Case Report

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Soft Tissue Tuberculosis Mimicking Ewing Sarcoma: A Case Report

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Abstract

Mycobacterium tuberculosis is a disease seen in every tissue and organ. Although it often involves the lung and pleura, it can also progress into extrapulmonary tuberculosis. Soft tissue and bone tuberculosis are the least common of all tuberculosis types. In some cases, the lesions may appear like bone tumors or metastatic lesions. Bacteriological and histopathological studies reach a definitive diagnosis because of the biopsy. We present a case suggestive of Ewing's sarcoma with clinical and imaging findings but diagnosed as soft tissue tuberculosis resulting from the biopsy. A two-year-old girl was admitted to our clinic with the complaint of palpable swelling on the left side of her chest. Ewing sarcoma was considered with the findings of Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and PET-CT. Biopsy material was reported as casefied granulomatous inflammation, and M. tuberculosis complex DNA was detected by PCR examination of the tissue. The patient was successfully treated with rifampin, isoniazid, pyrazinamide, and ethambutol. Today, it should be kept in mind that tuberculosis is a common disease, rarely isolated soft tissue or bone involvement, and can be confused with malignancy.

Keywords: Child, Ewing sarcoma, Chest wall mass, tuberculosis

Introduction

Mycobacterium tuberculosis can be seen in every tissue and organ. Although it often involves the lung and pleura, it can also progress into extrapulmonary tuberculosis. Soft tissue tuberculosis is the least common of all tuberculosis types. Rarely, they may involve the soft tissues and skin and cause very different clinical manifestations. Since it does not give specific symptoms and signs, it is difficult to diagnose, and there may be a delay in diagnosis. In cases where primary pulmonary tuberculosis is not accompanied, or the disease is asymptomatic, it may be confused with thoracic wall tumor, tuberculous osteomyelitis, tuberculosis cold abscess, and malignancy[1,2]. In some cases, the lesions may appear similar to bone tumors or metastatic formations. Definitive diagnosis is reached with bacteriological and histological studies resulting from biopsy[3].

Ewing sarcoma is one of the small round blue cell tumors. The most common places are; the trunk, pelvis, vertebrae, thorax, and extremities. The most common presenting symptoms are swelling, pain, limitation of movement, and tenderness in the affected area. Respiratory distress may also be seen in patients with sizeable primary chest wall tumours[4]. Ewing sarcoma is one of the first diseases that come to mind when a mass or a lesion originating from the rib is seen on the chest wall[5]. Here, we present a case who presented with the complaint of swelling in the chest wall and was initially thought to be Ewing's sarcoma on imaging but was diagnosed as soft tissue tuberculosis by biopsy.

Case Report

A two-year-old female patient was admitted to our clinic with a palpable swelling on the left side of her chest for 20 days (Picture 1). The patient's and family history was unremarkable. The schedule completed the patient's vaccinations, and there was a 5mm scar on the left arm. On physical examination, a 3x3 cm, semi-mobile, firm, and painless mass was detected under the nipple on the left side of the chest wall. No pathological findings were found in other system examinations. The patient's body weight was 11 kg (10-25 percentile), and his height was 84 cm (25-50 percentile). In laboratory examination, Complete blood count, serum electrolytes, and kidney and liver functions were within the normal reference range, and the erythrocyte sedimentation rate was 36 mm/hour. Immunoglobulins were within the normal range, lymphocyte subgroups were within the normal reference range: CD3 66.5%, CD4 43.3%, CD19

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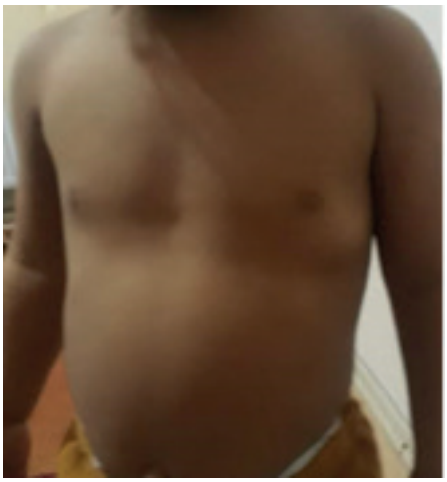

Figure 1. The appearance of a mass lesion on the chest wall.

