

Multifocal Osteolytic tuberculosis - Uncommon presentation of common disease

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ABSTRACT

Tuberculosis is one of the most prevalent bacterial infection in developing country like India and it is capable of affecting almost every system in the human body. Multifocal skeletal tuberculosis is a rare condition. We report a 22-year old immunocompetent female history of backache and sternal pain for three months, associated with progressive weight loss with no fever. Computed Tomography (CT) scanning demonstrated hypodense multifocal osteolytic lesions of the thoracic spine (T12) and the manubrium sternii. CT guided fine needle aspiration cytology (FNAC) performed from both osteolytic lesions. Cytology smears from both lesions show many granulomas and few giant cells. Z-N stain for AFB was positive. Patient treated with anti-tuberculosis drugs and responded well. This case reported for its rarity, unusual radiological findings & to emphasize the role of CT/CT guided FNAC in osteolytic lesions and also to stress the need for high index of suspicion in tuberculosis endemic areas to avoid delayed diagnosis in such uncommon presentation of common disease.

Keywords: Osteolytic tuberculosis; CT guided FNAC; Cytology.

INTRODUCTION

Multifocal osteoarticular tuberculosis is uncommon and accounts for approximately 10% of all cases of osteoarticular Tuberculosis. Multifocal skeletal tuberculosis is defined as osteoarticular lesions that occur simultaneously at two or more locations. The diagnosis of multifocal osteolytic skeletal TB is frequently delayed due to its rarity and vague symptoms of disease, thus allowing progression to severe deformities¹.

Radiological examinations, including conventional roentgenography, magnetic resonance imaging (MRI) and CT scans, can be used to assist the diagnosis of multifocal skeletal TB. Moreover, it is difficult to differentiate multifocal skeletal TB from other multiple bone lesions, including bone metastases, bone malignancies based on clinical or radiologic findings only.

Image guided FNAC has emerged as the first line of investigation in the assessment of radiologically detected vertebral and para-vertebral lesions. FNAC is a safe, less traumatic, rapid and easy method compared to larger core or open biopsy. This procedure is cost effective as well as easier to repeat, if necessary².

CASE REPORT

A 22-year-old female visited our hospital with a 3 month history of thoracic back pain and sternal tenderness. There was history of mild fever initially and subsided with anti-pyretics. The patient also reported weakness, decreased appetite and weight loss but did not experience chills or night sweats. There was no history of exposure to TB or of a chronic cough. The patient presented a normal general physical condition and afebrile. A physical examination revealed slight tenderness over the lower thoracic spine and sternum. No paraspinal swelling or spasms were observed, while the sensation, muscle strength and muscle tone of the lower extremities were normal.

Her laboratory examinations which was done outside showed a normal white blood cell count, normal differential count and low hemoglobin of 9.0 gm% & normal platelet count. The erythrocyte sedimentation rate (ESR) was 70 mm/h, which was higher than the normal range (0-10 mm/h), and the C reactive protein level was normal. Liver function test was normal. Serum creatinine and blood urea were normal. Viral serology for HIV, HBsAg, HCV and purified protein derivative (PPD) tests were negative. Radiographs of the thoracolumbar spine, chest, and pelvis were normal.

For further evaluation CT Chest and vertebrae done. CT chest and vertebrae show osteolytic destruction of left lateral border of manubrium sternii with soft tissue collection in retrosternal space. Another large lytic lesion involving left costo-transverse articulation with epidural soft tissue component causing compression over the cord. There was no intra or paradiscal lesion & no pre or paravertebral collection. Differential diagnosis made as malignancy, metastatic deposit, plasmacytoma, bone tumours, aneurysmal bone cyst, sarcoidosis and rarely infective.

Figure:1



Figure :1 CT Thoracic vertebrae: Lytic lesion involving left costo-transverse articulation(Green arrow)

Figure:2



Figure:2 CT Sternum: Osteolytic destruction of left lateral border of manubrium sternii (red arrow)



Figure :3 CT Guided FNAC - Needle track in T12 osteolytic lesion

CT guided FNAC performed from both sternum and T12 thoracic vertebrae. The aspirated sample was blood mixed and scanty. Cytological examination show many granulomas consisting epithelioid cells and few giant cells. There was patchy necrotic areas. Stain for AFB (acid fast bacillus) came positive and diagnosis of multifocal tuberculosis was made. Gene expert not performed in view of scanty aspirate.

