

A case of primary breast tuberculosis at a United Kingdom district general hospital

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ABSTRACT

Introduction: Tuberculosis (TB) is a condition that mostly affects the lungs but any organ can be affected as a result of hematogenous spread. Although global prevalence of *Mycobacterium tuberculosis* has been estimated as high as 1.86 billion people; breast TB is a rare disease accounting for only 0.1% of all known breast disease. Data from the United Kingdom is limited however one survey of British-Asian woman showed that breast TB accounted for 2.3% of all notified cases of tuberculosis. Clinically and radiologically breast TB can mimic both breast carcinoma and breast abscess; which often makes it a difficult diagnosis to make. **Case Report:** We present a 28-year-old Asian woman with a two-month history of an enlarging breast lump. The firm but fluctuant lump was adherent to the chest wall. MRI scan confirmed a 58-mm cystic structure deep to pectoralis muscle, and extending into the thorax. Subsequent testing revealed this to be a case of mammary tuberculosis. Although extra-pulmonary tuberculosis is uncommon; numerous cases of breast tuberculosis have been reported in South Asia. One should also be aware of other possible diagnoses such as carcinoma or sarcoma. **Conclusion:** Whilst being a very rare

disease, increasing migration is likely to only increase the incidence of breast TB in the UK, therefore these cases highlight the importance of recognizing breast tuberculosis as a potential differential of a breast mass.

Keywords: Breast disease, Mammary tuberculosis, Tuberculosis

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INTRODUCTION

Tuberculosis (TB) is a condition that mostly affects the lungs; but any organ can be affected as a result of hematogenous spread. Although global prevalence of *Mycobacterium tuberculosis* has been estimated as high as 1.86 billion people; breast TB is a rare disease accounting for only 0.1% of all known breast disease [1–3]. Data from the United Kingdom is limited; however one survey British-Asian woman showed that breast TB accounted for 2.3% of all notified cases of tuberculosis [4]. Clinically and radiologically breast TB can mimic both breast carcinoma and breast abscess; which often makes it a difficult diagnosis to make.

This report presents a case of primary breast TB that details our experience and highlights the importance of recognizing TB as a differential diagnosis of breast lesions.

CASE REPORT

A 28-year-old female presented to the breast unit after noticing a painful enlarging lump on her left anterior chest wall for two months prior to presentation. Her only medical history of note was that she suffered from meningitis at the age of 21 but made a fully recovery. Her sister aged 12 had pulmonary TB, but she never received the BCG immunization or any chemo-prophylaxis. Systemically, she denied any cough, loss of weight or night sweats.

The patient had moved to the United Kingdom four years prior from Pakistan. She had a three-year-old son; whom she breast fed for 2 years. It would later become apparent that the patient was also four weeks pregnant with a second child at time of presentation.

The findings at examination were a 40x50 mm firm fluctuant lump that was tethered to the chest wall. There was no palpable lymphadenopathy. The patient therefore underwent an ultrasound scan that showed a thick walled intra-muscular cystic structure extending medially to overlie the sternum. In view of this, she was referred to a sarcoma multi-disciplinary team meeting (MDT) and underwent an MRI scan of her breast. The MRI scan showed a 58-mm cystic structure with an enhancing wall deep to the left pectoralis and superficial to the sternum. A case review at this MDT suggested the possibility of breast tuberculosis after further review of the imaging and history.

The patient, therefore, underwent needle biopsy and aspiration which were sent for histology and microbiology. The microbiology was negative for acid fast bacilli; however the histology showed granulomatous inflammation and QuantiFERON test showed a reactive profile in keeping with TB. A diagnosis of breast tuberculosis was therefore made.

The patient then commenced on an anti-tuberculous regime consisting of two months of rifampicin, isoniazid, ethambutol, and pyrazinamide. Followed-by a minimum of four months of rifampicin and isoniazid. However, before commencing the regime obstetrics were consulted to ensure that it would not have a negative impact on the fetus.

DISCUSSION

The first case of breast TB was recognized in 1829 by Sir Astley Cooper who described it as “scrofulous swelling of the bosom” [5]. Breast TB most commonly affects young women between the ages of 20 to 40 years old [6]. It has been suggested that in this age group the female breast is most likely to undergo frequent changes. For example; during pregnancy and lactation; which make the breast more susceptible to infection due to vascular and dilated ducts [7].

Breast tuberculosis commonly presents as a lump; most often in the central or upper outer quadrants [8]. In a recent case series of breast tuberculosis from Tewari and Shulka 22 out of 30 patients presented with a breast lump whilst nipple discharge and discharging sinus’ were rare presenting features [5].

Breast TB can firstly be classified into primary and secondary types; a case can be considered primary if no other demonstrable focus exists or secondary if there is a demonstrable original focus elsewhere in the body. Cases can then further classified into three forms; nodular, diffuse and sclerosing. The most common form; nodular; is characterized by a slow growing circumscribed mass that masquerades as carcinoma on mammography with an oval tumor shadow [9, 10]. The diffuse form is characterized by multiple foci throughout the breast later leading to sinus formation and ulceration; this often masquerades as inflammatory carcinoma of the breast. Finally, the sclerosing form is most common in the elderly displaying an excessive fibrotic process.

Imaging modalities have so far proved unreliable in distinguishing TB from carcinomas due to its non-specific features. As the commonly affected age groups are under 40 years of age, mammography is of limited use due to the high density of breast tissue in this age group. In the older age group, mammographic findings are often indistinguishable from breast carcinomas and fibroadenomas. Ultrasonography may identify ill-defined hypoechoic masses or thick walled cystic lesions; in some cases a fistulous connection or sinus tract may also be identified [11]. The CT scan and MRI scan modalities have so far only been useful in imaging the extra-mammary extent of the lesion [12]. In this case, the mass appeared on ultrasound as a thick walled intramuscular cystic structure and MRI scan was subsequently used to identify the extra-mammary extent of the lesion.

The gold standard for diagnosis of breast TB is by demonstration of acid fast bacilli on stain, culture or PCR. However, these methods are not very sensitive and may lead to untimely delays to diagnosis [13]. In most published series, AFB in breast discharge or tissue could not be detected, but these cases had breast TB as they responded to anti-tuberculosis treatment [14, 15]. Therefore, pathological examination is a valuable tool for accurate diagnosis of breast TB; arising from evidence of granulomatous inflammation with caseous necrosis and Langhans giant cells. This is supported by this case in which the bacteriology was diagnostic only in Case 1; whilst histopathological specimens were diagnostic in both cases.

Treatment of breast tuberculosis is with a regime of anti-tubercular chemotherapy. This consists of a two month intensive phase (isoniazid, rifampicin, pyrazinamide and ethambutol) followed by a four month continuation phase (isoniazid and rifampicin). Currently there is no national guidance relating to surgical intervention for breast tuberculosis.

CONCLUSION

Whilst being a very rare disease, increasing migration is likely to only increase the incidence of breast TB in the UK. Therefore, these cases highlight the importance of recognizing breast tuberculosis as a potential differential of a breast mass. This case at a small District General Hospital provided us with the incentive to increase awareness of this condition. Thorough history taking and physical examination are key diagnostic tools to enable an early diagnosis and prevent unnecessary interventions and surgical procedures. Ultimately, the correct diagnosis will be concluded from histopathological examination of the specimen.

Author Contributions

Urpinder Singh Grewal – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Alexander Martin – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Steven Goh – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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