



## Common Disease with Uncommon Presentation: Multifocal Tuberculosis

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### Abstract:

The protean manifestations of tuberculosis include multifocal spinal tuberculosis involving uncommon spinal segments such as the lumbar spine, sacrum and coccyx. Another uncommon presentation is the concomitant occurrence of appendicular skeletal lesions with vertebral involvement. Placing impetus on the need for a high index of suspicion for these rare manifestations, we present an unusual case of multifocal skeletal tuberculosis involving all the segments of the spine (cervical, thoracic and lumbar spine, sacrum) along with lesions in both iliac bones, left hip and sternum in an immune-competent adolescent female patient.

**Key words:** Lumbar Vertebrae, Osteoarticular Tuberculosis, Sacrum, Sternum, Spinal Tuberculosis.

### Introduction

The burden of tuberculosis persists in the developing countries even after the advent of effective chemotherapy. While spinal tuberculosis is a common form of musculoskeletal tuberculosis, rare presentations pose diagnostic challenges [1]. Although recommendations for including spinal tuberculosis in the differential diagnosis of any spinal disorder are ubiquitous in literature, delayed diagnosis and its associated consequences are not uncommon in actual clinical practice.

Though spinal tuberculosis commonly involves thoracic and lumbar segments (about 90%), segments above and below this region are vulnerable as well. Rare cases of involvement of sacral and coccygeal involvement have been reported earlier [2-4].

Concomitant multifocal involvement of axial skeleton (spine) and appendicular skeleton is considered as an unusual occurrence in the earlier literature. Multifocal form of skeletal tuberculosis accounts for 10% of all skeletal tuberculosis, which itself is seen in about 2% of all patients with tuberculosis [5]. We present a report of skeletal tuberculosis with a high degree of multi-centricity of lesions in both axial and appendicular skeletons at initial presentation that has not been reported earlier.

### Case Report

A 14-year-old female presented with a history of fever for the past 6 months. Low grade, intermittent pyrexia was associated with chills, loss of appetite

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and loss of weight. There was no history of cough and expectoration. The patient complained of worsening back pain for the past 3 months. There was also history of pain in both hip joints; more in the left hip. She denied radiation of pain to the legs and restriction of movements. There was no history of headache, vomiting, bowel and bladder incontinence. The patient reported having amenorrhea in the previous 3 months.

Examination revealed a febrile, moderately-built female having normal pulse and blood pressure. No abnormal findings were noticed with respect to cardiovascular, respiratory, abdominal and nervous systems. She had an antalgic gait. Examination of the hip joints revealed tenderness over the anterior aspect of the left hip. There was knuckle kyphosis at the thoracolumbar junction with tenderness and paraspinal muscle spasm. There was no neurological deficit in the lower limbs.

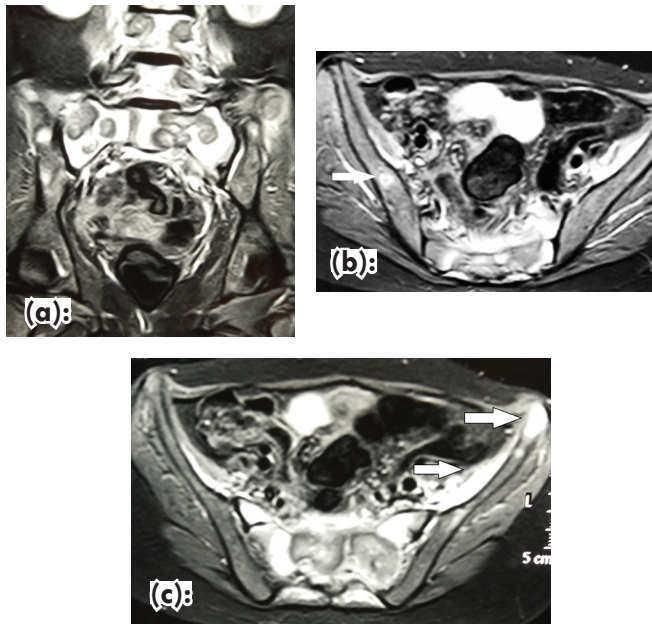
Investigations included complete hemogram, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), sputum for acid-fast bacterial (AFB) staining, sputum culture for mycobacteria, liver and renal function tests, plain radiograph of the chest and pelvis and MRI and CT scans of whole spine and pelvis. Blood investigations revealed anemia, hypoalbuminemia, markedly raised ESR and CRP. Plain radiographs of the chest and pelvis as well as ultrasonogram of the abdomen and pelvis were normal. MR and CT imaging of the whole spine showed lesions at C2 and C6 levels in the cervical spine, D1, D2 and D3 levels in the upper lumbar spine, D10, D11, D12 levels in the thoracic spine and L1, L3, L4 and L5 levels in the lumbar spine [Fig.1a-e]. Angular kyphosis was present at the thoracolumbar junction with para-spinal abscess. MRI of the pelvis revealed lytic lesions in the sacral alae along with minimal fluid in the lesions. Lytic lesions were noted in both iliac bones along with edema overlying iliocaps and gluteus muscles [Fig.2a-c], left acetabular anterior wall and left

inferior pubic ramus [Fig.3a, b]. In addition, lesions were present in the sternum [Fig.4a].

