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Original Research Article

Frequency of Malignancy in Clinically Benign Breast Lump

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Abstract: *Breast lumps are among the most common presentations in surgical clinics, and while many are benign, a significant proportion may harbor malignancy. Clinical assessment alone may not reliably differentiate benign from malignant lesions, necessitating histopathological confirmation to guide appropriate management.* ***Objective:*** *To determine the frequency of malignancy in clinically benign breast lumps. Study design: Cross-sectional study. Place and duration: Department of General Surgery, Liaquat University of Medical and Health Sciences, Jamshoro, for 6 months, i.e., from September 2024 to February 2025.* ***Methods:*** *A total of 143 patients who fulfilled the selection criteria were included. At baseline, the demographic profile, clinical history, and physical examination of all patients were carried out, and findings were not noted down on a predesigned proforma by the researcher herself. Risk factors for malignancy were assessed in all patients. All patients were then subjected to core needle biopsy of the breast lump. Specimens were sent for histopathological evaluation, and findings were noted down and subjected to statistical analysis.* ***Results:*** *The median (IQR) age of the patients was 52 (16) years. The median (IQR) BMI was 25.4 (4.8) kg/m2. The median (IQR) duration of BBL was 4 (2) months. Among patients with BLL, malignancy was reportedly present in 28 (19.6%) patients.* ***Conclusion:*** *In patients with benign breast lesions, malignancy was reported in 28 (19.6%) patients.*

Keywords: Clinically palpable, benign breast lump, malignancy

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Introduction

Breast cancer is a worldwide issue that impacts women in both developed and developing nations. One in eight women will get breast cancer at some point in their lives if current trends continue. It is responsible for 22% of all female cancers globally, and 42% of women in underdeveloped nations worry that a breast lump will always be cancerous (1).

One significant risk factor that doubles the chance of developing breast cancer later on is benign breast disease (2). With the rise in mammography, it is now more usual to identify benign breast illness; therefore, it is critical to have precise risk assessments for women who are diagnosed with this condition (3). Routine breast cancer screening is recommended for the majority of women diagnosed with benign breast illness. How the long-term risks of breast cancer change over time following a screening-detected benign breast disease is still unknown (4). There is disagreement over the frequency of surveillance imaging following a diagnosis of benign breast disease, despite the existence of several guidelines (5). The potential to reduce the number of needless benign biopsies and lower the medical costs that would have been incurred had category 3 lesions been sampled for biopsy right away, rather than being followed up on, outweighs the possible delay in cancer diagnosis that comes with short-interval follow-up (6). More than 98% of these lesions will be benign if the BI-RADS category 3 criteria are properly implemented (7). Short-term follow-up enables careful monitoring of the lesions for those that are eventually determined to be malignant (8). Short-interval follow-up would still result in early diagnosis of possible tumors without affecting patient survival, considering that the typical estimated doubling time of breast cancers is between 100 and 180 days (9).

According to reports, Pakistan has the highest rate of breast cancer in Asia, with nearly one in nine Pakistani women expected to develop breast cancer (10). Women are concerned about these concerning numbers. There is an ongoing need to ascertain the risk of having malignancy in benign lumps to assess which patients need to undergo surgical intervention. Keeping this in view, the current study aimed to determine the frequency of malignancy in clinically benign breast lumps. The results yielded by our study would help physicians in planning routine and early screening of such patients who present with a breast lump to provide prompt diagnosis and treatment, and reduce complications related to the malignancy and will help our female patients in feeling less anxious because not all breast lumps are cancerous. It would also demonstrate how crucial an efficient breast clinic is in raising awareness of breast disorders and dispelling the myth that a breast tumor is usually cancerous.

Methodology

The study had a cross-sectional design. After receiving approval from the Ethical Review Committee, the study was conducted for six months, from September 2024 to February 2025, at the General Surgery Department of Liaquat University of Medical and Health Science, Jamshoro. The study enrolled 143 patients who had clinically benign breast lump. The sample size of 143 cases was calculated with 95% confidence level, and taking expected prevalence of malignancy in clinically benign breast lump as 24%[11]. Non-probability consecutive sampling technique was used. The study included all patients with clinically benign breast lump (BBL) of age 18 to 80 years and female gender. Patients with breast lumps who had a high clinical suspicion of cancer, a case of breast cancer that had already been identified, females exhibiting obvious clinical indications of breast cancer and those whose breast masses show radiological indications of metastases were excluded.