23.4%, NK 7.7%, CD4/CD8 2.3. Ultrasonography revealed a 30x36 mm heterogeneous lesion with solid and cystic areas and amorphous calcifications in the left anterior-lateral wall of the chest, which could not be distinguished from the rib. The patient's chest X-ray was normal. Computer Tomography (CT) (Picture 2a, 2b) and Magnetic Resonance Imaging (MRI) (Picture 2c, 2d, 2e) images show a mass lesion originating from the 6th rib, 24x32x30 mm in size, extending towards the

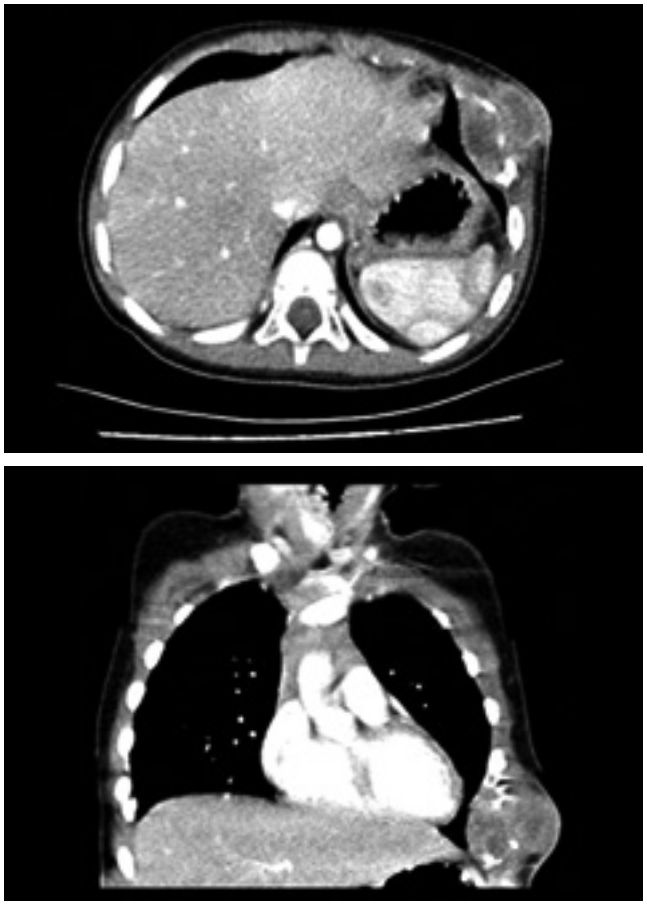

Figure 2a, 2b. On thorax CT examination: A mass lesion on the 6th rib, 26x33mm in size, hypodense in the center, cystic-necrotic structure, hyperdense solid in the periphery, peripherally contrasting, expanding-destroying the rib and extending into the soft tissue.

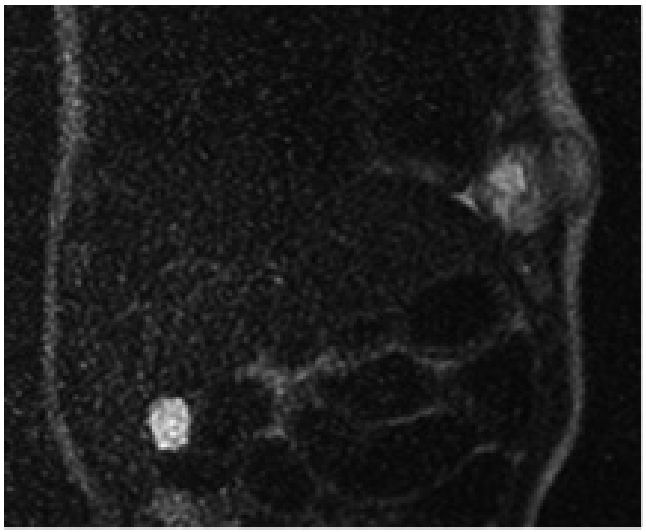

Figure 2c. Mass lesion with a central hyperintense appearance, cystic-necrotic structure, hypointense solid structure on the periphery, and extending into the soft tissue in coronal T2W MRI examination

