

A Clinical and Bacteriological Study of Breast Abscess In Female Patients

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Abstract

In this study, pus samples from seventy-one female patients admitted to the Breast Diseases Center, Hilla Teaching Hospital from September 2004 to June 2005 have been investigated. The samples have been classified into two groups: the first one included 53 lactating patients, ranging from 17 to 45 years , and the second did 18 non-lactating patients, where age ranged from 3 months to 57 years .

The results have revealed a remarkably high incidence of breast abscess among lactating patients (74.6%).The high infection rate (54.7%) in the first group has been among those who were 20-29 years old, whereas in the second group ,the high infection rate (44.4%) has been among those who were 40-49 years old .It has also been found that the breast abscess is higher among multiparty women (66.2%). As for the first group ,the high incidence of breast abscess occurs mostly at the third month postpartum (45.3%). It has Also been found that the incidence of subcutaneous abscess is higher than other types of breast abscess among the first group patients (52.8%) , whereas in the second group , the subareolar abscess is higher than other types (77.8%) . Furthermore, it has been found that the high incidence of breast abscess occurs in the left breast (60.56%) .Meantime , infection is higher among women of rural area (64.8%).The results of the bacteriological diagnosis have revealed that the species and percentage of bacteria isolated from the first group are *Staphylococcus aureus* (73.6%), *Moraxella catarrhalis* (5.7%), *Streptococcus pyogenes* (3.8%) and *Staphylococcus epidermidis* (1.9%). Whereas in the second group , the bacteria growth has been *S.aureus* (27.8%), *Arcanobacterium haemolyticum* (22.2%) and *M.catarrhalis* (11.1%) .

دراسة سريرية وبكتريولوجية لحالات خراج الثدي عند النساء

الخلاصة

تم وفق هذا البحث إخضاع إحدى وسبعين مريضة للدراسة ممن راجعن مركز أمراض الثدي في مستشفى الحلة التعليمي للفترة من أيلول ٢٠٠٤ إلى حزيران ٢٠٠٥ , وقد تم تصنيف العينات إلى مجموعتين : الأولى تضم ثلاثة وخمسون مريضة من المرضعات اللاتي تتراوح أعمارهن بين ١٧-٤٥ سنة , والثانية تضم ثمانية عشر مريضة من غير المرضعات تتراوح أعمارهن بين ٣ أشهر إلى ٥٧ سنة . لقد أظهرت النتائج نسبة عالية (٧٤,٦%) من الإصابة بخراج الثدي بين المرضعات اللاتي تتراوح أعمارهن بين ٢٠ إلى ٢٩ سنة , بينما كان اعلي معدل للإصابة في المجموعة الثانية في الأعمار التي تتراوح بين ٤٠ إلى ٤٩ سنة , حيث بلغت (٤٤,٤%) . وقد ظهر كذلك إن معدل الإصابة بخراج تحت الجلد كان اعلي بين مريضات المجموعة الأولى (٤٥,٣%) مقارنة بالأنواع الأخرى لخراجات الثدي, في حين كان خراج تحت الهالة في المجموعة الثانية اعلي من الأنواع

الأخرى (٧٧,٨%) . إضافة إلى ذلك , لوحظ إن النسبة العالية لخراجات الثدي أصاب الثدي الأيسر (٦٠,٥٦%) , كذلك لوحظ ان الإصابات كانت اعلي بين المريضات في المناطق القروية (٦٤,٨%) .
 إن النسبة العالية لخراج الثدي للمجموعة الأولى حدثت على الغالب في الشهر الثالث بعد الولادة (٤٥,٣%) . وظهر أيضا بان خراج الثدي كان اعلي معدل بين النساء متعددة الولادات (٦٦,٢%) . أظهرت نتائج التشخيص البكتيري إن أنواع ونسب البكتريا المعزولة في المجموعة الأولى هي: *Streptococcus pyogenes* (3.8%) و *Moraxella catarrhalis* (5.7%) و *Staphylococcus aureus* (73.6%) و *epidermidis* (1.9%)
 إما في المجموعة الثانية فان النمو البكتيري كان و *S.aureus* (27.8%) و *Arcanobacterium Haemolyticum* (22.2%) و *M.catarrhalis* (11.1%)

Introduction

An abscess can be defined as an infected area of tissue that contains pus. The collection of pus is usually localized. The breast appears structurally and functionally to be relatively uncomplicated, but it is the site of a surprising broad array of pathological alterations; the breast abscess is one of these important and critical pathological alterations [1].

