Percutaneous Needle Aspiration Is A Minimally Invasive Method for A Breast Abscess

Hamid H. Sarhan¹, Osama M. Ibraheem²

Abstract

Background: Breast abscesses could be successfully treated by the percutaneous aspiration of pus and irrigation of the cavity with saline solution.

Objective: To assess the feasibility and effectiveness of percutaneous needle aspiration of breast abscesses under local anesthesia in the outpatient clinic.

Patients and methods: A prospective study of forty-three women with breast abscesses, who attended the outpatient clinic at the Tikrit teaching hospital and privit clinic for the period of January 2008 to January 2010. All patients had preliminary breast ultrasound examination. Percutaneous needle aspiration of pus under local anesthesia was done, followed by systemic antibiotics. Repeated aspiration was carried out later when deemed necessary and a follow-up by ultrasound was conducted.

Results: Twenty-three (53.4%) of the patients obtained complete resolution (no focal collection) after one aspiration; 9 (21%) required two aspirations and 8 (18.6%) required more than two aspirations for the cure (residual collection). In 3 (7%) of the patients, the treatment failed, where symptoms had not resolved after 3 days, with further pus collection despite aspiration and antibiotics, where surgical drainage was required.

Conclusions: Percutaneous needle drainage of breast abscesses after preliminary breast US is feasible as a primary and definitive treatment for breast abscesses, if complete or near complete drainage is achieved.

Key words: Breast, abscess, aspiration

Introduction

The traditional surgical treatment of breast abscesses consists of an incision over the point of maximal tenderness (or fluctuation) and digital disruption of the abscess septa [1]. The abscess cavity is left open and packed with gauze, with subsequent dressing changes for a few days during wound granulation [2]. This strategy is often done under general anesthesia. The incision is often cosmetically disappointing, owing to scar formation and interference with lactation [3]. Battle and Bialy, quoted by Uriburu in 1923, first suggested that breast abscesses could be successfully treated by the percutaneous aspiration of pus and irrigation of the cavity with Dakins solution [4,5]. In 1946, Flory was the first who considered the possibility of daily aspiration of small abscesses and direct injection of penicillin soon after the drug becomes available at the end of World War II [6].
Ultrasonography (US) has shown to be useful in depicting abscesses in patients with mastitis [7,8]. Later on, it was used to guide and facilitate complete drainage of breast abscesses, compared with blind aspiration, as it enables the visualization of multiple abscess loculations [9]. Subsequently, the imaging-guided percutaneous aspiration of purulent breast abscess collection was increasingly popular in the 1980s, [10] as Karstrup et al., in 1990, reported the successful percutaneous US-guided aspiration of breast abscesses [11].

The purpose of the current study is to assess the feasibility and effectiveness of percutaneous needle aspiration of breast abscesses under US and under local anesthesia in the outpatient clinic.

**Patients and methods**

A prospective study of forty-three women with breast abscesses was conducted; they attended the outpatient clinic at Tikrit teaching hospital and privit clinic for the period of January 2008 to January 2010. The data gathered included age, lactation and breast symptoms (discharge, red skin, fever, tender lumps). The site of the abscesses, in relation to the breast, was recorded. A radiologist performed preliminary breast US with 7–13 MHZ linear array tenderness (Figure 1). The long axis diameter of the abscesses was checked. The aspiration procedure was performed on an outpatient basis using a 19 G sterile needle under local anesthesia, and 2 ml of 2% plain lignocaine anesthetic solution at the puncture side. Aspiration was followed by irrigation of the cavity thoroughly, with about 50 ml of sterile 0.9% isotonic saline solution until aspirate returned clear. Post-procedural US images were obtained to evaluate any residual fluid collections (Figure 2). A parenteral cefotoxime 1 mg bid was prescribed on discharge from the clinic. Further aspiration was done when necessary in the next 2–3 days. Patients were followed up one week later by US for any residual pus collection. Follow-ups were no longer needed, when clinical evidence of inflammation or residual collection was no longer seen on follow-up sonography. Lactating patients were encouraged to continue doing so. Our management algorithm was stated in Figure 3.
Results

A total of 43 patients with breast abscesses were included in this study. Their age ranged from 16–75 years, with a mean age of 37 years ± 5.6. Seven (16%) of the patients were lactating.

The abscesses were situated centrally in the retro-areolar space in 9% of the patients; however, in 91% of the patients, the abscesses were situated in peripheral sectors of the breast (Table 1).

All patients presented with a firm, tender, palpable mass, or masses in the breast. Seventeen (40%) of the patients had redness of the overlying skin and one patient had thick discharge from the nipple (Table 2).