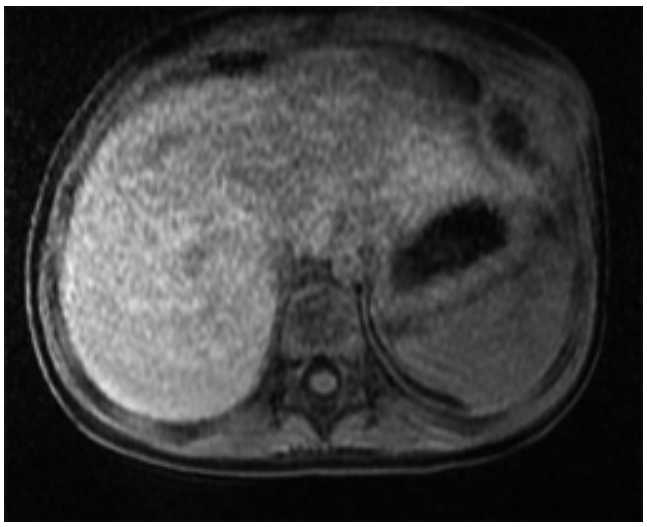

Figure 2d. On T1W MRI with axial contrast, a mass lesion originating from the 6th rib, 24x32x30 mm in size, hypointense in the central, cystic-necrotic structure, peripheral hyperintense solid construction, peripheral enhancement, extending into the soft tissue.

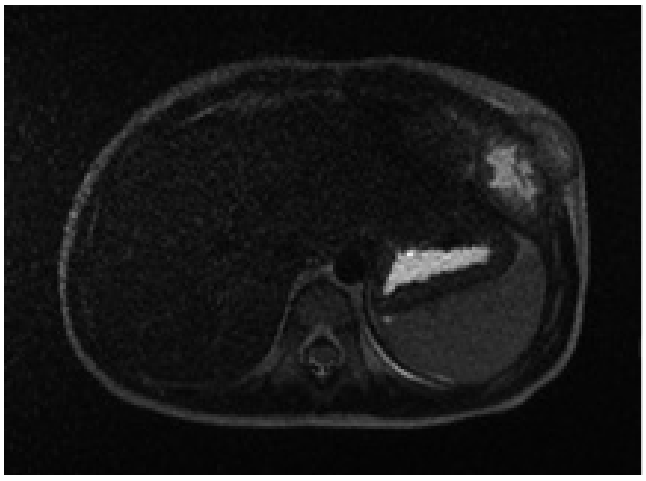

Figure 2e. Mass lesion with central hyperintense appearance, cystic-necrotic structure, peripheral hypointense, solid structure, extending into soft tissue in axial T2W MRI examination

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abdomen and under the skin, destroying the rib. The lesion had central necrosis and peripheral contrast enhancement. In the whole body PET-CT examination, a malignant mass was reported in the left intercostal space, lysing the 6th rib, medially adjacent to the liver and stomach corpus, extending to the cutaneous-subcutaneous plane, and showing pathological FDG uptake (SUVmax: 7.7). All these reports are suggestive of Ewing's sarcoma. Histopathological review of the tru-cut biopsy samples reported granulomatous inflammation. Tuberculin skin test was negative. In the polymerase chain reaction (PCR) examination of the tissue samples, M. tuberculosis complex DNA was detected. Treatment with rifampin, isoniazid, pyrazinamide, and ethambutol was started. In the 6th month of her treatment, a significant clinical and radiological regression was observed in the size of the mass (Figure 3a, 3b).

Discussion

The skeletal system is one of the most common sites of extrapulmonary tuberculosis infection and constitutes 1-3% of all tuberculosis cases. The most commonly affected bones in children are; the metaphysis of long bones such as the femur, tibia, fibula and humerus, vertebrae, pelvis, and skull bones. Although the infection occurs due to the spread of the microorganism from the lungs by the lymphohematogenous route, a primary pulmonary lesion may not be seen at the time of diagnosis[6,7]. The history of contact with a possible tuberculosis case is also very low[8]. Skeletal tuberculosis is more common in immunocompromised patients, especially multifocal bone lesions in these patients[2]. Immune system deficiency was not detected in our case. In addition, no other tuberculosis focus was detected in the lung and musculoskeletal system. No tuberculosis infection was seen as a result of screening of family members.