Clinically benign breast lump was defined as a painless, round lump with distinct, smooth borders, easily movable and either firm or rubbery in consistency as seen on inspection and palpation. Malignancy was defined if on histological examination there were cancerous cells which displayed anomalies such enlarged and atypical nuclei (nuclear atypia), heightened mitotic activity, and a loss of typical cell differentiation.

After taking written informed consent, all patients who fulfilled the selection criteria were enrolled. At baseline, the demographic profile,

clinical history and physical examination of all patients was carried out and findings were not noted down on a predesigned proforma by the researcher herself. Risk factors for malignancy were assessed in all patients i.e. increased age at the time of diagnosis of the benign lump, family history of breast cancer, late menopause, history of oral contraceptive use, age at first pregnancy, obesity and smoking. All patients were then subjected to core needle biopsy of the breast lump. After making the required preparations for the test, the patients were instructed to lie down. To make the skin and surrounding tissue numb, a local anesthetic was administered. The area of concern was located using an ultrasound probe, which also helped to position the needle correctly. The hollow needle was then placed into the breast through a tiny incision. Samples were extracted from the breast lump after the needle was repositioned. To get adequate tissue, this procedure was carried out multiple times. To make it easier to locate the biopsy site in the event that it is required for further treatments, a tiny clip known as a biopsy marker was inserted into the breast. Following sample collection, a dressing was applied and pressure was given to the region to stop the bleeding. Following that, samples were sent for histological investigation in order to check for the existence of malignancy. The results were recorded and then statistically analyzed.

Collected data was analyzed through computer software SPSS 25.0. The Shapiro-Wilk test was used to assess the normality of data and it was found that the data was non-normal in distribution. Therefore, quantitative data such as age, BMI, duration of benign lump was presented as median and interquartile range (IQR). Qualitative data such as age group, risk factors, etiologies of benign lesion, and presence of malignancy were presented as frequency and percentage. Data was stratified for age and duration of BBL. Post-stratification Chi square test was applied and a p value of ≤0.05 was considered as significant.

Results

A total of 143 patients were enrolled. The median (IQR) age of the patients was 52 (16) years. The median (IQR) BMI was 25.4 (4.8) kg/m^2. The median (IQR) duration of BBL was 4 (2) months (Table-I).

There were 7 (4.9%) patients of age group 18 to 30 years, 61 (42.7%) patients of age group 31 to 50 years, 64 (44.8%) patients of age group 51 to 65 years and 11 (7.7%) patients of age group 66 to 80 years. The duration of BLL was ≤3 months in 53 (37.1%) patients and >3 months in 90 (62.9%) patients. With respect to risk factors it was found that no risk factor was present in 25 (17.5%) patients, increasing age was seen in 4 (2.8%) patients, family history of breast cancer was present in 22 (15.4%) patients, late menopause was reported by 12 (8.4%) patients, use of oral contraceptive was reported by 23 (16.1%) patients, late age at first pregnancy was documented in 23 (16.1%) patients, obesity was seen in 12 (8.4%) patients and smoking history was present in 22 (15.4%) patients. With respect to etiologies of BLL, fibrocystic disease was present in 35 (24.5%) patients, cysts were found in 18 (12.6%) patients, fibroadenoma was present in 31 (21.7%) patients, fat necrosis was present in 12 (8.4%) patients, intraductal papilloma was present in 6 (4.2%) patients and lipoma was seen in 13 (9.1%) patients. Among patients with BLL, malignancy was reportedly present in 28 (19.6%) patients (Table-II).

Data was stratified for age and gender and it was found that none of these effect modifiers had any significant association with the presence of malignancy in patients with BLL (Table-III).

Table-1: Median (IQR) of the quantitative variables (n=143)

Variable	Median (IQR)
Age (in years)	52 (16)
BMI (in kg/m^2)	25.4 (4.8)
Duration of BBL (in months)	4 (2)

Table-2: Frequency of qualitative variables (n=143)

Variables	Frequency (percentage)
Age group:	
18 to 30 years	7 (4.9%)
31 to 50 years	61 (42.7%)
51 to 65 years	64 (44.8%)
66 to 80 years	11 (7.7%)
Benign lump duration:	
≤3	53 (37.1%)
>3	90 (62.9%)
Risk factors:	
None	25 (17.5%)
Increasing age	4 (2.8%)
Family history of breast cancer	22 (15.4%)
Late menopause	12 (8.4%)
Use of oral contraceptive	23 (16.1%)
Age at first pregnancy	23 (16.1%)
Obesity	12 (8.4%)
Smoking	22 (15.4%)
Etiologies of BLL:	
Fibrocystic disease	35 (24.5%)
Cysts	18 (12.6%)
Fibroadenoma	31 (21.7%)
Fat necrosis	12 (8.4%)
Intraductal papilloma	6 (4.2%)
Lipoma	13 (9.1%)
Presence of malignancy:	
Yes	28 (19.6%)
No	115 (80.4%)