Breast abscess is more likely to develop in women when breast feeding a new baby especially if they have cracked nipples .This occurs as a sequel of mastitis .Women a patients do not immediately seek medical attention for treatment of puerperal mastitis . The breast abscess also occurs in non-lactating women but it is uncommon .This type of breast abscess must be differentiated from a rare form of breast cancer [2].

Breast abscess occurs mostly in women with infectious mastitis and It has reported that the incidence of the mastitis among lactating women is 2.5%; from those patients , only (11.1%) have developed breast abscess [4].

There are many species of pathogenic bacteria that can cause breast abscess, like *S. aureus*, *S.epidermidis*, *S.pyogens* and *Bacteroides* [5]. Most of the studies conducted on breast abscess have concluded that *S.aureus* is the most

common cause of breast abscess. It has mentioned that *S.aureus* is the predominant cause of the breast abscess in both lactating and non-lactating patients [4,5]. Furthermore, it has said that the commonest cause of breast abscess in lactating patients is *S. aureus*, whereas in non-lactating patients the commonest cause is *S.aureus* and *bacteroides* [3,6].

The aim of this study is to assess the type and phase of presentation of breast abscess and isolation of aerobic bacteria associated with this disease.

Materials and Methods

Patients

From September 2004 to June 2005, seventy-one patients of breast abscess visited Breast Center at Hilla Teaching Hospital. Their ages ranged from 3 months to 57 years. All patients underwent the following investigations : ultrasound of the affected breast, fine needle aspiration (FNA) sent for aerobic bacteriological study . Out of the total number of patients twenty were on antibiotics, two were diabetic and one was suffering from sickle cell anemia.

Collection of Pus

Fine needle aspiration was done for all patients to obtain the pus from localized abscess: the pus was collected in sterilized plastic tubes containing 5 ml of brain heart broth and incubated at

37°C for 18 – 24 hr. before being plated on a screening media. Before FNA, the females breast were disinfected with 2% of iodine solution, then disinfected after area dryness with 70% ethanol [7].

Identification of Bacteria

A single colony was taken from each primary positive culture growing on blood agar, nutrient agar and MacConky agar, identified by depending on its morphological characteristics such as shape, size, borders and texture , and then examined under microscope after staining it with Gram stain or other specific stains (such as Albert stain).

After staining, the biochemical tests were done for each isolate to reach the final identification according to Bergy's Manual for Determinative Bacteriology [8].

Results and Discussion

In this study, seventy –one patients who have been suffering from breast abscess visited were investigated .Most of the patients were presented with classical features of the breast abscess (Table 1). These included mass (100%), pain (98.6%), fever (97.2%), and bright reddens (91.5%) .

Table 1 Clinical features among patients of breast abscess

Clinical feature	Number	%
Mass	71	100
Pain	70	98.6
Fever	69	97.2
Reddens	65	91.5

Also this study showed that the high incidence of breast abscess occurred among lactating women who represented

74.6% of the patients .In non-lactating women, the rate of breast abscess was 25.4% (Table 2).

Table 2 Incidence of breast abscess among lactating and non-lactating women

Lactation	No. of cases	%
Lactating women	53	74.6
Non lactating women	18	25.4
Total	71	100

In lactating women , the high incidence of the breast abscess was noticed in the age group of the 20 – 29 years which constituted 54.7% of the patients and in the age group of 30 – 39 years which constituted 37.7% whereas the incidence rate decreased when the ages were less than 19 years and above 40 years (Table 3).

