical examination also aids in the discovery of any warning signs or symptoms that need to be addressed. Exploring the chest wall and performing a breast examination can help identify extramammary pain from true mastalgiaThe breast should be extensively checked in conjunction with a comprehensive examination of all four quadrants. The breast, as well as the supraclavicular, infraclavicular, and axillary regional lymph nodes, should be examined for lumps, skin changes, nipple retraction, colour change, ulceration, swelling, or edoema, inflammation, scarring, or abnormal nipple discharge. Elevating the breast tissue with one hand while palpating the underlying chest wall with the other to check for any abnormalities is also part of the exam.[21, 22]

METHODOLOGY

A retrospective cross sectional study was conducted at Medcare International Hospital Gujranwala, Pakistan. A total of 121 female patients with the history of breast pain were enrolled in present study. The duration of this research work was from July 2021 to December 2021. All patients visiting us with the history of breast pain more than one month were included in the study. Pregnant women, those with hormonal therapy and previously diagnosed and treated cases of breast cancer were excluded. All patients were advised breast ultrasound after history and physical examination. Predesigned questionnaire form was used to collect the data. SPSS was used to analyze the data. Frequency of different findings and their associations were found out using the chi square test. These were then graphically portrayed in the form of tables and graphs. P value < 0.05 was considered as significant.

RESULTS

Total 121 cases of all age group were enrolled in this study. The mean value of the age was calculated as 30.03 ± 8.019 with minimum age of 10 years and 53 years as maximum of age.

Table 1: Showing descriptive statistics for age

	N	Minimum	Maximum	Mean	Std. Deviation
Age (Year)	121	10	53	30.03	8.019

Among 121 patients, the maximum frequency 50 (41.3%) of patients who presented with breast pain was seen in age range of 21-30 years following 31-40 years (34.7%)

Table 2: Showing descriptive statistics for age group

Age Group	Frequency	Percentage%
<20	17	14.0
21-30	50	41.3
31-40	42	34.7
41-50	11	9.1
51-60	1	0.8
Total	121	100.0

Among 121 females 47(38.8%) females presented with left breast pain, following 46(38.0%) with bilateral mastalgia and 28 (23.1%) with right sided mastalgia.

Table 3: Showing descriptive statistics for pain in breast

Site of Mastalgia	Frequency	Percent%
Right Breast	28	23.1
Left Breast	47	38.8
Bilateral	46	38.0
Total	121	100.0

According to breast density category, 67(55.4%) females had category-c, 45(37.2%) females had category-b and 9(7.4%) females had category-a.

Table 4: Showing descriptive statistics for breast density.

Breast Density	Frequency	Percent%
Category-a	9	7.4
Category-b	45	37.2
Category-c	67	55.4
Total	121	100.0

Among 121 females who presented with mastalgia, 22(18.2%) females had fibro-cyst. Parenchymal changes were seen in 20(16.5%) patients, 17(14.0%) had mass in their breast, 10(8.3%) showed lymphadenopathy, 13(10.7%) had duct ectasia, 8(6.6%) had solid lesion,. Fibro-adenoma, fibrosis and axillary lump was noted in 4(3.3%) patients. 3(2.5%) women showed dermal thickening, adenosis and breast engorgement on ultrasound. Only 1(0.8%) women showed abscess on ultrasound. (Table 5)

Table 5: Showing descriptive statistics for ultrasound findings

Ultrasound Findings	Frequency	Percent%
Fibro Cystic changes	22	18.2
Parenchymal Changes	20	16.5
Mass	17	14.0
Duct Ectasia	13	10.7
Lymphoadenopathy	10	8.3
Solid Lesion	8	6.6

Fibrosis	4	3.3
Axillary Lump	4	3.3
Fibro-adenoma	4	3.3
Breast Engorgement	3	2.5
Adenosis	3	2.5
Dermal Thickening	3	2.5
Abscess	1	0.8

Significant association was found between age and different pathologies following fibro-cyst (p=0.02), solid lesion (p=0.001), adenosis (p=0.012) and parenchymal changes (p=0.009) respectively. while all others showed no significant link with age. (Table 6)