Table-3: Stratification of malignancy with respect to age and duration of BLL (n=143)

Variables	Malignancy		p value
	Yes	No	
Age group:			
18 to 30 years	1 (0.7%)	6 (4.2%)	
31 to 50 years	10 (7%)	51 (35.7%)	0.479
51 to 65 years	16 (11.2%)	48 (33.6%)	
66 to 80 years	1 (0.7%)	10 (7%)	
Benign lump duration:			
≤3	13 (9.1%)	40 (28%)	0.253
>3	15 (10.5%)	75 (52.4%)	

Discussion

The current study findings revealed that in patients with BLL, malignancy was seen in 19.6% patients. Majority of the patients who had malignancy were of age group 51 to 65 years and had more than 3 months duration of BLL. The commonest etiologies of BBL were fibrocystic disease and fibroadenoma. The commonest risk factors were age at first pregnancy, use of oral contraceptives, smoking and family history of breast cancer.

The primary cause of cancer-related deaths among women, particularly in underdeveloped nations like Pakistan, is breast carcinoma (12). Lung, uterine, and ovarian malignancies have been left behind. It is responsible for 26% of female malignancies that are newly diagnosed as well as cancer-related deaths (13). As a result, each breast lump that seems possibly malignant needs to be carefully examined using the Triple Assessment method, which provides the most accurate and certain diagnosis (14, 15). Cancer is the most likely diagnosis if any of the triple assessment's components are positive (16, 17). There is an ongoing need of ascertaining the risk of having malignancy in benign lumps in order to assess which patients need to undergo surgical intervention (18-20). Keeping this in view, the current study was planned to determine the frequency of malignancy in clinically benign breast lumps.

In our study, 19.6% of women with BBL had malignancy. Iqbal *et al*. in a study conducted in Lahore revealed that the frequency of malignancy in BBL was 17.3%[1]. Another local study by Abbas *et al*. revealed that in patients with BBL, malignancy was present in 19.65% (12). In another study conducted in Iraq, the frequency of malignant lump in patients with BBL was found to be 24.06% (13). The results of these studies are consistent with our study results revealing that the rate of malignancy in BLL is high. On the contrary, Hartmann *et al*. revealed that the rate of malignancy in BBL was 4% (14). Weinstein *et al.* in a study conducted in the United States revealed that the frequency of malignancy in BBL was 0.9% only (2). The study by Hartmann *et al*. and Weinstein *et al.* revealed much lower rates of malignancy in BBL compared to our results. There are a number of reasons why breast cancer is more common in our nation than in developed ones, including a lack of knowledge about the disease and inadequate education, in addition to religious beliefs. Breast lump patients conceal the lesion and only seek medical attention when it results in symptoms like pain, discomfort, changes to the skin, or an enlargement of the lump.

It is impossible to overstate the importance of a full-service, surgeon-operated breast clinic. This is the mainstay of breast disease treatment. For the breast clinic to operate efficiently, having a skilled surgical team is just as crucial as having a well-equipped staff and radiology department. Our study's early cancer diagnosis brought these findings to light. Additionally, only by being aware of the precise numbers and communicating them with patients can we reassure them and prevent them from experiencing undue fear of cancer.

Conclusion

The current study concluded that in females with BBL, the frequency of malignancy was 19.6%. Thus, our study proposed that such patients should be screened earlier in order to diagnose malignancy promptly and make quick decisions regarding the surgical intervention and give further treatment if needed, thus helping in reducing the morbidity associated with this condition if left ignored. Future studies must be carried out on a larger sample size for the validation of current study results.

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Limitations:

There were certain limitations of the study. Results of this study cannot be generalized because it was a single center study with a small sample size. Secondly, the patients were examined at one point in time for the presence of malignancy and were not assessed over a longer term during which further benign lumps might convert to malignant ones and hence could have affected our results. Lastly, association between the types of benign lumps with the occurrence of malignancy was not evaluated.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-ATAE-24)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

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All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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