On the other hand, in non lactating women, the high incidence rate was noticed in the age group of 40 – 49 years

which constituted 44.4% of the patients (Table 3), which agreed with results obtained by [5] who observed that non-lactating breast abscess would encompass the third to the eight decades of life. These results likewise would agree with those obtained by [3,6] who mentioned that breast abscess in non-lactating women were very uncommon and it usually affected women older than 40 years. In addition, It referred that non lactation breast abscess often affected

older women, when the super added bacterial infection in periductal mastitis could present as abscess [2,4].

However, the incidence of breast abscesses in non-lactating women between 20-29 years would be zero when compared to the lactated women.

Table 3 the relation between the age and the occurrence of breast abscess in lactating and non-lactating patients.

Age/years	Lactating patients		Non-lactating patients	
	No.	%	N0.	%
< 1	0	0	2	11.1
1-9	0	0	0	0
10-19	3	5.7	3	16.7
20-29	29	54.7	0	0
30-39	20	37.7	2	11.1
40-49	0	0	8	44.4
50-59	1	1.9	3	16.7
Total	53	100	18	100

This study also showed that the high incidence rate occurred in women that had more than one child , representing 66.2% (Table 4.4). This finding might most likely be ascribed to recurrent

mastitis which is a high risk factor of breast abscess. The recurrent mastitis is higher in multipara than primipara . So the breast abscess occurs in multipara more than primipara does.

Table 4 The relation between the parity and occurrence of breast abscess in married patients with breast abscess.

Parity	No. of cases	%
Nili para	3	4.6
Primipara	19	29.2
Multipara	43	66.2
Total	65	100

Besides the study has shown that the common type of breast abscess in lactating women is subcutaneous abscess which represents 45.3% of the patients, whereas in non lactating ladies the most common type is subareollar abscess which constitutes 77.8% of the patients (Table 5) .

The high occurrence of the subareollar breast abscess in non lactating women was due to squamous epithelial neoplasia with keratin plug or ductal extension with associated inflammation [7].

Table 5 Types of the breast abscess in lactating and non-lactating women

Type of abscess	Lactating		Non-lactating	
	No.	%	No.	%
Subcutaneous	24	45.3	0	0
Subareolar	17	32.1	14	77.8
Interlobular	11	20.7	4	22.2
Retromammary	1	1.9	0	0
Total	53	100	18	100

Besides, The associated pathogens were studied and divided into two groups; the first group was for single infecting microbes (Table 6). It included *S.aureus*, *M. catarrhalis*, *S. pyogenes* and *S. epidermidis*. The high incidence (73.6%) was of *S.aureus*, whereas the low incidence (1.9%) was of *S.epidermidis*.

This study has shown that the breast abscess is due to monobacterial infection only, whereas the dibacterial infection has not been detected . Most bacterial isolates are related to the gram positive cocci and some gram negative cocci as shown in table [6]

Table 6 Incidence of bacterial isolates in lactating and non –lactating patients.

Bacterial isolate	Lactating		Non-lactating	
	No.	%	No.	%
<i>S. aureus</i>	39	73.6	5	27.8
<i>M. catarrhalis</i>	3	5.7	2	11.1
<i>S. pyogenes</i>	2	3.8	0	0
<i>S. epidermidis</i>	1	1.9	0	0
<i>A.haemolyticum</i>	0	0	4	22.2
No growth	8	15	7	38.9
Total	53	100	18	100

In the second group, however the associated pathogens could not be recovered. This group constituted 15% of the patients. The reasons of non-recoverable infection may be due to the following:

- a- Infection was nonbacterial .It was termed nonbacterial infection and caused by *Cryptococcus* or viruses [11].
- b- Mastitis and breast abscess might be caused by Chlamydia, Mycoplasma, or Mycobacterium .That did not grow in culture conditions used in this study.
- c- Antiboma which resulted from uses of broad spectrum antibiotics would kill

the bacteria and leave it as sterile pus [12].

Conclusion

The results of this study confirmed that Breast Abscess incidence was high among lactating women and Gram positive bacteria was predominant as a causative agents for this disease.

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