Multi-drug chemotherapy was instituted consisting of isoniazid, rifampicin, ethambutol and pyrazinamide. The patient underwent debridement of the infected tissues and instrumented spinal fusion from D8 to L3 segments for the kyphotic deformity in the dorsolumbar junctional area [Fig.4b]. The debrided material was sent to the laboratory for Z-N staining and PCR tests which confirmed the



**Fig.1:** Tubercular lesions in the spine; (a): cervical spine lesions (C2 and C6), (b): Upper dorsal spine lesions (D1, D2 and D3), (c): Lower dorsal spine lesions (D9, D10, D11 and D12), (d): Lumbar spine lesions (L1, L3, L4 and L5), (e): Sagittal plane reformatted image showing lesions in L1, L3, L4 and L5.

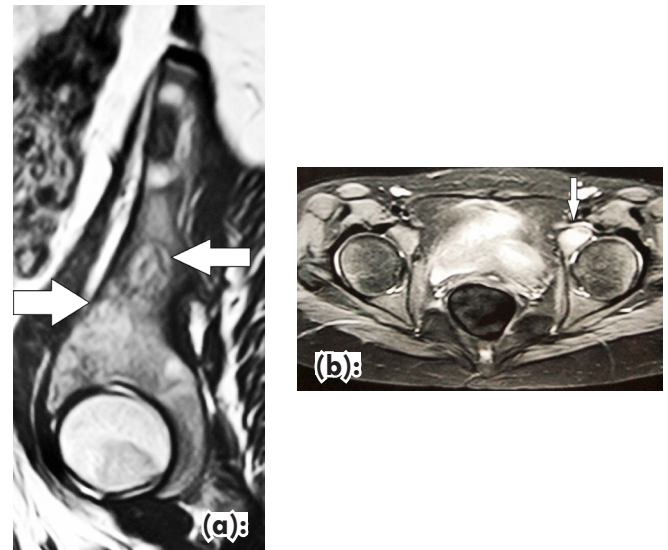


**Fig.2:** Lesions in the sacrum and iliac bones; (a): Sacral lesions (both ala), (b): Lesion in the left ilium (arrow), (c): Lesions in the right ilium with oedema in the iliopsoas muscle (arrows).

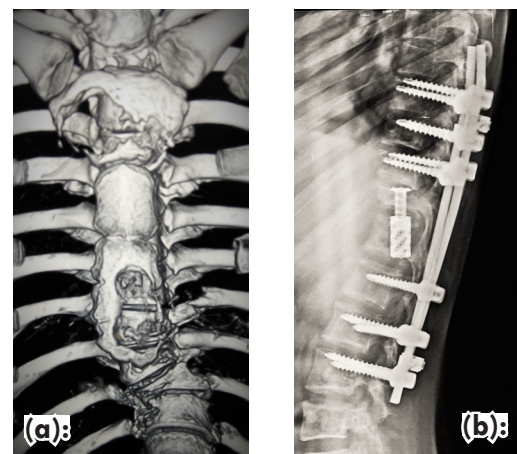
presence of tubercle bacilli in the lesion. The patient recovered well with healing of multi centric lesions and no relapse was detected in the latest follow-up three years following treatment.

## Discussion

Despite its relative rarity, skeletal tuberculosis has been noted relatively uncommon sites such as the sacrum, coccyx and sternum [2,3,4,6]. Within the spine itself, multicentric vertebral involvement (skip lesions) has been reported in up to 15 to 16% of patients [7,8]. Simultaneous multicentric involvement of both axial and appendicular skeleton has been reported earlier [5,9] but the degree of multicentricity that was noted in our patient has not been reported earlier. Involvement of the atlanto-axial region, mid thoracic region concomitantly with one sternoclavicular joint was reported by Saibaba *et al.* [10]. Six out of 40 patients in the



**Fig.3:** Lesions in the acetabulum; (a) Sagittal plane image of acetabular lesions (arrows), (b): coronal plane image showing lesion in anterior acetabular wall in the left hip.



**Fig.4(a):** 3-D CT image showing lesions in the sternum, (b): Segmental spinal fusion from D8 to L3 with pedicle screw instrumentation and anterior cage.

series reported by Pandit *et al.* had lesions apart from multicentric lesions in the spine [7]. However, the extra-spinal lesions were all limited to ribs and no other lesions in the appendicular skeleton were noted on isotope scans.

