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Research Article

Bacteriology in Breast Abscesses

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Abstract: Breast abscess is a condition as old as mankind, references to which are available in ancient scriptures in the civilizations world over. However most of the progress in the diagnosis and treatment of breast abscesses has been made in the last century. The present study was conducted on 50 female patients with provisional diagnosis of breast abscess with an aim to study the bacteriological profile i.e. aerobic and anaerobic bacteria, management of breast abscess and to compare the results of our present study with other relevant studies.
Keywords: Breast Abscess, Lactational, Non-Lactational, Needle aspiration, Incision and Drainage, Aerobes, Anaerobes, Staphylococcus aureus

INTRODUCTION

Breast abscess is one of the most commonly occuring conditions reported in female patients attending surgical O.P.D's. The quantum of this condition can be gauzed by the fact that 4.6% to 11% of female population in both developed and developing countries have been afflicted by this condition at certain point of time in their lives [1].

Breast abscesses are more common in women belonging to poor socio-economic status and also in females with co-existing medical disorders such as HIV related disorders and diabetes mellitus.

Broadly, breast abscesses can be classified into two main types-lactational and non-lactational. Lactational breast abscesses are usually characterized by acute onset in post puerperal period and is a very painful condition associated with considerable morbidity. Acute puerperal mastitis is usually the first step heralding onset of this condition with incidence of 2.5% to 33% in lactating women [1]. The condition usually resolves if diagnosed early and managed aggressively but is often complicated by abscess formation. The most common presenting symptom is of pain which is usually severe in intensity and associated with an obvious erythematous swelling. The aetiology of this condition is blockage of engorged lactiferous ducts leading to milk stasis and subsequent infection. The portal of entry for the bacteria is usually a fissure at the base of the nipple so that infection occurs most often in the early weeks of the puerperium [2]. The most common causative organism in lactational breast abscess is Staphylococcus aureus although, polymicrobial infection in these abscesses have also been reported [3].These microorganisms can originate anywhere from the baby's nasopharynx to mother's skin [4]. Although lactational breast abscesses can occur anywhere in the affected breast they are usually peripheral in location [5]. Upper and outer quadrant is usually the most common site of localization of these abscesses [6].

Non-lactational breast abscesses although uncommon are predominantly encountered in perimenopausal age group [7]. The exact aetiology of these abscesses is obscure. Pre existing cytomorphological abnormalities such as nipple inversion, duct ectasia, duct metaplasia or other congenital abnormalities in the duct system may have significant role in aetiopathogenesis of these abscesses [8]. Even co-existence of non lactational breast abscess with underlying malignancy has also been demonstrated [9]. Regardless of aetiology the precipitating pathophysiologic event in these abscesses is partial blockage of a lactiferous duct by keratotic debris and squamous metaplasia of the epithelium lining milk sinus. Organisms present in milk sinus become

entrapped and proliferate resulting in abscess formation [10].

Classically breast abscesses both lactating and non-lactating are treated surgically once they fail to respond satisfactorily to conservative management. Well circumscribed small abscesses (usually less than 5 cm) can be successfully drained by needle aspiration [11]. Large abscesses or sub areolar abscesses are treated by conventional method that is incision and drainage usually under general anesthesia [12]. Besides drainage of abscess, surgery also corrected underlying or associated complications responsible for abscess formation or subsequent recurrence such as nipple inversion, sinusectomy, fistulectomy or excision of abnormal duct system [13]. Supportive treatment in the form of analgesia, antibiotics especially after c/s testing, breast support and regular breast emptying (especially in lactating) is equally important in the management of this condition.

MATERIAL AND METHODS

The present study was conducted on 50 female patients visiting surgical OPD's or admitted in Department of General Surgery with presumptive diagnosis of breast abscess. The diagnosis of breast abscess was made based on clinical signs and symptoms of infection. The case presenting with features of suppuration during phase of lactation was labeled as lactational breast abscess while others were classified as non-lactational breast abscess. These patients were also sub-categorized as acute or chronic based upon their history and clinical presentation. A detailed history including history of economic status and menopausal history was recorded. Details of local examination were also documented. Note was also made of any associated medical disorder at the time of presentation. Routine bedside tests and biochemical tests were carried out. Type of surgical procedure adopted with details of operative findings was also noted. Bacteriological profile of collected pus sample was analyzed for both aerobic and anaerobic growth.

RESULTS

In non lactational breast abscess; 6 types of aerobes, 2 types of anaerobes and 5 types of mixed cultures were obtained. On other hand lactational breast abscesses only showed 2 types of aerobic bacteria. (Table-1).

Pure aerobic growth was seen in 10 lactating breast abscesses where non-lactating cases showed presence of 12 aerobic and 5 anaerobic organisms. (Table-2).