US examination of the breast demonstrated a hypo-echoic breast mass in all patients. Five patients had ultrasonic features of acute mastitis, and they were excluded from the study. The US long axis diameter of the abscesses ranged in size from 0.8–7 cm (average size = 2.8 cm), as measured by the calipers on the sonogram.

Twenty-three (53.4%) of the patients obtained complete resolution (no focal collection) after one aspiration; 9 (21%) required two aspirations and 8 (18.6%) required more than two aspirations for a cure (no residual collection). In 3 (7%) of the patients, the treatment failed where symptoms had not resolved after 3 days, with further pus collection despite aspiration and antibiotics, where surgical drainage was required (Table 3).

No complications were observed in all patients who were successfully treated with aspiration and antibiotics.

Discussion

In the current report, the patient age range has some similarity with the results of Dixon JM, who demonstrated that breast abscesses most commonly affect women aged 18–50 years [2].

Although the breast abscess has generally been associated with mastitis and breast feeding, the results of our study and others [12] indicate that the abscess is common in non–lactating women. In our series, the frequency of lactating abscesses was 16%. This is in agreement with the study of Crowe et al., who reported a 5% incidence of lactating abscesses in 21 patients [8] and thus for the incidence of 8.5% reported by Scholefield et al. in 72 patients [13].

In our study, the finding of peripherally located abscesses, more than centrally located, contradicts Dixon JM’s results, which reported that peripheral breast abscesses are less common than periareolar ones [2].

In the procedure of aspiration, some patients experienced discomfort during aspiration. This feeling, according to Schwarz RJ and Shrestha R, could have been resolved if prior application of local anesthetic (EMLA) cream at the puncture site for 1 hour was done to make aspiration acceptable; [10] unfortunately, it was not available in our clinic.

Table 1. Sites of breast abscesses

<table>
<thead>
<tr>
<th>Sites</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Peripheral</td>
<td>39</td>
<td>91</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2. Clinical presentation of patients

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Tender lump</td>
<td>43</td>
<td>100</td>
</tr>
<tr>
<td>Fever</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>Red skin</td>
<td>17</td>
<td>40</td>
</tr>
</tbody>
</table>

Table 3. Treatment of patients by aspiration

<table>
<thead>
<tr>
<th>Profile of treatment</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>One aspiration</td>
<td>23</td>
<td>53.4</td>
</tr>
<tr>
<td>Two aspirations</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>More than two aspira-</td>
<td>8</td>
<td>18.6</td>
</tr>
<tr>
<td>Treatment failure</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>100</td>
</tr>
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</table>
Our results showed that most of the abscesses (93%) could be treated with aspiration and antibiotic therapy if the abscess cavity is completely or almost completely drained. The finding of residual collection on the follow-up US in the patients studied emphasized the need for follow-up imaging in the next referral to the clinic. O’Hera et al. reported an 85% cure rate of 22 abscesses; some of them aspirate without sonographic guidance [12]. Schwarz and Shrestha also reported aspiration without sonographic guidance plus oral antibiotic in 33 abscesses, with a resultant cure rate of 82%. In larger abscesses, aspiration was not always successful in abscess drainage and treatment [10]. Hook and Ikeda reported a 54% cure rate of 13 breast abscesses treated by aspiration and irrigation. The patient with whom treatment failed had an abscess of more than 3 cm in diameter [9]. Dixon et al., however, reported successful aspiration of six lactating abscesses with a mean volume of 26 ml [14]. It was stressed by R. Eryilmaz that the risk factor for failure of needle aspiration for breast abscesses was abscesses larger than 5 cm in diameter, an unusually large volume of aspirated pus and delay in treatment [15].

In their retrospective study that includes 39 patients, Juan D et al. showed that percutaneous drainage procedures in breast abscesses are a safe and effective alternative to incision and drainage [16]. After reviewing 36 papers, Thirumalaikkumar et al. concluded that the smaller the abscesses are, the better the outcome is and the lower the recurrence rate is following the aspiration [17]. According to Strauss et al. and Imperale A, surgery or other decompression methods were required for definitive treatment in chronic or complicated abscesses [18,19].

Conclusion

Percutaneous needle drainage of breast abscesses after preliminary breast US is feasible as a primary and definitive treatment for breast abscesses if complete or near complete drainage is achieved.

Formal surgical drainage may be best reserved for the few patients with whom aspiration fails.

Conflict of interest statement

The authors do not declare any conflict of interest or financial support in this study.

References


