CHILDHOOD TUBERCULOSIS PRESENTING AS AN ANTERIOR CHEST WALL ABSCESS

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In Taiwan, the incidence of tuberculosis in children younger than 14 years of age remains high (0.34% in 1997) [1]. However, tuberculous infection of the subcutaneous tissue and muscle is rare in children [2]. We report a case of a tuberculous chest wall abscess in a 4-year-old healthy girl who had received Bacillus Calmette-Guerin (BCG) vaccination at birth.

Case Report

A 4-year-old girl was admitted due to 2 days of fever and chills, and a dry cough for 1 month. No past history of tuberculosis exposure was noted. On initial presentation in February 1998, she looked ill, and rales were heard in the right lung on physical examination. Chest roentgenogram showed a faint round radio-opacity in the right upper lung field, accompanied by an expansile change in the right anterior third rib shaft. Chest computerized tomography (CT) scan showed a soft tissue lesion protruding into the pleural cavity around the expansile right third rib shaft. Neither active lung parenchymal nor mediastinal lesion was seen. There was no tenderness, palpable mass, or erythematous discoloration on the right anterior chest wall. Laboratory examinations revealed a white blood cell count of 3.4 x 10⁹/L, with normal classification; hemoglobin, 11.2 g/dL; platelets, 236 x 10⁹/L; C-reactive protein, 0.3 mg/dL; and a normal urine analysis. Since bronchopneumonia was first suspected as the cause of her febrile condition, empiric antibiotics were prescribed, leading to a gradual subsidence of fever. Since an intact third rib was revealed by local excision biopsy, no further bone biopsy was performed at that time. One pinkish nodule beneath the rib, without adhesion to the surrounding tissue, was disclosed and dissected. Histopathologic examination of the biopsy specimen showed reactive hyperplasia of the lymph node. She was discharged with the diagnosis of enchondroma and lymphadenitis. Clinical follow-up with regular checking of her right third rib lesion was advised.

One year after initial presentation, the patient noted an enlarged, non-erythematous, painless mass on the right anterior chest wall just above and median to the nipple area, which prompted her family to seek medical attention. The previous expansile lesion of the right third rib had become larger on chest roentgenogram (Fig. 1). Chest CT with a contrast agent revealed an expansile osteolytic lesion with punctuate chondroid calcifications and focal cortical breakthrough over the anterior portion of the right third rib with soft tissue swelling. There was also an ovoid cystic lesion with marginal enhancement (Fig. 2). These lesions were compat-

Abstract: Chest wall abscess is a rare manifestation of childhood tuberculosis. We report a case of a tuberculous chest wall abscess in a 4-year-old healthy girl who had received Bacillus Calmette-Guerin (BCG) vaccination at birth. She developed a localized anterior chest wall mass, which was initially mistaken for enchondroma on the chest radiograph. Pathologic examination of the biopsy specimen revealed chronic granulomatous inflammation and positive acid-fast staining, which confirmed the diagnosis of chest wall tuberculosis infection. She received a 12-month course of anti-tuberculous treatment and was perfectly well 1 year later. The chest wall lesion resolved without the need for surgery. In conclusion, tuberculosis should be excluded in children with undiagnosed chest wall lesions, especially in endemic areas, even if they have been vaccinated with BCG. Adequate anti-tuberculosis treatment can result in a complete recovery.

Key words: tuberculosis chest wall abscess osteomyelitis children

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Fig. 1. Chest roentgenogram shows a faint round radio-opacity on the right lung field, accompanied by an expansile change in the right anterior third rib shaft.

Fig. 2. Contrast-enhanced chest computerized tomography scan shows an expansile osteolytic lesion with punctuated chondroid calcifications and focal cortical breakthrough over the right third rib, soft tissue swelling, and an ovoid cystic lesion with marginal enhancement.

Discussion

Although the incidence of tuberculosis in children younger than 14 years of age remains high in Taiwan (0.34% in 1997) [1], tuberculous infection of the subcutaneous tissue and muscle is rare in children [2]. Our patient initially presented with a rib lesion found accidentally on image studies, with no typical manifestation of tuberculosis. One year later, she developed a chest wall abscess with underlying rib destruction. These findings suggest that primary tuberculosis infection may have gone undetected and so have extended to the rib, then spread to the subcutaneous tissue, and eventually formed a chest wall abscess. The delay in seeking medical attention may have contributed to this unusual complication. Chest wall tuberculosis may present as an enlarging tumor mass, soft or firm in consistency, with or without signs of local inflammation or destruction of the underlying ribs or sternum. The pattern of manifestations depends on the number and virulence of the bacilli, the route of infection, the host immune status, and the timing of discovery of the lesion [3]. Therefore, maintaining a high degree of suspicion is essential, especially in endemic areas.

The pathogenesis of chest wall tuberculosis includes direct extension from underlying pleural or pulmonary disease [3], hematogenous dissemination associated with the activation of dormant tuberculosis [4], direct extension from lymphadenitis of the chest wall [5], and direct skin inoculation [6]. In our patient, lymphadenitis may have been the primary site of infection. The third rib nearby was involved by direct extension, as shown by a positive test for acid-fast bacilli in the biopsy specimens.

The manifestations of chest wall tuberculosis on chest roentgenography and CT are non-specific, and should be differentiated from actinomycosis or other tumor lesions [7]. Bone and costal cartilage destruction, soft tissue mass with calcification, chest wall mass with low attenuation of central necrosis, and rim enhancement under intravenous contrast medium injection are the most common roentgenographic features of chest wall tuberculosis [8]. In our patient, a presumptive diagnosis of enchondroma was made based on the imaging studies. Not until the appearance of an abscess with rim enhancement did we begin to suspect the possibility of chest wall tuberculosis. Ultrasonography, with its advantages of being radiation-free, available for bedside procedures, and helpful in the performance of
needle biopsy [9], is a useful diagnostic tool for evaluation of chest wall lesions. Although not always reliable [10], needle biopsy can provide histopathologic and bacteriologic evidence of tuberculous infection.

Optimal therapies for chest wall tuberculosis remain controversial. In the early twentieth century, surgical interventions by repeated aspiration, focal excision [11], or en-bloc resection [12] of the chest wall abscess were the mainstream of treatment for chest wall tuberculosis. With the development of new anti-tuberculosis drugs, a regimen consisting of ethambutol, isoniazid, rifampicin, and pyrazinamide for 2 months, followed by ethambutol, isoniazid, and rifampicin for a further 10 months, is recommended [9]. Sometimes, a combination of surgery and medication may be necessary [5].

This case highlights the fact that childhood tuberculosis may present as a chest wall abscess. In children with a chest wall lesion, the possibility of a tuberculosis infection should be kept in mind even when there is no evidence of tuberculosis, especially in countries where tuberculosis is endemic.

References


