

An Overview of Recent Trends in Lactational and Non-lactational Breast Abscess

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Abstract

Background: Breast abscess is a common disease encountered in the surgery department. It is usually managed by ultrasound-guided aspiration as well as incision and drainage with antibiotic coverage. A breast abscess is of two types- lactational and non-lactational. The purpose of this study was to find an association between the lactational status of women with breast abscess, in relation to clinical variability, bacteriological variables, blood parameters along with its management.

Methodology: This is a prospective, observational study over a period of 18 months, done at a medical college hospital, which is a tertiary care center. The study participants included 60 patients above 18 years of age, who were presented to the outpatient department and emergency services with features of breast abscess. Among the study subjects, 48 were in lactational and 12 were in non-lactational cases of breast abscess. Clinical, bacteriological, and blood parameters were studied and compared along with the management of these patients within the groups of lactational and non-lactational breast abscesses.

Results: The most common organism found in both groups was Staphylococcus aureus comprising 83.3% in the lactational group and 58.4% in the non-lactational group. Other organisms in the non-lactational group were Group B Streptococci (25%), Proteus (8.3%), and Acinetobacter SPP (8.3%). There was no significant difference in the groups of lactating and non-lactating breast abscess with respect to age, chief complaints, site of an abscess, a local rise of temperature, blood parameters, management and hospital stay as per Chi-Square test ($p > 0.05$).

Conclusion: There was an increase in the incidence of breast abscess observed among lactational than the non-lactational group of patients. Staphylococcus aureus was found to be the most common agent among both groups. Mixed flora was common in cases of non-lactational breast abscess when compared to lactational abscess. The clinical features and blood parameters are similar for both groups.

Keywords: Breast Abscess, Staphylococcus aureus, mastitis.

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Introduction

Breast infections can be present on the skin or within the breast parenchyma and are commonly associated with breast-feeding. This is most common in women of childbearing age. It can also be found in non-lactating women. Non lactating breast abscesses have a wider age range, with the most common occurrences in the fourth decade of life.

Breastfeeding abscesses are commonly caused by *Staphylococcus* and *Streptococcal* strains. *S. aureus* resistant to Methicillin is increasingly common nowadays. Often, breast abscesses may be caused by mixed flora of organisms such as *Staphylococcus aureus*, *Streptococcus*, and anaerobic bacteria. [1,2]

The symptoms of breast abscess normally include chest pain, fever, purulent nipple discharge, erythema, and possibly edema. The history of breastfeeding is usual. Most postpartum mastitis is seen within 6 weeks of breastfeeding. Some patients may have medical illnesses like diabetes.

The cornerstone of diagnosis of a breast abscess is physical examination. Clinically, the abscess area will have erythema, induration, warmth, and sensitivity to palpation. There may be purulent nipple discharge, reactive axillary lymphadenopathy, and an associated fever or tachycardia.

A complete blood count may reveal leukocytosis. An ultrasound of the breast can be performed to rule out cellulitis from the abscess. On ultrasound, abscesses appear as ill-defined masses containing fluid along with internal septations. Sometimes, needle aspiration of the breast abscess can be done, and the fluid can be sent for analysis and culture.

To increase the effectiveness of acute bacterial mastitis and less common dehydration techniques with antimicrobial

treatment, information on the type of bacteria that cause breast abscesses, and their resistance patterns can help a surgeon choose the right empirical treatment. Cultures can be obtained from the nipple discharge to guide antibiotic therapy. Breast bacteriology has been studied in the past, which identified *Staphylococcus aureus* as part of a leading bacterium.[3] Non-lactating breast abscesses have shown the presence of anaerobic bacteria, besides aerobes. As recent trends in the management of breast abscesses suggest ultrasound-guided drainage along with systemic antibiotic therapy, it is essential to learn about the appropriate empirical antibiotic therapy in this era of drug resistance.

