RESEARCH ARTICLE

COMPARISION OF PERCUTANEOUS ULTRASOUND GUIDED NEEDLE ASPIRATION AND OPEN SURGICAL DRAINAGE IN MANAGEMENT OF PUERPERAL BREAST ABSCESS

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DOI: 10.5455/ijmsph.2013.2.69-72 **Received Date: 15.09.2012** **Accepted Date: 26.09.2012**

ABSTRACT

Background: The treatment of puerperal breast abscess is a clinical dilemma which ranges from conservative treatment to surgical intervention. A recently highlighted approach is drainage of pus by needle aspiration with ultrasound guidance under antibiotic cover. This approach had advantage of complete resolution without incision scar, less morbidity and will allow the patient to carry on breast feeding.

Aims & Objective: The aim of this study is to compare the management of puerperal breast abscess by percutaneous ultrasound guided needle aspiration versus open surgical drainage with special attention to resolution and complications.

Material and Methods: In this interventional study, 70 puerperal breast abscess cases were randomly divided and undergone either percutaneous ultrasound guided niddle aspiration (Group A) or open surgical drainage (Group B) and results were compared.

Results: Failure rate for aspiration therapy was17.14% with 06 patients requiring conversion to open surgical drainage after aspiration and were excluded from study. The resolution time was less in aspiration group. Painful and cumbersome daily changes of dressing, mammry fistula in 3 patients with ugly scar were the main drawback of open surgical drainage as compared to aspiration. However, there was high failure rate of aspiration therapy in abscesses presenting later than 5 days (45.83%) and those with >5 cm size (55.55%) on ultrasonography.

Conclusion: Percutaneous ultrasound guided needle aspiration has acceptable failure rate and is an effective alternative to open surgical drainage of puerperal breast abscess especially for those present early and of small size.

KEY-WORDS: Puerperal Breast Abscess; Percutaneous Ultrasound Guided Needle Aspiration; Open Surgical Drainage

Introduction

A puerperal breast abscess is defined as a collection of pus in breast surrounded by pyogenic membrane.[1] This is most common during the first 4 to 6 weeks of breast.[2] Most cases are caused by staphylococcus aureus and if hospital acquired, are likely to be penicillin resistant. The intermediary is usually the infant; after the second day of life, 50% of infants harbor staphylococci in the nasophyarnx.[3] Patient presents with fever, pain, swelling, redness.[2] Diagnosis is confirmed by ultrasound evidence of liquefaction and aspiration of pus which is sent for culture and sensitivity.[4,5,7]

The treatment of breast abscess is a clinical dilemma which ranges from conservative treatment to surgical intervention like drainage of pus with or without biopsy.[2,6] In early stage when pus is absent, it can be treated with antibiotics, analgesics and local measures like breast support and local heat application.[3] Once pus is formed, the principle of treatment dictates its drainage.[7] Though conventional open surgical drainage under general anaesthesia remains the gold standard in the management of puerperal breast abscess but is associated with poor cosmetic result and longer duration of treatment[6], less invasive procedure like percutaneous ultrasound guided needle aspiration have been tried and have shown promising results. The aim of this study is to compare these two modalities for the management of puerperal breast abscess.

Materials and Methods

Data of 70 patients with clinical features suggestive of puerperal breast abscess (fever, pain, swelling, redness of breast associated with localized tenderness) and who gave consent was recorded. The diagnosis was confirmed by ultrasound evidence of liquefaction with long axis diameter for consideration of size and aspiration of pus which was sent for culture and sensitivity. The patients were then divided into two treatment groups A and B with 35 patients in each group by random sampling technique. Patients with co-morbid conditions were excluded from the study. The exclusion criteria were patients with diabetes mellitus, renal failure, patients on steroid therapy, patients of suspected malignancy (family history of breast malignancy/ hard longstanding lump breast with or without palpable axillary lymph nodes), patients with recurrent abscess, patients with active pulmonary tuberculosis or tuberculous cervical lymphadenitis, sub-areolar breast abscess, patient with imminent necrosis of skin overlying breast.

Patients with group A, underwent percutaneous ultrasound guided needle aspiration as an outpatient basis using 18 gauze needle attached with 10 cc syringe under local anaesthesia by infiltration of 2 ml 2% plain lignocaine anaesthetic solution at the proposed site of puncture. Post-procedural ultrasound images were obtained to evaluate any residual fluid collections. All the patients were encouraged for breast feeding with hygiene. Further aspirations if needed were done at an interval of 4-5 days till the resolution of signs and symptoms with ultrasound evidence which were considered as an end point of management. Failure of treatment in group was declared as on the basis of persistence of symptoms and signs after 04 aspirations with ultrasound evidence of liquefaction.

Patients with group B underwent open surgical drainage under general anaesthesia as an indoor basis. Daily dressing with packing gauze was done till the resolution of sign and symptoms with ultrasound evidence and complete healing of wound as end point of management. All patients were encouraged for breast feeding from opposite sites with expression of milk in the same side.

All patients in both the groups were given oral co-amoxiclav 1 gram, twice daily for maximum of 5 days and then changed according to culture and sensitivity reports. The outcome of each group was evaluated.

Results

70 consecutive patients were enrolled on random sampling basis. Age range was between 16 to 38 years with peak age groups between 24-30 years. Out of 70 patients, 43(61.42%) presented within 5 days of appearance of symptoms while 27(38.57%) had delayed presentation ranging from 6 to 12 days.

