Spectrum Of MRI Findings In Musculoskeletal Tuberculosis: Pictoral Essay

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Citation

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Abstract

Tuberculosis continues to be an important clinical problem in India. An increased number of extra pulmonary and atypical presentations have been reported with rising incidence of AIDS. A major change in the clinical course of disease has occurred after introduction of antituberculous treatment. Musculoskeletal tuberculosis accounts for large number of extra pulmonary tuberculosis. The association with active pulmonary TB is however less than 25%. In this pictorial essay, we describe spectrum of radiographic presentations with the help of MRI. MRI is the ideal modality to study the extent of involvement and its related complications. It also helps to predict outcome of disease and may guide in decision for surgery.

INTRODUCTION

Tuberculosis is common disease in our country. It is the most common etiology in our day to day work. All Indian radiologists would agree to the same as they have seen tuberculosis in various forms.

Here in this pictorial essay we describe varying presentations of tuberculosis of musculoskeletal system.

Skeletal tuberculosis constitutes 35%of extra pulmonary disease with the spine affected 50-60% of the time ([1]). In the musculoskeletal system, 65% cases show involvement of axial skeleton, while only 35% have involvement of peripheral skeleton.

Musculoskeletal TB is usually hematogenous, secondary to primary focus elsewhere, more commonly in the lungs ([2]).

The radiological manifestations generally parallel the pathological appearances. And hence MRI is the ideal modality for imaging.

SPINE

Also known as Pott's spine.

Thoracolumbar spine is the most common site, however it can occur anywhere.

The disease may originate anteriorly near the vertebral body near the anterior cortex, commonly near the endplate.

Originating from metaphysis of vertebral body, it commonly spreads under anterior longitudinal ligament. It can cause destruction of vertebral body margin with involvement of contiguous levels.

Skip lesions (15%)

Abscess formation (50%) may occur.

Figure 1

T2 Weighted saggital image of lumbar spine shows altered

Marrow signals involving anterosuperior margin.

Figure 2

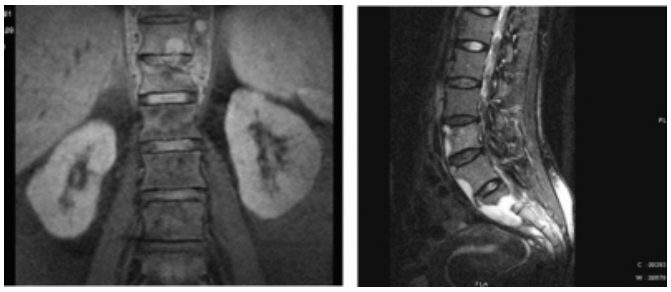
T2 Weighted sagittal image ,

Of lumbar spine showing altered marrow signals with subchondral destruction

And spread along anterior longitudinal ligament.

Also note the skip lesions.

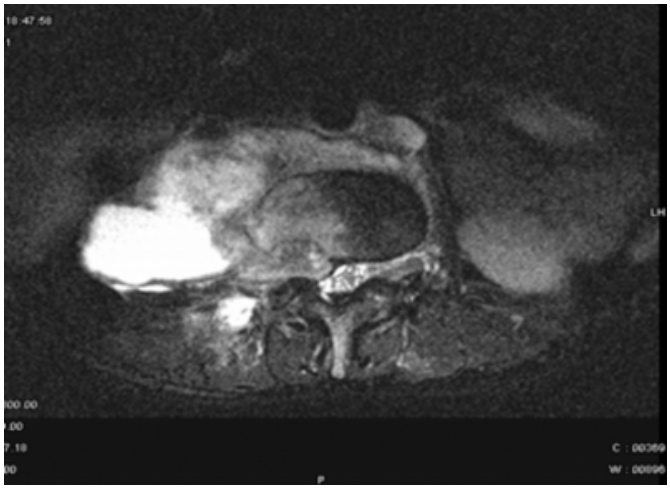
Figure 3



Contiguous involvement of vertebral body with paraspinal soft tissue.