The management of the breast abscess requires needle aspiration for abscesses smaller than 3 cm in size. Sometimes, abscesses require multiple drainage procedures in cases of recurrence. Incision and drainage have lower recurrence rates, but it is more invasive than needle aspiration and may lead to scarring and poor cosmesis.

Material and Methods

This study was done at a medical college hospital after due permission from the Institutional Ethics Committee and review board. The study is a Prospective, Observational study over a period of 18 months (February 2019 to July 2020) that included a total of 60 patients with age more than 18 years presented to the outpatient department and emergency services with features of breast abscess.

Valid informed consent was taken from all the subjects before the commencement of the study. After this, a thorough medical history was taken, and a physical examination was done and documented. All the patients underwent routine blood tests and ultrasonography of breast

abscesses. Pus was sent for culture and sensitivity. Patients were treated either by

ultrasound-guided needle aspiration or incision and drainage.

Table 1: Comparison of Lactating and Non-Lactating breast abscess patients

	Lactating breast abscess	Non-Lactating breast abscess	p value
Cases	48	12	
Age group			
18-24 years	23	4	>0.05
25-30 years	19	6	
31-35 years	6	2	
Fever			
Present	30	8	>0.05
Absent	18	4	
Diabetes Mellitus	3	1	>0.05
Site of Abscess			
Upper Outer Quadrant	9	3	>0.05
Upper Inner Quadrant	13	3	
Lower Outer Quadrant	7	2	
Lower Inner Quadrant	8	1	
Retroareolar	11	3	
Pain			
Present	44	11	>0.05
Absent	4	1	
Tenderness			
Present	44	11	>0.05
Absent	4	1	
Local rise in temperature			
Present	46	11	>0.05
Absent	2	1	
Management			
Surgical (Incision and Drainage)	48	11	>0.05
Conservative	0	1	
Hospital Stay			
1-5 days	46	11	>0.05
>5 days	2	1	
Blood Parameters			
Hemoglobin			
Normal (>11)	25	6	>0.05
Mild Anemia (9-10.9)	15	4	
Moderate Anemia (7-8.9)	6	2	
Severe Anemia (<7)	2	0	
Total Leukocyte Count			
Raised (>10000)	42	10	>0.05
Normal (4000-10000)	6	2	
Decreased (<4000)	0	0	

All the patients received antibiotics based on the antibiotic sensitivity pattern.

Patients were discharged within 3 to 4 days of admission. Those presenting with

pus formation during lactation were classified as lactational breast abscesses.

Table 2: Type of organism in Lactating breast abscess patients (n=48)

Type of organism	N	%
Staphylococcus aureus	40	83.3%
Staphylococcus epidermis	8	16.7%
Total	48	100%

Table 3: Type of organism in non-Lactating breast abscess patients (n=12)

Type of organism	N	%
Staphylococcus aureus	7	58.4%
Group B Streptococci	3	25%
Proteus	1	8.3%
Acinetobacter SPP	1	8.3%
Total	12	100%

and other patients were classified as non-lactational breast abscesses. The study participants were followed up till their hospital discharge.

The data gathered from the patient's records included their age, clinical presentation, investigations, and treatment. The pus culture and sensitivity reports and the antibiotics used in the treatment were recorded. Data were tabulated in Microsoft Excel Spreadsheet.

Statistical Analysis: Quantitative data was presented with the help of mean and standard deviation. Comparison among the study groups was done with the help of an unpaired t-test as per the results of the normality test. Qualitative data was presented with the help of frequency and percentage tables. Association among the study groups was assessed with the help of the Fisher test, student t-test, and Chi-Square test. The p-value < 0.05 was taken as statistically significant. The statistical software, including but not restricted to MS Excel, SPSS ver. 20 was used for the statistical analysis.

Results

Out of the 60 patients under the study, most of the patients (45%) were in the age group of 18-24 years followed by 25-30 years (41.7%) and 31-35 years (13.3%).

The mean age of the patients was 25.18 ± 4.63 years. 6.7% of patients were diabetic.

