Case Report

Aneurysmal bone cyst of thoracic spine mimicking spinal tuberculosis

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Abstract

A 22-year-old female presented to our services with back pain and paraparesis for 11 months. She was earlier diagnosed with tuberculosis of spine, and antitubercular chemotherapy was started. However her condition had worsened. Plain and contrast-enhanced computed tomography scans of the thorax and magnetic resonance imaging of the thoracic spine showed heterogenous, lytic, expansile lesion involving third thoracic vertebra with epidural extension and large bilateral paraspinal and mediastinal components. Multiple variably sized loculations with fluid-fluid levels were seen within the lesion. These imaging findings suggestive of aneurysmal bone cyst of thoracic spine were compared with the findings seen 11 months earlier, which were mistaken for spinal tuberculosis. Histopathology confirmed the diagnosis of aneurysmal bone cyst. The imaging features, diagnostic challenges and the lessons learned have been briefly discussed.

Key words: Aneurysmal bone cyst, paraparesis, thoracic spine, tuberculosis

INTRODUCTION

Tuberculosis (TB) has been reported to mimic several neoplasms; however, in our case, neoplasm is seen to mimic TB. In the initial stages of development, primary spinal neoplasms may not reveal characteristic imaging features and therefore can mimic other pathologies like spinal TB. This is of particular importance in the developing world where TB is extremely common and also in the developed world, which is witnessing a resurgence of TB with increasing number of immunocompromised patients.

CASE REPORT

In September 2011, a 22-year-old female presented with insidious onset, gradually progressive back pain and weakness in both lower limbs for 11 months. She was earlier diagnosed with TB of spine, and antitubercular chemotherapy was started. However her condition had worsened. She had no history of trauma.

On physical examination, she had reduced power in both lower limbs with reduced sensations below D4 dermatome level. Auscultation of chest revealed reduced breath sounds in bilateral upper and middle zones. Her hematological investigations revealed no significant abnormality.

Frontal chest radiograph revealed symmetric homogenous soft tissue density and bilateral lung field opacification in upper and middle zones [Figure 1]. Collapse of third dorsal (D3) vertebral body with resultant kyphotic deformity was seen on lateral skiagram of the dorsal spine. Ultrasound examination of bilateral upper chest revealed heterogenous mass with multiple variably sized cystic areas within [Figure 2]. This raised the suspicion of hydatid disease of the spine.

Plain and contrast-enhanced computed tomography (CT) scans of the thorax and magnetic resonance imaging (MRI) of the thoracic spine showed heterogenous, lytic, expansile lesion...
involving right transverse and spinous process of D3 vertebra with extension into the left transverse process and epidural extension with large bilateral paraspinal and mediastinal components. Multiple variably sized loculations with fluid-fluid levels were seen within the lesion. The lesion showed heterogenous post-contrast enhancement with enhancement of the intervening septae. There was compressive collapse of lower lobes of both lungs [Figure 3]. A diagnosis of aneurysmal bone cyst (ABC) of posterior elements of D3 vertebra was considered on imaging.

These imaging findings were compared with MRI study performed 11 months earlier, which showed pre- and bilateral para-vertebral soft tissue lesions without loculations with involvement of vertebral body and right transverse process of D3 vertebra. Epidural soft tissue was seen from first to fourth vertebral levels causing compression of the spinal cord. These imaging findings were mistaken for tuberculosis of spine earlier. [Figures 4 and 5]
A CT-guided biopsy was performed from the solid mediastinal component along with diagnostic cyst aspiration. On histologic analysis [Figure 6], blood-filled lacunae separated by a spindle-cell stroma with haphazardly arranged multinucleate osteoclast-like giant cells were seen. This confirmed the imaging diagnosis of aneurysmal bone cyst. Due to extensive extension into mediastinum, the tumor was regarded inoperable.

**DISCUSSION**

Aneurysmal bone cyst (ABC) is a benign, expansile, relatively rare lesion that represents 1.4%–2.3% of primary bone tumors. The spine is involved in 3%–20% of the cases. The long bones and flat bones like pelvis are involved more often. The cervical spine is affected in 22% of cases, the thoracic spine in 34%, the lumbar spine in 31% and the sacrum in 13%. Spinal involvement is typically in the posterior elements, although extension into the vertebral body is common (75% of cases). Spinal ABC may extend into the adjacent vertebrae or intervertebral disk, the ribs, epidural space and the paravertebral soft tissue.

ABC usually occurs between the ages of 5 and 20 years with slight female predilection. Most patients have pain and swelling, and vertebral lesions frequently cause signs and symptoms related to compression of the spinal cord, nerve root or both.

In a study by Hudson, 35% of ABCs showed fluid-fluid levels at CT. Visualization of fluid-fluid levels requires that the patient be motionless for approximately 10 minutes (to allow layers to settle) and that the imaging plane be perpendicular to the fluid levels. Such scans should be viewed with a narrow window setting to identify small differences in fluid attenuation. Fluid-fluid levels within ABCs are indicative of hemorrhage with sedimentation and are better demonstrated with MR imaging. This case also reminds that primary spinal neoplasm should be considered a differential when symmetric opacification of lung fields on frontal chest radiographs is seen.

Expansile neoplasms of the spine like ABC may rarely gain entry into the thoracic cavity and grow exuberantly due to negative intrathoracic pressure and relative lack of resistance. Hence, such lesions in later stages of their development may mimic a malignant mediastinal mass on imaging. Occasionally, vertebral hydatid cyst can also be close imaging differentials of ABC of spine.

Our case report emphasizes that primary spinal neoplasms like ABC in the initial stages can present without the characteristic imaging features and can thereby mimic spinal TB. High index of suspicion can lead to timely imaging and biopsy, strict follow-up and early detection, thereby preventing complications and difficulties in management.

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