Subligamentous spread is seen with altered marrow signals

Figure 4

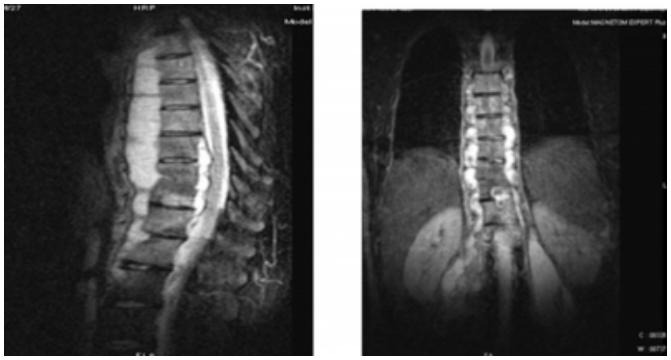


Axial T2 weighted image of lumbar spine reveals extensive paraspinal soft tissue with nerve root encasement.

Figure 5

Bilateral psoas abscesses are frequent complication in lumbar involvement.

Figure 6



Extensive pre, paraspinal and epidural soft tissue with cord compression.

Figure 7

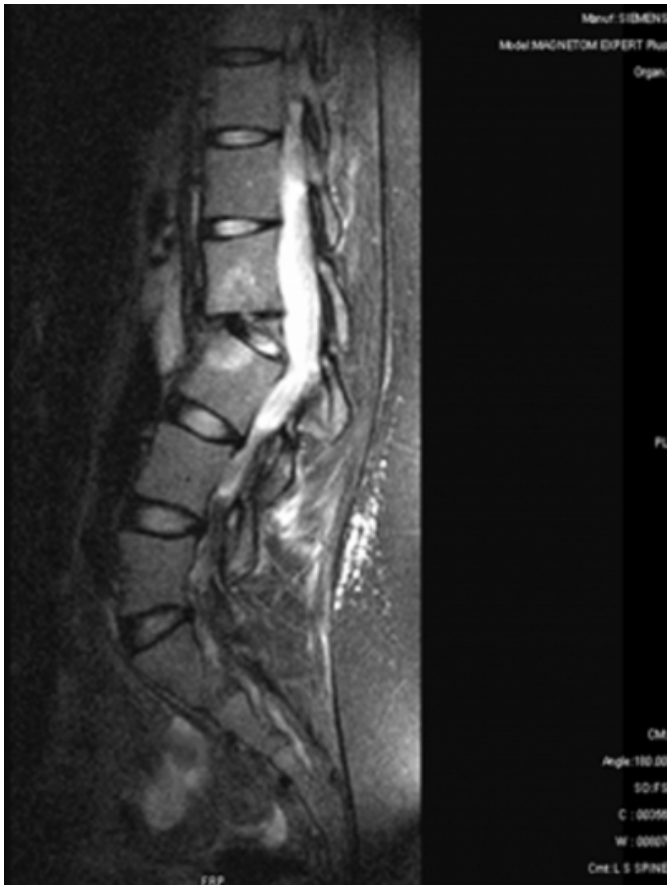
Posterior epidural soft tissue with posterior paraspinal abscess.

Figure 8

Isolated posterior element involvement though rare is not so uncommon.

Altered marrow signals with associated soft tissue favors diagnosis

Figure 9



Bone destruction and Gibbus-short segment kyphotic deformity are common sequelae of tuberculosis of spine.

JOINTS

Classical radiographic findings -Phemisters triad is described on plain radiographs.

Severe periarticular osteoporosis, peripherally located osseous erosions and gradual narrowing of intraosseous space are radiographic findings of tubercular arthritis.

In addition, reactive sclerosis, periosteal reaction and joint effusion are described.

Pathological changes include synovial thickening and joint effusion.

Slow insidious type of disease or dry variety is known as caries sicca.