The most common site of the abscess was the upper inner quadrant, seen in 26.7% of patients. 20% patients had breast abscesses in the upper outer quadrant. The lower outer quadrant and lower inner quadrant were involved in 15% of patients each. In 23.3% of patients, the abscess was seen in retro-areolar space. It was observed that 63.3% of patients had a fever. 91.7% of patients reported pain while 8.3% of patients had no pain. There was tenderness in 91.7% of patients. A local rise in temperature was noted in 57 (95%) patients. 31 (51.7%) patients had normal hemoglobin values (>11g/dL) while 19 (31.7%) and 8 (13.3%) patients had mild (9-10.9g/dL) and moderate (7-8.9g/dL) anemia respectively. 2 (3.3%) patients had severe anemia (<7g/dL). 52 (86.7%) patients had raised total leukocyte count (TLC) (>10000 cell/mm³) while 8 (13.3%) patients had normal TLC (4000-10000 cell/mm³). No patients had decreased TLC.

Most of the patients (98.3%) were treated surgically (Incision and Drainage) while 1 (1.7%) patient was treated conservatively. The duration of hospital stay for most of the patients was 1-5 days (95%) followed by >5 days in 5% of patients. The mean duration of hospital stay was 2.75 ± 1.58 days.

48 (80%) patients had lactating breast abscesses while 12 (20%) patients had non-lactating breast abscesses. The most common type of organism in lactating breast abscess patients was *Staphylococcus aureus* (83.3%) followed by *Staphylococcus epidermis* (16.7%). The most common type of organism in non-lactating breast abscess patients was *Staphylococcus aureus* (58.4%) followed by Group B Streptococci (25%), *Proteus* (8.3%) and *Acinetobacter SPP* (8.3%). It was observed that there was no significant difference in lactating and non-lactating breast abscess patients as per the Chi-Square test ($p > 0.05$).

Discussion

Breast abscesses are broadly categorized into lactational and non-lactational breast abscesses. Lactational breast abscess develops within the first 12 weeks of childbirth or while weaning and is associated with considerable morbidity.[4] Milk stasis due to blockage of engorged lactiferous ducts and the following infection is the main etiology of this. Non-lactational breast abscess predominantly occurs in the perimenopausal age group. [5,6] In the present study, among the 60 study subjects, 48 (80%) had lactating breast abscesses while 12 (20%) had non-lactating breast abscesses. This is in concordance with the studies of Ramakrishnan et al., who observed that 97 women (78%) had lactational breast abscesses and 27 women (22%) had non-lactational breast abscesses. [7]

The reason for the high incidence of lactational breast abscesses among young mothers can be attributed to high rates of breastfeeding, poor hygiene, lack of awareness and education, poor socioeconomic status, and poor breastfeeding techniques.

In the present study, *Staphylococcus aureus* (83.3%) was the most common type of organism found in lactating breast abscesses, followed by *Staphylococcus*

epidermis (16.7%). This is similar to the study findings of Ramakrishnan et al. and Abdelhadi et al. [7,8]

Staphylococcus aureus (58.4%) was the most common type of organism found in non-lactating breast abscess followed by Group B Streptococci (25%), *Proteus* (8.3%) and *Acinetobacter SPP* (8.3%) in this study. This finding was consistent with the studies of Ramakrishnan et al.,[7] Eryilmaza et al.,[9] Abdelhadi et al.,[8] Benwan et al.,[10] and Paty et al. [11]

In the present study, there was no significant difference in lactating and non-lactating breast abscess patients as per the Chi-Square test ($p > 0.05$). This is in concordance with the studies of Bukharie et al.,[12] Jain et al. [13] and Benwan et al. [10]

Conclusion

According to the results obtained from the present study, there was an increased incidence of breast abscess among lactational than non-lactational patients. Mixed flora is common in the non-lactational group of breast abscesses when compared to the lactational group. *Staphylococcus aureus* is the most common organism found among both groups. The pattern of organisms involved in non-lactational breast abscess is different from those occurring in lactating women having breast abscesses.

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