Breast mass caused by rib tuberculosis abscess

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Abstract

Tuberculosis involving ribs and presenting with breast mass is a very rare entity and only a few cases have been reported in the literature previously. A 35 year-old patient had a retromammary abscess revealed by a mass in the medial quadrant of right breast. Midsternal incision for abscess drainage and a partial resection of involved ribs was performed. Histopathologic evaluation revealed rib tuberculosis and secondary abscess formation in the right breast. This unusual manifestation of tuberculosis should be included in differential diagnosis of high-risk patients presenting with a breast mass.

Keywords: Rib tuberculosis; Breast mass; Tuberculosis abscess

1. Introduction

The thoracic wall is an uncommon localization for tuberculosis, accounting for an estimated 1–5% of all cases of bone and joint tuberculosis which themselves account for 15% of all extrapulmonary localization [1]. Because of the rarity of tuberculosis as a cause of symptomatic breast disease, the diagnosis has often been missed as diagnostic efforts were directed at the more common causes such as carcinoma and other benign lesions. However, unlike these other diseases, TB is eminently curable and therefore it is imperative that clinicians should bear it in mind when managing patients with breast disease symptoms. The unusual cause and the interesting clinical course of breast mass are described.

2. Case report

A 35 year-old woman complained of having a mass in her right breast for 2 months. There was no history of breast carcinoma in her family. Physical examination revealed a soft, well defined, about 12 × 10 × 8 cm mass, in the medial quadrant of right breast. The mass was fixed and there was no skin or nipple retraction. No axillary or supraclavicular lymph nodes were palpable and she was a febrile. Erythrocyte sedimentation rate was 21 mm/h, and Mantoux test strongly positive (20 mm). Serology for viral hepatitis, syphilis, cytomegalovirus and HIV was negative. Chest X-ray and electrocardiogram showed no abnormality. The patient was referred to mammographic evaluation. Mammography in mediolateral oblique (MLO) projection showed an opaque mass lesion within the pectorals muscle. All borders of the lesion could not be detected by mammographically due to technique difficulties in positioning. Ultrasound (US) revealed (Fig. 1) anechoic mass lesion with hyperechoic necrotic materials in close proximity of underlying rib. Thet cortical integrity of the rib distributed. Because of the lesion was in close relation with chest wall, thorax computed tomography (CT) was performed. Axial CT sections through the ventricles showed a hypo-dense mass lesion, 8 × 6 cm in size. The lesion showed peripheral ring-like contrast enhancement after intravenous contrast medium administration. The underlying rib was destructive (Fig. 2).

Needle biopsy specimens taken from the mass did not show any malignancy or specific infection. The lesion was located at the upper middle quadrant of the breast and extending to axillar region at operation. The lesion originated from the costochondral junction of the 4th and 5th costae. The abscess was drained and then excised totally with its wall. The 4th and 5th costae were excised approximately 5 cm to the costochondral junction. Pleura were not open because it was not involved. The thoracic wall defect was repaired by pectoralis major muscle reconstruction. The drain was inserted to the subcutaneous tissue and sufficient drainage was provided.
The histopathologic study of the rib demonstrated chronic granulomatous inflammation without evidence of malignancy. Ziehl-Neelsen staining revealed the presence of acid-fast bacilli and cultures of the abscess fluid were positive for *Mycobacterium tuberculosis*, which was sensitive to all antituberculosis drugs.

The recovery was uneventful and the patient was discharged from the hospital on the sixth postoperative day. The medication (isoniazid, 300 mg; rifampin, 450 mg; and pyrazinamide, 1.5 g; ethambutol 2 g once daily) for tuberculosis was started postoperatively for 2 months, followed by isoniazid and rifampin for an additional 7 months. Nine months later, she is asymptomatic.

### 3. Discussion

Tuberculosis may mimic many disease processes and affect any anatomical structures. In developing countries where tuberculosis is common the diagnosis can be made easily by evaluating clinical course, history and laboratory examinations [2]. Although the rib is a rare site for TB to cause symptoms, the problem is well recognized, as attested to by many sporadic case reports in the literature [1,3–5].

The gradual development of the abscess of the thoracic wall is mostly not recognized. Tuberculosis abscess formation presenting as a breast mass and lysis of the underlying rib is a very unusual presentation to the best of our knowledge. Only a few cases have been reported in the literatures [6,7].

There are three mechanisms of pathogenesis of rib tuberculosis [8]: (1) direct extension to underlying pleural or pulmonary parenchymal disease; (2) direct extension from a lymphadenitis of the chest wall; and (3) hematogenous dissemination. In our case histological examination did not identify tuberculosis lymph nodes adjacent to lesion of the rib. This could be explained by the fact that the surgical specimen was not resected en bloc. There was not a past history of tuberculosis and pleural and parenchymal lesion.

Biopsy and fine needle aspiration is made for diagnostic purpose and acid-fast bacilli was seen on smear and tubercle bacilli can be seen in culture. But the accuracy rate of diagnosis of fine needle aspiration and biopsy is generally low. In the study of Faure et al. [8], they applied these procedures to 11 cases and diagnosis was made only in four of them. In our case needle aspiration was performed but diagnosis was not established.

A plain chest radiograph is taken as part of the routine...
work for patient with breast mass. The detection of apical lung lesion that is suggested present or past tuberculosis can provide diagnostic clues in the differential diagnosis of suspected lesion. The presence of tuberculosis lesions in the lungs confirms the diagnosis. However it should be kept in mind that a small percentage of the tuberculosis cases could be seen without lung involvement.

Mammography and US are the primary imaging methods in the evaluation of breast lesions. But the mass lesions near the chest wall cannot be evaluated enough due to technique difficulties in positioning the patient. MLO projection is generally preferred to image the lesions near the chest wall. But in our case the greatest dimension of the lesion can not permit the lesion to image with all borders. Abscess formation is detected as an opaque lesion with regular formation. But it is difficult to differentiate it from other breast lesions that show opacity such as fibroadenomas, cysts. US can differentiate these lesions by demonstrating internal architecture. The differentiation between solid and cystic structures on the basis of US findings is very easy. Abscess formation is detected as a hypoechoic mass with internal echoes and surrounding by a thick wall at US. But technique difficulties are also present to arrive a deep-seated lesion when examined by high frequency transducers. But CT, with the advantage of demonstrating deep and superficial tissues in same contrast and spatial resolution, provides most diagnostic information. An abscess formation in the retromammary region is usually seen a focal, smoothly marginated, inhomogeneous, hypodense lesion on CT. Ring-like contrast enhancement is so characteristic to abscess formation [6]. The detection of a direct fistulas connection with the pleura or a destroyed rib fragment in the abscess by CT provides important information in differential diagnosis of tuberculosis abscess from the other abscess formations of different causes [6].

The diagnosis of TB rests on the demonstration of a classical caseous lesion or acid-fast bacilli in the lesion. Because fine-needle aspiration remains an inaccurate diagnostic tool and antituberculous medical treatment is not always efficient, chest wall tuberculosis cold abscesses remain in most cases a surgical entity. Partial resection of the involved rib together with local decortication of the pleura is according to our experience is the optimal therapy to obtain good results.

This case underlines the important message that tuberculosis should be considered when breast mass is undiagnosed, especially in at-risk populations. These include not only people migrating from endemic areas but also the increasing number of individuals infected with HIV.

References