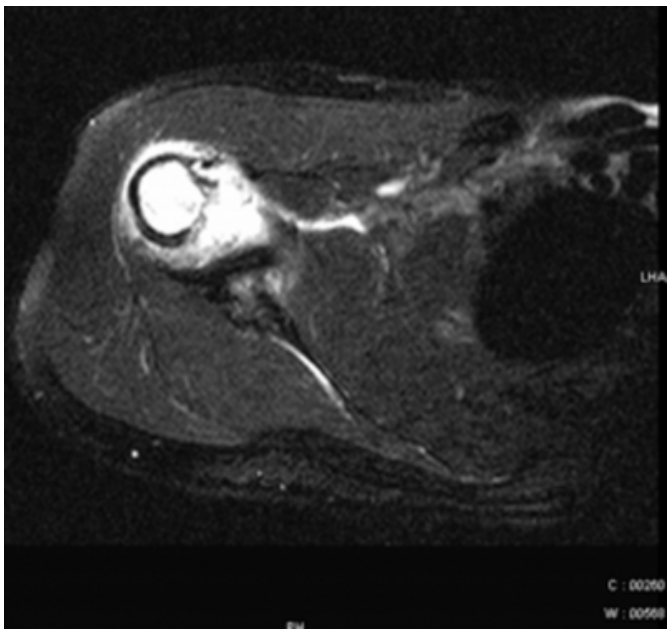
MRI helps for early detection, as finding are obvious before they appear on plain radiographs.

Figure 10

T2 weighted sagittal image showing involvement of CV Joint.

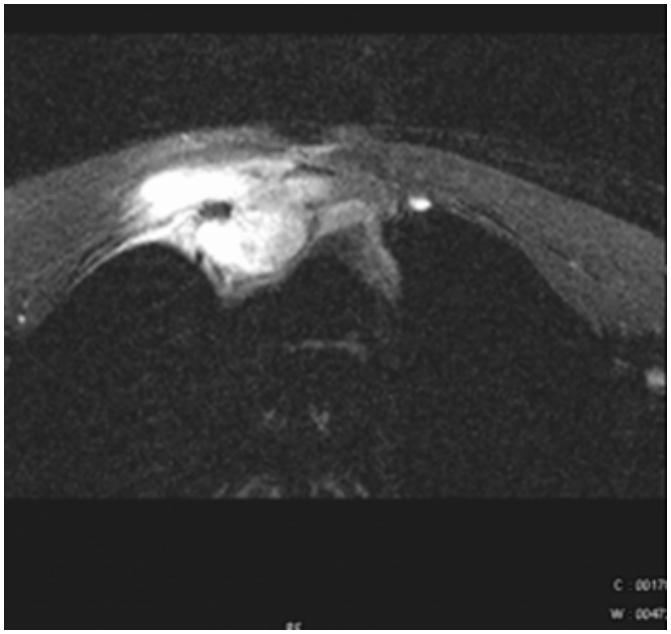
Precervical soft tissue with bone destruction and altered marrow signals favors diagnosis.

Figure 11



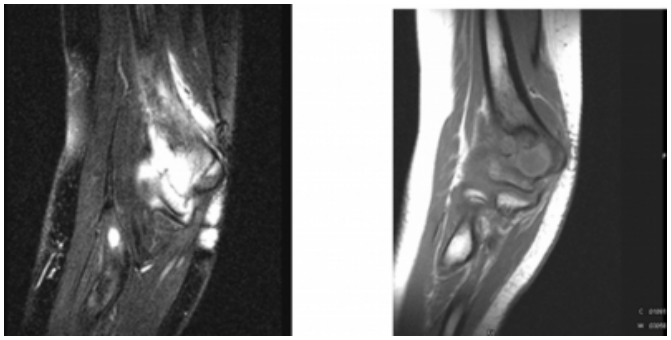
Shoulder Joint involvement is rare- but not uncommon.

Figure 12



Sternoclavicular Joint swelling may show soft tissue and altered marrow signals involving underlying bones.

Figure 13



Elbow Joint tuberculosis showing altered marrow signals with synovial thickening and effusion..

Figure 14

Unilateral sacroilitis is usually infectious.

Altered marrow signals with soft tissue

Component and joint involvement are commonly seen.

Figure 15

Hip joint tuberculosis seen as altered marrow signals and soft tissue.

Figure 16

Altered marrow signals involving tarsal bones with Soft tissue component and effusion in ankle joint raise possibility of tuberculosis.