Table 6: Showing association of Age with ultrasound findings

Ultrasound Findings	**Age**						**P value**
	<20	**21-30**	**31-40**	**41-50**	**51-60**	**Total**	
Fibro-cyst	2(1.7%)	4(3.3%)	11(9.1%)	5(4.1%)	0(0.0%)	22(18.2%)	0.02
Adenosis	0(0.0%)	1(0.8%)	0(0.0%)	2(1.7%)	0(0.0%)	3(2.5%)	0.012
Parenchymal changes	1(0.8%)	7(5.8%)	6(5.0%)	6(5.0%)	0(0.0%)	20(16.5%)	0.009
Solid lesion	1(0.8%)	4(3.3%)	0(0.0%)	2(1.7%)	1(0.8%)	8(6.6%)	0.001
Mass	2(1.7%)	5(4.1%)	6(5.0%)	4(3.3%)	0(0.0%)	17(14.0%)	0.24
Fibroadenoma	0(0.0%)	2(1.7%)	2(1.7%)	0(0.0%)	0(0.0%)	4(3.3%)	0.85
Lymphadenopathy	0(0.0%)	6(5.0%)	3(2.5%)	1(0.8%)	0(0.0%)	10(8.3%)	0.62
Duct ectasia	2(1.7%)	2(1.7%)	7(5.8%)	2(1.7%)	0(0.0%)	13(10.7%)	0.32
Abscess	0(0.0%)	1(0.8%)	0(0.0%)	0(0.0%)	0(0.0%)	1(0.8%)	0.83
Dermal thickening	0(0.0%)	3(2.5%)	0(0.0%)	0(0.0%)	0(0.0%)	3(2.5%)	0.35
Axillary lump	0(0.0%)	3(2.5%)	1(0.8%)	0(0.0%)	0(0.0%)	4(3.3%)	0.69
Breast engorgement	1(0.8%)	0(0.0%)	2(1.7%)	0(0.0%)	0(0.0%)	3(2.5%)	0.51
Fibrosis	1(0.8%)	1(0.8%)	2(1.7%)	0(0.0%)	0(0.0%)	4(3.3%)	0.86

According to the grades of sonomammography: 65(53.7%) females had BI-RADS-1, 33(27.3%) had BIRADS-2 and 14(11.6%) had BIRADS-3. 8(6.6%) females had BIRADS-4 category on the basis of ultrasound findings.

Table 7: Showing BI-RADS grades

BIRAD	Frequency	Percentage
0	1	0.8
1	65	53.7
2	33	27.3
3	14	11.6
4	8	6.6

DISCUSSION

Breast pain is a very common symptom in women and it affects their daily life. Most of the breast cancer were discovered in early stages, with regular screening breast disease can be detected early and may avoid serious surgery such as mastectomy, a lumpectomy or FNA. In many cases patients with pain did not understand what is happening and neglect the medical examination until she feel any lump. Breast self examination and sonomammogram are low cost approaches to detect breast pathologies. Ultrasound is an excellent modality for early detection of any breast pathology and also to lessen their worry about breast pain.

We observed patients who presented with mastelgia maximum frequency 50 (41.3%) belonged to age group 21-30 years and 42(34.7%) females belonged to age group 31-40 years So the most females with mastalgia were from age group 21-40. Females presenting with mastalgia from age group 51-60 were only 1(0.8%). These results are similar to the previous study. As Noureen Shaukat et al concluded in her research that that patients presenting with mastalgia may have different pathologies. Ultrasound helps to determine the exact cause so that appropriate treatment for the cause of breast pain can be provided.[28]

In this prospective study patients were examined clinically and underwent ultrasonography. We revealed 22(18.2%) females had fibro-cyst. Parenchymal changes were seen in 20(16.5%) patients, 17(14.0%) had mass in their breast, 10(8.3%) showed lymphadenopathy, 13(10.7%) had duct ectasia, 8(6.6%) had solid lesion,. Fibro-adenoma, fibrosis and axillary lump was noted in 4(3.3%) patients. 3(2.5%) women showed dermal thickening, adenosis and breast engorgement on ultrasound. Only 1(0.8%) women showed abscess on ultrasound. Our study is in concordance with the results of previous study conducted by Olcucuoglu E et al.[29]

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CONCLUSION

Patient presenting with mastalgia may have different pathologies. Ultrasound can help to determine the exact cause of mastalgia specially breast diseases in young females for whom mammography is contraindicated.

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