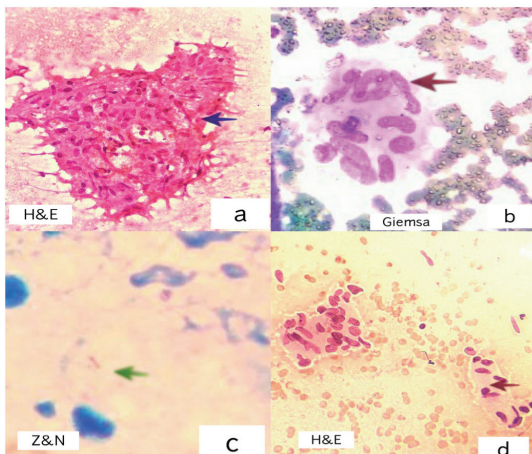


Figure :4 a; Cytosmear(T12vertebrae) H& E stain (40X) Show granulomas consisting epithelioid cells.

b;Giemsa stained cytosmear(100X)Granuloma with epithelioid cells.

c;Z-N stain for AFB Show acid fast bacillus.

d;Cytosmear(Sternum) granulomas consisting epithelioid cells

The patient was prescribed antitubercular chemotherapy with isoniazid, rifampicin, pyrazinamide, and ethambutol and hematinics. Four weeks afterwards, her pain was subsided and her ESR dropped to 38 mm/hr. Patient advised to continue Antitubercular chemotherapy for next 10-12 months and regular follow up.

DISCUSSION

TB remains a major cause of morbidity and mortality worldwide. Osteoarticular tuberculosis accounts for 2% of patients with tuberculosis with the most common site being the spine (50%), and the second most common being the hip joint (20%) followed by the knee joint (10%). Skeletal TB usually occurs in patients with risk factors such as low socioeconomic status and old age or in patients with immune compromised states such as those with acquired immune deficiency syndrome (AIDS) or those undergoing organ transplantation. Multifocal skeletal lesions may occur as a result of hematogenous dissemination from another primary focus such as cervical lymph nodes, lungs, tonsils or gastrointestinal tract³.

In skeletal tuberculosis, the onset of symptoms is generally insidious, and not accompanied by alarming general manifestations such as fever, night sweats, toxicity, or extreme weakness. Pain in the region of the involved joint is usually mild at onset. Also quite a number of patients with multifocal TB may not present with overt signs and symptoms and constitutional symptoms may not be seen⁴. In our case too, patient was immunocompetent has no constitutional symptoms except weakness. There was sternal tenderness and pain around lower thoracic vertebrae.

The earliest radiological sign of vertebral tuberculosis is typically localized osteoporosis and the most common radiological presentation is peridiscal metaphyseal erosion. In this case however, there was a vertebral osteolytic lesion involving the posterior half of the body of the T12 vertebra and focal osteolytic lesion at manubrium sternii. The other differential diagnoses of multiple osteolytic lesions are inflammatory conditions like pyogenic osteomyelitis, blastomycosis, coccidioidomycosis and syphilis, or neoplastic conditions like metastasis, lymphomas and eosinophilic granulomas and hyperparathyroidism.

CT is of great importance in demonstrating small, early foci of bone infection and the extension of the bone and soft tissue involvement. CT may also be used in the follow-up of patients under treatment with antituberculous chemotherapy. End plate destruction, fragmentation of the vertebrae, and paravertebral calcifications are adequately demonstrated⁵.

MR imaging, compared with CT scan and plain radiography, is the higher sensitivity for detection of early

inflammatory bone marrow changes and infiltrative end plate changes in the vertebra. Characteristic findings of MRI in vertebral TB include decreased signal intensity on T1-weighted images of both vertebral bodies and disc spaces, but a signal intensity that is increased in the vertebral disc and markedly decreased in the vertebral bodies on T2-weighted images. With late chronic vertebral tuberculosis, signal intensity is variable⁶.

Although CT and MRI are reliable techniques that help establish a diagnosis, biopsy or CT_guided Fine needle aspiration remain essential for accurate, early diagnosis and adequate treatment. The advantage of needle aspiration is that it is a less invasive technique; however, only a small number of specimens can be obtained, particularly when the lesions are sclerotic, and thus the diagnosis rate is only 81.0% in children 13 and 91.3% in adults⁷. Hao *et al* concluded that the diagnostic accuracy of CT_guided thoracic spinal biopsy using a 16_gauge needle was 90.5% overall, as the diagnostic accuracy was significantly lower for the middle thoracic spine (90.0%) compared with that for the lower spine (97.6%), as well as lower for sclerotic lesions (81.3%) compared with that for lytic lesions (96.4%)⁸.

The combined use of fine needle aspiration and GeneXpert (Xpert MTB/RIF) provides a rapid diagnosis wherever excision biopsy is not available. Cytology features include granulomas consisting epithelioid cells, giant cells with or without necrosis⁹.

The treatment of multifocal skeletal tuberculosis involves the administration of four major drugs (isoniazid, rifampicin, pyrazinamide, and ethambutol) in a standard antituberculosis regimen over 12 to 18 months. Surgery is needed only if there is a neurologic deficit or spinal instability¹⁰. The prognosis is favorable, and patients with multifocal skeletal TB can be completely cured if the disease is detected early

CONCLUSION

To conclude Multifocal skeletal tuberculosis must be considered in the differential diagnosis of multiple osteolytic skeletal lesions as clinical picture of skeletal TB is often nonspecific and may mimic malignant disease both clinically and radiographically. In addition CT guided fine needle aspiration cytology play valuable role in early, accurate diagnosis and management.

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