SMALL AND FLAT BONES

Tubercular osteomyelitis classically appears as osteopenia with osseous erosions and soft tissue component on plain radiographs. Periosteal reaction with reactive scleroses are described. Large sequestration is not uncommon. Bone debris may present in discharging fluid of sinus tracts.

Varying presentations are described:

Spina Ventosa- Fusiform swelling of diaphysis of short tubular bones of hand.

Pott's puffy tumor- Localised soft tissue mass with osteolytic lesion in skull.

Cystic tuberculosis-Multifocal osteolytic areas- common in pediatric age group.

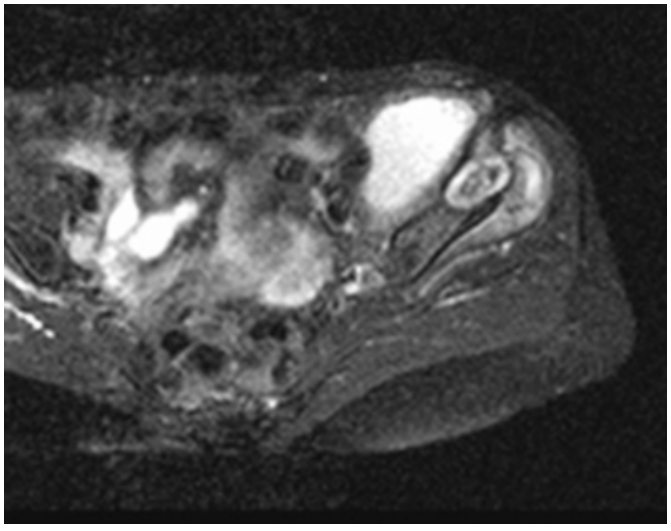
Figure 17

Classical bloated appearance involving metacarpal bone.

Figure 18

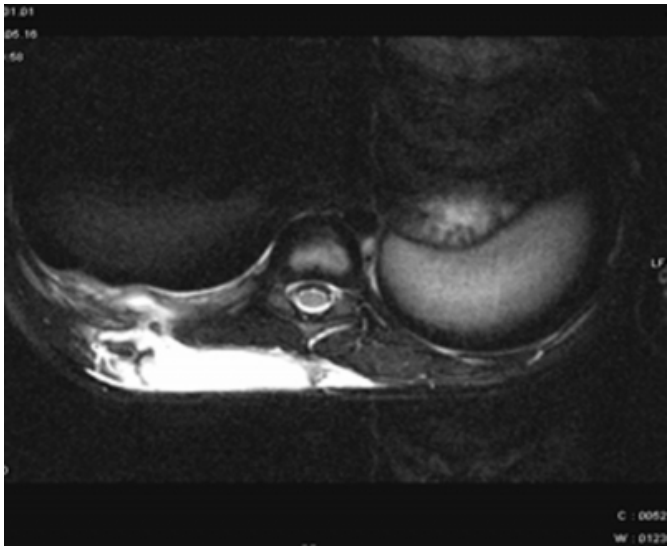
Subtle area of altered marrow signals Involving metatarsal bone

Figure 19



Tubercular osteomyelitis of iliac bone with large abscess

Figure 20



Rib involvement with soft tissue component and discharging sinus tract.

Figure 21

Sacral involvement with bone destruction and large presacral soft tissue component.

DISCUSSION

Tuberculosis is still commonly encountered disease in our country despite preventive measures and appropriate therapy. Low socio-economic status is not the only affected

group in today's scenario. It can affect any individual and any age group. Clinical suspicion with correct use of imaging modality helps for early detection. Further confirmation can be done with hematological correlation and biopsy if required.

Few patients may receive trial of AKT. Knowledge of varying presentations will help us to think of the diagnosis and correlate with clinical picture.

MRI detects lesions much earlier the radiographs in form of marrow involvement.

Granulation tissue and caseous material may appear as soft tissue component.

It also helps for follow up and assessment of complications.

References

1. Gorse et al, Paris JM et al: Tuberculous spondylitis -report of 6 cases and review
of literature- Medicine - 1983 - 62(3)-178-193.
2. Subbarao K. Taveras JM, Ferruci JT: Radiology. Vol 5, Lippincot & co.1989, ch 23,1-10.

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