Table-1: Clinical Presentation

Symptoms	Frequency	Percentage
Pain	70	100%
Swelling	65	92.85%
Fever	53	75.71%
Tenderness	70	100%
Erythema	51	72.85%

Table-2: Cross-Tabulation between Time of Presentation and Size of Abscess

Treatment Group	Time of Presentation	Size of Abscess		Total
		Up to 5 cm (n)	> 5 cm (n)	
Aspiration	Up to 5 days	12 (17.14%)	9 (12.86%)	21 (30%)
	> 5 days	8 (11.42%)	6 (8.50%)	14 (20%)
Surgical drainage	Up to 5 days	14 (20%)	8 (11.42%0	22 (31.13%)
	> 5 days	6 (8.57%)	7 (10%)	13 (18.57%)
Total		40 (57.14%)	30 (42.46%)	70 (100%)

n = total number of patients

Table-3: Aspirations Required For Complete Resolution

No. of Aspirations	Frequency			
	Up to 5 cm		> 5 cm	
	Up to 5 days	> 5 days	Up to 5 days	> 5 days
1	9 (75%)	1 (12.5%)	3 (33.33%)	0
2	2 (16.66%)	1 (12.5%)	2 (22.22%)	1 (16.66%)
3	1 (8.34%)	3 (37.5%)	1 (11.11%)	1 (16.66%)
4	0	2 (25%)	1 (11.11%)	2 (33.33%)
Open Surgical Drainage	0	1 (12.5%)	2 (22.22%)	2 (33.33%)

Table-4: Cross-Tabulation between Treatment Groups and Resolution Time

Resolution Time(days)	Treatment Group			
	Aspiration		Open Surgical Drainage	
	n	Percentage	n	Percentage
1-5	13	44.82%	0	0
6-10	6	20.68%	0	0
11-15	6	20.68%	2	5.71%
16-20	4	13.79%	10	28.57%
21-25			8	22.85%
26-30			8	22.85%
30-35			7	20.00%
Total	29 (6-failure)		35	

n = total number of patients

The mean size of abscesses as measured by ultrasonography was 4.97 ± 2.5 cm (range 1-15 cm). For assessment of management outcome size of range was divided into two subgroups, Group I: up to 5cm. Group II: > 5cm.

Failure rate for aspiration therapy was17.14% with 06 patients requiring conversion to open surgical drainage after aspiration and were excluded from study. Observations were shown in Table 1 to 4.

On comparison, it is evident that the resolution time was less in aspiration group (Table 4). However, there was high failure rate of aspiration therapy in puerperal abscesses presenting later than 5 days (45.83%) and those with >5 cm size on ultrasonography (55.55%).

Main complication faced by patients in group A was pain. 80% patients rated this pain as a tolerable. Recurrence was observed in 3 patients in group A. Major Complication in group B was mammary fistula in 3 patients warranted for cessation of breast feeding and patients complained of ugly scar, daily change of dressings, especially packing of wound, as painful and cumbersome.

Discussion

Though the conventional method of treatment of puerperal breast abscess is open surgical drainage, percutaneous ultrasound guided needle aspiration has emerged as a valid alternative and shown the promising results.

In current study, we were able to achieve 82.86% cure rate in percutaneous ultrasound guided needle aspiration. In earlier studies, Sarhan HH et al[8] and Chandika AB et al[9] reported the cure rate of 93%, Schwarz RJ et al[10] reported cure rate of 82%, Christensen AF et al[11] and Berna-Serna JD et al[12] reported cure rate of 82%.

From our study, it is evident that when compared to open surgical drainage, percutaneous ultrasound guided needle aspiration has obvious benefits. There is no need for general anaesthesia or operation, or any in-hospital stay and postoperative dressing. The discomfort after aspiration therapy is minimal and therefore is also a low occurrence of the troublesome milk fistulae that often follow incision and drainage.

In present study the most important factors affecting the outcome of two modalities were size of puerperal abscess and time of presentation. In other series, puerperal abscesses smaller than 5 cm[13] and patients presented within 5 days of the onset[10] can be successfully treated with aspiration and antibiotic therapy in most of the cases which is alike to our study. In the developed world, patients usually present during this time period; therefore, a further very high success rate would be expected with percutaneous guided needle aspiration.

One argument against aspiration of breast abscesses is that these abscesses are frequently loculated. This may be one reason why multiple aspirations are required, although it is of interest that in our study first aspirate consisted of pure pus whereas the second and subsequent aspirates changed from hemo-pus to serous fluid. High-resolution real-time ultrasonography is a unique means for diagnosing and evaluating the extent, site, size and internal characteristics of puerperal breast abscess and it clearly define an area 'ripe' for drainage. So, importance of such loculi has been overemphasized.

In recent years the incidence of lactational breast abscess has reduced worldwide owing to improved hygiene and early administration of antibiotics. However, our study has shown that puerperal breast abscess predominates in our population. Most of these patients were from poor families and therefore, this increased incidence can be attributed to multiple factors including

poor host resistance, improper nursing technique and delay in administration of treatment.

There were few limitations in our study. We excluded patients with co-morbid disease because the underlying pathological process itself can be responsible for recurrences and could have affected the results. Similarly patients with suspicion of tuberculosis were also excluded from the study because of longer duration of therapy and risk of recurrence. In addition the role of catheter drainage under ultrasound and local instillation of antibiotics also can be taken into consideration to elaborate the treatment of larger puerperal abscesses.

Conclusion

Percutaneous ultrasound guided needle aspiration with oral antibiotic treatment of puerperal breast abscesses on an outpatient basis is safe and effective. This technique should become the standard of practice in the management of small breast abscesses and who presents early.

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Cite this article as: Suthar KD, Mewada BN, Surati KN, Shah JK. Comparision of percutaneous ultrasound guided needle aspiration and open surgical drainage in management of puerperal breast abscess. Int J Med Sci Public Health 2013; 2:69-72.
Source of Support: Nil
Conflict of interest: None declared