Table 1: Bacteriological spectrum in culture positive cases

Type of Growth	Type of organism	Lactating		Non-lactating	
		No.	%age	No.	%age
Aerobic	Staph. aureus	6	60	4	33.33
	Staph. Epidermidis	4	40	3	25
	Strepto. pyogenes	-	-	2	16.67
	E.coli	-	-	1	8.33
	Proteus species	-	-	1	8.33
	Pseudomonas aeruginosa	-	-	1	8.33
	Total	10	100	12	100
Mixed	Staph. aureus + Anaerobic cocci	-	-	2	28.57
	Staph. Epidermidis +E. coli + Anaerobic cocci	-	-	1	14.29
	Pseudomonas aeruginosa + Anaerobic cocci	-	-	1	14.29
	Staph. epidermidis + Proteus+ Anaerobic cocci	-	-	2	28.57
	Staph. aureus +E.coli	-	-	1	14.29
	Total	-	-	7	100
Anaerobic	Peptostreptococcus sp.	-	-	3	60
	Bacteroid sp.	-	-	2	40
	Total	-	-	5	100
	Grand Total	10		24	

Table 2: Bacterial flora

Type of Growth	Lactating		Non-lactating		Total
	No.	%age	No.	%age	
Pure aerobic	10	45.45	12	54.55	22
Pure anaerobic	-	-	5	100	5

DISCUSSION

The present study was carried out on 50 patients of breast abscess, both lactational and non lactational, who were either admitted or treated as outdoor patients. The abscesses were drained either by incision and drainage or needle aspiration. The patients suffering from the benign/ malignant diseases of breast were excluded from the present study.

Age

Although the concept of breast abscess as disease of young and malignancy as disease of old is traditionally held but in our study the maximum number of cases 36% were reported in females belonging to age groups between 36 to 45 years while 20% were between the age groups of 26-35 years and 18% fell in the age group of 46-55 years.

This observation is closely supported by a study done in 1973 (14) which also reported maximum incidence of this condition in 4th decade followed by 3rd and 5th decade.

There were 8 patients in age groups of 15-25 years (16%) while 5 patients were present in the post menopausal age groups of 56-65 years (10%).

Average age of patients with breast abscess in our study was 38.82 years. This closely approximates with findings of a study done in 1994 [15] which report average age to be 37.6 and 36 years respectively.

Occupation

In our present study the disease was more common in housewives (74%) than in working women (26%). This can be explained from the fact that a large number of our patients are from rural background where women are traditionally engaged in domestic work only. Such patients have less awareness of personal health and health care facilities which can be a cause of high incidence of this condition among housewives especially during postpartum period.

Economic Status

The condition of breast abscess in our study was more commonly seen in poorer patients i.e. 64% than in upper and middle class combined i.e. 34%. These results tally well with observations of a study done in 1995 [16] that has reported a high incidence of breast abscesses, especially lactational, in low income group.

Menstrual status

Premenopausal women comprised the major group (72%) followed by post menopausal (28%). The reason for this can be attributed to the fact that lactational breast abscess mainly affects young females in post partum period which comprises a major chunk of pre menopausal cases in our study. These observations are comparable with two other studies done in 1967 [7] and 1996 [12], which reported the incidence of premenopausal cases at 81% and 64% respectively.

Thus it can safely be concluded from our study that incidence of disease rises during the reproductive age group and falls inversely after menopause.

Lactational status

Non lactating patients of breast abscess comprised the major group (68%) in comparison to lactating group (32%). This observation suggests that incidence of breast abscess in non-lactating to be far more than lactating. This finding has been supported by a study done in 1992 [17] in which it was reported that 70% patients were of non lactational breast abscesses in comparison to 30% of lactational breast abscess.

The reason for fall in incidence of lactational breast abscesses can be attributed to more awareness, availability of better antibiotics and better health care facilities especially during post puerperal period.

Associated Diseases

In our study incidence of diabetes mellitus was 8%, hypertension 8% and urinary tract infection was 6%. No associated disease was seen in remaining 78% of cases

Procedure

Out of 50 cases of breast abscess, incision and drainage was done in 31 cases and needle aspiration was performed in 19 cases only. None of the abscess was managed conservatively. The main reason is that collected pus is enclosed in fibrous cavity which is impermeable to any anti microbial agents. However, peripherally located, well circumscribed, abscesses not greater than 3 cm were subjected to needle aspiration for evacuation of pus.

Bacterial profile of the organisms isolated

Aerobes

Six species of aerobic organisms were identified in breast abscesses of both lactating and non-lactating females. Staphylococcus aureus was most commonly isolated organism both lactating (60%) and non-lactating (33.3%). Other aerobic bacteria isolated were Staphylococcus epidermidis (lactational (40%) and non-lactational (25%) breast abscesses), Streptococcus pyogenes, E.coli, Proteus species and Pseudomonas aeruginosa in order of frequency. These results tally well with observations of studies done in 1995 [16] and in 1992 [17] i.e. *Staphylococcus aureus* isolated in 85% and 73% of breast abscesses respectively.

Anaerobes

In present study the incidence of anaerobes was 21% in non-lactating breast abscesses with anaerobic cocci and bacteroides constituting two major pathogens isolated. No anaerobes were recovered from lactational breast abscesses. This finding is confirmed by a study in 1979 [18] which also reported no anaerobes in lactating breast abscesses. *Peptostreptococcus species* was isolated in 12.5% of cases and constituted a major percentage of anaerobes i.e. 60%. *Bacteroid Species* were isolated in 8.3% of cases

CONCLUSION

Thus to conclude breast abscesses were positive in significant number of cases (68%) with aerobic bacteria especially Staphylococcus sp being

predominant isolate in both lactating and non-lactating patients. However non-lactating breast abscesses besides aerobes also showed presence of anaerobic bacteria. So, by this study it seems that bacteria, aerobic as well as anaerobic, play an important role in pathogenesis of this condition. So, antibiotic therapy should be recommended to all the patients undergoing drainage of these abscesses irrespective of the lactational status.

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