Multicentric presentations mimic malignancy and need to be differentiated carefully [3,11,12]. Bruce *et al.* reported a patient who was diagnosed with multicentric skeletal tuberculosis during a repeat admission to the hospital more than three years following earlier diagnosis and chemotherapy of unifocal tuberculosis in the lumbar spine [13]. Our patient was diagnosed with multifocal involvement in the first presentation itself and had clinical symptoms for only 6 months before diagnosis.

This case report of extremely multifocal skeletal tuberculosis suggests the need to maintain high index of suspicion for the involvement of less common vertebral sites and appendicular skeletal lesions in skeletal tuberculosis, which may mimic other conditions such as metastatic bone disease. Multicentric spinal tuberculosis may present with atypical radiographic features such as sparing of the intervertebral disc and destruction of pedicles that are usual in malignant lesions [11]. Isotope bone scan is a useful investigative modality when multi-centric tuberculosis is suspected since it draws attention to all possible areas of involvement [7,12,13,14]. MR imaging has been used extensively in the last decade [1,6,9,11] and whole body MR imaging may be advisable in patients with multi-centric lesions in the spine.

Multi-centric disease can occur even in immunocompetent patients with no other morbidities and no history of previous episodes of chemotherapy (disease progression after chemotherapy may indicate drug resistance). In fact, in the vast majority of case reports till now, multi-centric lesions have not been associated with immunodeficiency syndromes. Multi centric TB need not necessarily be a 'fulminant' form of tuberculosis portending poor prognosis in all patients [8].

## References

1. Moorthy S, Prabhu NK. Spectrum of MR imaging findings in spinal tuberculosis. *Am J Roentgenol.* 2002;179:979-983.
2. Owonayo O, Eyram F, Kodjovi K, Lama K. Agoda-Koussema, Moustafa M. Sacrum Pott's disease: A rare location of spine tuberculosis, *The Egyptian Rheumatologist.* 2014;36:209-211.
3. Shantanu K, Sharma V, Kumar S, Jain S. Tuberculosis of sacrum mimicking as malignancy. *BMJ Case Reports.* 2012;2012.
4. Kim DU, Kim SW, Ju CI. Isolated Coccygeal Tuberculosis. *Journal of Korean Neurosurgical Society.* 2012;52(5):495-497.
5. Gosal G, Boparai A, Choudhary G, Kour R. Multifocal Skeletal Tuberculosis Involving the Lumbar Spine and Iliac Bone, Mimicking a Malignant Bone Tumour: A Case Report. *Malaysian Orthopaedic Journal.* 2012;6(3):51-53.
6. Singh S, Nagaraj C, Khare GN, Kumaraswamy V. Multicentric tuberculosis at two rare sites in an immunocompetent adult. *J Orthopaed Traumatol.* 2011;12:223-225.
7. Pandit HG, Sonsale PD, Shikare SS, Bhojraj SY. Bone scintigraphy in tuberculous spondylodiscitis. *Eur Spine J.* 1999;8:205-209.
8. Polley P, Dunn R. Non-contiguous spinal tuberculosis: incidence and management. *Eur Spine J.* 2009;18:1096-1101.
9. Nachimuthu S, Gopal LN, Alrawi S, Natesan V, Sreenivasan T, Raju SK. Multicentric Spinal Tuberculosis with a Possible Concomitant Bacterial Infection. *Hospital Physician.* 2000;36:61-66.
10. Saibaba B, Meena UK, Behera P, Meena RP. Multicentric Spinal Tuberculosis with Sternoclavicular Joint Involvement: A Rare Presentation. *Case Rep Pulmonol.* 2014;2014: 685406.

11. Khattry N, Thulkar S, Das A, Khan SA, Bhakshi S. Spinal tuberculosis mimicking malignancy: Atypical imaging features. *Ind J Pediatr.* 2007;74(3):297-298.
12. Dickinson FL, Finlay DB, Belton IP. Multifocal skeletal tuberculosis: bone scan appearances. *Nucl Med Commun.* 1996;17(11):957-962.
13. Bruce AK, Ekhlass A, Al-Haider ZY. Multicentric Skeletal Tuberculosis in the Absence of Pulmonary Disease. *Clinical Nuclear Medicine.* 2004;29(8):507.
14. Kim SJ, Seok JW, Kim IJ, Kim YK, Kim DS. Multifocal Pott's disease (tuberculous spondylitis) incidentally detected on Tc-99m MDP bone and Ga-67 citrate scintigraphy in a patient with diabetes. *Clin Nucl Med.* 2003;28(4):286-289.