A 12-Month-Old Boy with a Soft Mass Over His Left 10th Rib

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A 12-month-old boy was admitted to our clinic with a soft mass on his left 10th rib, which was first noticed 20 days prior when he presented with swelling in the anterior chest wall. The patient had no history of chronic disease, contact with sick people, or weight loss, fever, or night sweats. Upon physical examination, his vital signs were normal, but on his left side between his 9th and 10th ribs there was a soft and fixed mass that was 6 × 5 cm in diameter. His abdominal, cardiovascular, and pulmonary examinations were normal and he had a Bacillus Calmette-Guérin vaccine scar on his left shoulder.

Laboratory examination was as follows: white cell count of 14,300/mcL, hemoglobin of 10.9 g/dL, platelet count of 532,000/mcL, C-reactive protein of 0.04 mg/dL, erythrocyte sedimentation rate of 17 mm/h, uric acid of 5.1 mg/dL, and lactate dehydrogenase of 284 mg/dL. The patient’s serum electrolyte levels and liver and renal function tests were normal.

After an ultrasound examination showed an osteochondral soft tissue lesion originating from the left thoracic wall, a computed tomography (CT) scan was performed. CT imaging showed a hypodense mass 31 × 21 mm in diameter between the cartilage of the 9th and 10th ribs (Figure 1). A CT scan of his lungs was normal. Magnetic resonance imaging showed a mass lesion 15 × 8 × 10 mm in size on the left-posterior thoracic wall with linear enhancement that had minimally invaded the thorax wall (Figure 2).

For diagnosis, see page 482

Editor’s note: Each month, this department features a discussion of an unusual diagnosis. A description and images are presented, followed by the diagnosis and an explanation of how the diagnosis was determined. As always, your comments are welcome via email at pedann@Healio.com.
Diagnosis:
Chest Wall Tuberculosis

For definitive diagnosis, fine needle aspiration was performed. Microbiologic examination of the purulent biopsy material confirmed a diagnosis of tuberculosis. Polymerase chain reaction testing also revealed *Mycobacterium tuberculosis*. Treatment was started with isoniazid at 10 mg/kg per day for 9 months, with 15 mg/kg per day of rifampicin, 25 mg/kg per day of pyrazinamide, and 15 mg/kg per day of streptomycin for 2 months. After medical treatment the size of the mass decreased (Figure 3), and after 6 months of therapy the swelling was completely resolved.

**DISCUSSION**

According to the World Health Organization (WHO), although prevalence of tuberculosis infection worldwide is 178 per 100,000 people, the incidence of disease is actually 128 per 100,000 people. Tuberculosis is still an important health issue, especially in developing countries. Also, with the increase in antibiotic-resistant bacilli and the increase in HIV infection incidence, tuberculosis infections have become more prevalent in recent years in some areas.²

Chest wall tuberculosis, also known as cold abscess, is defined as a mass without obvious inflammation, which is usual with tuberculosis infection.³ Chest wall tuberculosis, which occurs from direct inoculation or hematogeneous spread, accounts for 1% to 5% of musculoskeletal tuberculosis cases and up to 1% to 2% of all tuberculosis infection cases.⁴ In children, tuberculosis infection of the musculoskeletal system is rare.²,⁵,⁷ In the case presented here, the patient was admitted with a cold abscess without primary focus in either the lungs or the ribs.

Cold abscess is usually seen in the sternum, ribs, costochondral junction, costovertebral junctions, and vertebrae.⁸ Two possible mechanisms are suggested for pathogenesis of chest wall tuberculosis: (1) after activation of primary focus, hematogeneous spread causes cold abscess, and (2) direct inoculation from lymphadenitis.⁹ When bacilli reach the pleural space they cause pleuritis, and then some bacilli that spread to lymph nodes cause lymphadenitis. After rupture of these lymph nodes, necrotic material leads to abscess formation.¹⁰ In recent years, the incidence of tuberculosis infection has increased in the elderly population, with one reason being the increasing use of immunosuppressive drugs.¹¹ The child in this case was not taking any immunosuppressive agents.

When this patient was admitted to our clinic, although there was abscess formation in the rib body, CT scan of the lungs was normal. One month af-
ter the diagnosis of cold abscess of the chest wall, we considered that the rib wall was the primary focus of infection.

A retrospective study by Paik et al. investigated 89 patients aged 9 to 71 years with cold abscess of the chest wall who were diagnosed as having tuberculosis infection. The study revealed the most common presenting symptoms were swelling of the chest, pain, and pus drainage. In our case, the patient was admitted with swelling in the anterior chest wall, and after exclusion of malignancy (which is important in the differential diagnosis) he was diagnosed with tuberculosis infection.

Chung et al. suggested that for diagnosis and dissemination of abscess, the most suitable method is CT imaging. Although definite diagnosis of tuberculosis infection is done by detecting the microorganism in culture or detecting bacilli in acid-fast staining, this is possible in only 20% of cases. In our case, both acid-fast staining and culture of the pus material indicated infection with M. tuberculosis.

Treatment of cold abscess of the chest wall usually involves abscess drainage and medical treatment. In the study by Paik et al., abscess excision was performed in 28% of patients and rib excision was performed in 72%. Our patient responded to abscess drainage and medical treatment of tuberculosis guided by WHO recommendations.

CONCLUSION

According to the medical literature, chest wall tuberculosis is rare in pediatric patients. In the case discussed here, chest wall tuberculosis occurred without clear evidence of pulmonary tuberculosis infection. Although musculoskeletal tuberculosis is uncommon in children, in patients with chest wall masses, cold abscess should be considered even if there is not any obvious primary focus.

REFERENCES