Mycobacterium Tuberculosis Breast Infection Mimicking Pyogenic Abscesses in Kuwait

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Key Words

Mycobacterium tuberculosis • Pyogenic abscess • Breast abscess • Kuwait

Abstract

Objective: To present 2 cases of primary breast abscesses caused by *Mycobacterium tuberculosis* mimicking pyogenic abscesses in healthy young females. **Clinical Presentation and Intervention:** Two young non-lactating Indonesian and Indian women, aged 27 and 29 years old, respectively, presented with breast abscesses caused by *M. tuberculosis*. The breasts presented as huge, swollen, hot, tender masses with a discharge at the subareolar site. Surgical drainage revealed deep abscess with copious amount of pus, samples of which were positive for acid-fast bacilli (AFB) and later confirmed as *M. tuberculosis* by positive cultures in Becton Dickinson BBL Migit and BACTEC 12B media. The initial therapies with clindamycin were changed to 4 anti-tuberculous drugs as soon as the smears showed the presence of AFB. The patients were discharged a week later, but both were lost to follow-up. **Conclusion:** Mammary tuberculosis should be considered in the differential diagnosis of breast lesion, especially in patients from endemic areas.

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Introduction

Extra-pulmonary tuberculosis (TB) of the breast is a rare form of the disease with an overall incidence of less than 0.1% of all breast lesions in Western countries [1]. In developing countries where *Mycobacterium tuberculosis*

(MTB) infection is endemic, it constitutes approximately 3–4% of all surgically treated breast diseases [1]. Mammary TB was first reported in 1829 by Sir Astley Cooper who named it ‘scrofulous swelling of the bosom’ [2]. Since then, reports on this form of TB have been far and apart. When the disease occurs, it commonly affects females in the reproductive age group. The diagnosis is difficult, and it is often mistaken for carcinoma in the elderly or pyogenic breast abscess in the young.

In this communication, we report rare cases of breast tuberculous abscesses mimicking pyogenic abscesses in Indonesian and Indian patients residing in Kuwait with no apparent signs of the disease at any other sites.

Case Reports

Case 1

This was a 27-year-old Indonesian single female, admitted to Mubarak Al-Kabeer hospital on 9 September 2006, complaining of a swollen left breast of 5 months duration. She claimed that it started in the inner upper quadrant, and then extended to involve the entire left breast. Two days prior to admission, she complained of pain and erythematous changes in her left breast, and noticed greenish periareolar discharge as well as fever of 1 week’s duration. Her past medical history and travel history were unremarkable; she gave no history of travel outside Kuwait in the last 3 years. She worked as housemaid in the Jahra area, a predominantly native district, in the first 2 years and then lived in Jabriya, a middle class area, with a group of girls in a flat. She denied any history of pulmonary MTB as well as family history of TB. On examination, she was slightly febrile (oral temperature was 37.7°C) with a tender, warm, diffusely swollen, erythematous left breast with a greenish pus discharge at the 10 o’clock position of the periareolar region. There were no palpable axillary or cervical lymph nodes. Her hae-

matological profiles showed slight leukocytosis with a white blood count of $13.2 \times 10^9/l$, while her renal, liver and lipid profiles were within normal ranges. A pregnancy test using urine was negative.

The initial diagnosis was that of pyogenic breast abscess, which was treated with intravenous (i.v.) clindamycin 600 mg given thrice daily. The abscess was then drained surgically under general anaesthesia; about 2 liters of pus was drained. About 10 ml of pus was sent to the laboratory in a tightly capped sterile universal bottle for microbiological investigations. Gram staining of the pus showed many pus cells, but no micro-organism was seen. However, Ziehl-Neelsen (ZN) staining of a smear from the same material demonstrated abundant acid-fast bacilli (AFB). As a routine, portions of the samples were also sent to the reference laboratory for culture and sensitivity testing.

The initial anti-microbial therapy with clindamycin was stopped as soon as the smears showed the presence of AFB, and anti-TB therapy (comprising isoniazid, rifampicin, ethambutol and pyrazinamide) was started in addition to pyridoxine. The chest radiograph showed no abnormality. Three sputum samples, taken on 3 consecutive days, were tested for the presence of AFB and they were negative. The patient's post-operative period was uneventful, and she was discharged on the eighth post-operative day with the 4 anti-TB drugs. Culture of the samples, inoculated onto Lowenstein Jensen media (Mast Diagnostics, Bootle, UK) and into BD BBL Migit media (Becton Dickinson, Sparks, Md., USA) and BACTEC 12B media (Becton Dickinson) came back positive for *M. tuberculosis* after 4 weeks of incubation, and was susceptible to streptomycin, isoniazid, rifampicin, ethambutol and pyrazinamide. Unfortunately, the patient did not come back for follow-up.

Case 2

The second case was a 29-year-old Indian woman, who was admitted to Mubarak Al-Kabeer Hospital in February 2007, complaining of a mass in the right breast of 1 month's duration. She also gave a history of whitish discharge and a low-grade fever that had started 5 days prior to admission. Her medical history was unremarkable. The patient denied any history of breast trauma, travel outside the country in the past 6 months or history of similar illness in the household. On examination, she was afebrile and her right breast was red, swollen and tender, and there was pus discharging at about the 10 o'clock position, 4 cm from the areola. A diagnosis of pyogenic breast abscess was made.