Since clinical and radiological findings are not specific in the early period in children, the diagnosis can be easily missed[5,6]. Pain, swelling, and limping are the most common complaints. Fever, weight loss, night sweats, weakness, muscle atrophy around the joint, and pathological fracture are rare findings[9]. Tuberculin skin test, erythrocyte sedimentation rate, complete blood count, and chest x-ray are auxiliary diagnostic methods[1,2,6]. Our case presented with the swelling in the thoracic wall without pain and systemic symptoms. Erythrocyte sedimentation rate was slightly elevated. With these findings, we first thought of costal malignancy in our patient.

Tissue swelling can be detected only in the affected area in the early X-ray of patients with soft tissue and bone tuberculosis. In the late period, a lytic, oval, lobulated structure with multiple sclerotic cystic appearances extending from the metaphysis to the epiphysis is typical and is often accompanied by osteoporosis[2,6,8]. Computed Tomography and MRI examinations will help determine the degree of bone involvement. The preliminary diagnosis was reported as malignancy in all imaging studies performed on this patient, including ultrasonography, CT, MR, and PET CT.

Similar radiological findings may be seen in tuberculous bone lesions, such as eosinophilic granuloma, primary/secondary malignancies, or fungal infections. In children, lytic lesions may resemble bone pathologies such as leukemia, neuroblastoma, and Langerhans cell histiocytosis[2,7]. Multifocal bone involvement may occur[6,8]. Malignancies, including Ewing's sarcoma, are primarily considered in the differential diagnosis of mild tissue tuberculosis[2,3,5].

Ewing sarcoma is one of the small round blue cell tumors. The most common sites are the trunk, pelvis, vertebrae, thorax, and extremities. The most common presenting complaints are swelling, pain, limitation of movement, and tenderness in the affected area. Respiratory distress may also be seen in patients with a large primary chest wall tumor. Lytic lesions on direct X-ray and characteristic onion skin appearance due to periosteal reaction should suggest Ewing's sarcoma. In radiological imaging, the tumor often crosses the cortex and enters the soft tissue, and the soft tissue component can sometimes be huge. There is no calcification in the smooth tissue extension4. In the differential diagnosis, osteomyelitis due to bacteria, fungi, and bone tumors that cause lytic lesions should be investigated. Therefore, the biopsy is recommended in suspicious cases[2,5,8].

Detection of granulomatous inflammation in the histopathological examination of the tissue specimen supports the diagnosis of tuberculosis. Acid-fast bacteria can be seen with Ziehl-Neelsen staining. M. tuberculosis growth in culture is diagnostic[8]. However, since M. tuberculosis culture takes a long time, it may cause a delay in treatment. Polymerase chain reaction (PCR), one of the nucleic acid amplification methods, can be used for faster diagnosis. In our case, the diagnosis of tuberculosis was made due to the detection of M. tuberculosis complex DNA in the PCR examination and the absence of malignant cells in the biopsy sample, together with the findings of granulomatous inflammation.

Anti-tuberculosis drugs should be given in the treatment of skeletal tuberculosis. While many authors in the literature suggest that medical treatment alone is sufficient, some believe that surgical debridement and drainage are necessary. Surgical intervention may be needed in refractory or complicated cases, advanced lesions with caseation, or nonresponsive patients to drug therapy[7,8]. The medical treatment of skeletal tuberculosis includes 9-12 months of drug therapy[11]. Our patient received isoniazid, rifampicin, ethambutol, and pyrazinamide for six months and responded clinically and radiologically.

In conclusion, although clinical and radiological evaluations indicate malignancy in children presenting with a mass in the chest wall, it should be kept in mind that there may be tuberculosis infection in the etiology, and lung lesions may not accompany the findings.

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