Laboratory investigations revealed normal haematological and biochemical profiles. The patient underwent surgical incision and drainage under anaesthesia the same day and was placed on i.v. clindamycin, 600 mg thrice daily. A sample of the pus was sent to the microbiology laboratory for microscopy, culture and sensitivity. Gram-stained smear of the pus revealed numerous pus cells, but no micro-organisms were seen. The ZN-stained smear, however, revealed numerous AFB per high-power field. The patient was immediately placed on quadruple anti-TB drugs, comprising, rifampicin, isoniazid, ethambutol and pyrazinamide. A chest X-ray, ordered to rule out pulmonary TB as a possible source, was normal with no evidence of hilar lymph node involvement. Post-surgical recovery was uneventful. She made good progress in the ward, and was discharged 8 days later. The culture results of the sample sent to the reference laboratory came back 4 weeks later as *M. tuberculosis*, which was sensitive to streptomycin, rifampicin, isoniazid, ethambutol and pyrazinamide. She also did not show up for subsequent follow-up.

Discussion

TB of the breast is an extremely rare entity, even in countries where the incidence of tuberculosis is high. In developing countries like India where TB is endemic, TB of the breast accounts for only 3% of treatable breast conditions [3]. Breast TB has been rarely reported in the Middle East where overall incidence is low, as exemplified by the State of Qatar, where the incidence of histologically proven breast TB is 0.4% per year, and in Turkey [4–6]. The explanation for this generally low incidence may be a result of high resistance offered by mammary gland tissue to the survival and multiplication of the tubercle bacillus [7]. The disease commonly affects females in the reproductive age group, as was the case with our patients, although breast TB has been reported occasionally in elderly and perimenopausal women [8] as well as in an adolescent girl [9]. Pregnant and lactating women are most susceptible because the breast is more vascular and predisposed to trauma during these periods [6]. Our patients were young non-parous and non-lactating women, which made the diagnosis more unusual, even though they were in an active reproductive age. The pyogenic nature of the presentations was also worthy of mention, as such cases are usually caused by *Staphylococcus aureus* and, to a lesser extent, streptococci. Based on literature search, breast MTB abscess is very rare and male breast TB abscess is even extremely rare; the reported incidence is only about 4% of all cases [1]. This assertion is supported, as shown in table 1, by the fact that only 8 cases of TB mastitis have so far been reported in the English literature since 1945 [4, 5, 8–13].

Although both mammary glands can be affected by the disease, only 3% of the patients with breast TB are affected bilaterally [2]. Breast TB is either of primary aetiology, when no demonstrable tubercular focus exists, or secondary to a co-existing lesion present elsewhere in the body, such as the lungs or lymph nodes [1], from where it spreads by retrograde lymphatic extension from the affected cervical, axillary lymph nodes or rarely from a primary lung lesion. Primary form is rare and often occurs through abrasions or through openings of the ducts in the nipple [3]. Our patients seem to have had primary breast TB abscesses as no detectable focus could be detected.

The diagnosis of breast TB abscess is difficult because the clinical and radiological findings are not specific. In addition, the percentage of smears positive for AFB is low. For instance, in a report by Harris et al. [7] from India, the rate of positive ZN smears for AFB was about 2%. In this report, both cases had positive AFB smears which prompted relative early diagnosis and institution of ap-

Table 1. Summary of breast tuberculosis

References	Age years	Main symptom	Duration of symptom	Lymph nodes	Systemic symptoms	Pulmonary symptoms	No.
Indumathi et al. [9]	15	left breast abscess	1 month	yes	yes	no	1
Gupta et al. [8]	46	right painless mass	4–5 months	yes	yes	no	2
	48	left mobile mass	14 days	yes	yes	yes	
Ozol et al. [4]	26	right painful abscess with sinus	6 months	n.a.	yes	no	1
Akçay et al. [5]	45	left painful abscess with sinus	15 days	no	yes	no	3
	39	left painful abscess with sinus	4 years	yes (painful)	yes	no	
	30	right painful abscess with sinus	4 months	no	yes	no	
Da Silva et al. [13]	73	right painless mass	8 months	no	no	no	1
Present study	27	left painful abscess	5 months	no	yes	no	1
	29	right breast mass	1 month	no	yes	no	1

appropriate therapy. Mycobacterial culture is the gold standard for the diagnosis of TB, and our cases were confirmed as breast TB abscesses by demonstration of positive cultures using combined conventional and modern semi-automated methods.

The main possible differential diagnosis in our patients was breast carcinoma. However, the clinical presentation was not in favour of this diagnosis. Other diseases of the breast that could have been considered (fatty necrosis, actinomycosis, blastomycosis and plasma cell mastitis) were quickly ruled out by the presence of AFB in stained smears. As soon as the microbiological diagnosis was made, the recommended treatment of breast tuberculosis with anti-tubercular chemotherapy was initiated. The anti-tubercular chemotherapy, with a 4-drug regimen of rifampicin, isoniazid, pyrazinamide and eth-

ambutol, forms the main modality of treatment. Surgical intervention is reserved for drainage of a breast abscess or biopsy from the abscess wall, scraping of sinuses in the breast, and incisional or excisional biopsies. Simple mastectomy may be performed in refractory cases with destruction of the breast [3], although this option may be difficult to accept for most patients.

Conclusion

This case showed that breast TB has to be considered in the differential diagnosis of breast lesion, especially in breast abscesses with discharging sinuses, more so if the patient is from a high-risk population or an endemic region.

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