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An Atypical Presentation of Pott's Spine Masquerading as Lymphoma / Secondaries

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Abstract: ***Background**: Pott's Disease is the most common form of skeletal tuberculosis and usually presents with back pain, constitutional symptoms, and vertebral destruction. However, atypical radiological and clinical manifestations can closely mimic spinal malignancies, leading to diagnostic dilemmas. Differentiating spinal tuberculosis from metastatic disease or lymphoma is crucial because management strategies differ significantly. We report a rare case of atypical spinal tuberculosis in a middle-aged patient who presented with persistent back pain, weight loss, and progressive lower limb weakness. Xray LS showed no significant findings. the flexion and extension views showed no changes in the spine stability. USG abdomen and pelvis showed illdefined hypoechoic splenic lesion /areas- which were indeterminate on ultrasound. Differentials include infiltrative / neoplastic or infective /inflammatory lesions which required further imaging correlation. Magnetic resonance imaging demonstrated findings suggestive of metastatic etiology. Subsequently Whole Body 18-F-FDG PET-CT Scan was done which suggested differentials of Lymphoma v/s Tuberculosis and HPE from bone lesions was recommended. HPE via CT guided Core Biopsy was done which showed no specific diagnostic pathology. The patient was initiated on antitubercular therapy with adjunctive supportive management, resulting in gradual neurological and symptomatic improvement on follow-up.*

Keywords: Pott's disease, malignancy, USG, PET SCAN, 18F-FDG, Core biopsy, antitubercular therapy

1. Introduction

Spinal tuberculosis, also known as Pott's spine, remains one of the most common forms of extra-pulmonary tuberculosis in developing countries. Despite advances in radiological imaging and microbiological diagnostics, atypical presentations of spinal tuberculosis continue to pose a major diagnostic challenge. Classical Pott's disease usually involves contiguous vertebral bodies with intervertebral disc destruction, paravertebral abscess formation, and kyphotic deformity. However, atypical forms may present with skip lesions, isolated vertebral involvement, preserved disc spaces, posterior element disease, or extensive soft tissue masses, thereby closely resembling malignant conditions such as lymphoma or metastatic spinal disease.[1]

The radiological overlap between spinal tuberculosis and neoplastic disorders often leads to delayed diagnosis and inappropriate management. Magnetic resonance imaging (MRI), although highly sensitive, may not reliably differentiate atypical tuberculous lesions from spinal metastasis or lymphoma because both entities can demonstrate vertebral destruction, epidural extension, marrow infiltration, and paraspinal soft tissue components.[2] In endemic regions like India, tuberculosis should therefore remain an important differential diagnosis even in patients presenting with imaging features suggestive of malignancy.[3]

Several reports in literature have highlighted cases where spinal tuberculosis masqueraded as metastatic disease or lymphoma, resulting in significant diagnostic confusion. Histopathological examination and microbiological confirmation remain the gold standard for definitive diagnosis. Early recognition is crucial because timely initiation of antitubercular therapy can prevent irreversible neurological deficits, spinal deformity, and unnecessary oncological interventions.[4]

We report a case of atypical Pott's spine presenting with clinical and radiological features highly suggestive of lymphoma/secondary metastasis, emphasizing the importance of maintaining a high index of suspicion for tuberculosis in atypical spinal lesions, especially in tuberculosis-endemic countries.[5]

2. Case Report

This case has been described in accordance with the case report [SCARE] guidelines. This was a 48 year old man, married and a daily wage worker by profession without any known prior condition, he presented to our facility, with complaints of severe back pain for six months, non-radiating, and continuous and progressive, which was not relieved by medications. The patient was examined clinically which showed lower back and midline tenderness with para spinal muscle spasm with localised raise temperature and pain on bending with Alderman gate. Patient has got his prior investigations of x-rays standing AP/lateral with flexion and extension views, USD abdomen, MRI, pet, scan, and CT guided biopsy. X-RAY investigation showed no instability, in flexion extension views, USG abdomen showed few suspicious defined spinal lesions indeterminate on ultrasound. Differential included infiltration /neoplastic or infective/inflammatory lesions, imaging correlation was advised. Therefore, MRI was done with showed hyperintense lesion involving D12-L1 vertebral body with diffuse marrow oedema involving D2 and L2 vertebral body involvement of particle on either side of L5 vertebral body with subtle changes in S1 vertebral bodies, MRI report concluded that findings are suggestive of metastatic aetiology and asked for further evaluation for unknown primary. Whole body, 18 F-FDGPET scan suggested lytic lesions with sclerotic rim within axial skeleton showing variable, hyper metabolism and hepatosplenomegaly with hyper metabolic sub centimetre hypodensities in spleen. Low grade metabolism within upper abdominal and retroperitoneal lymph nodes were noted. CT guided core biopsy from L2 vertebral body was remarkable.Under general anaesthesia patient was taken up for surgical curative treatment for stabilisation of dorso-lumber spine along with diagnostic biopsy and histopathology. Stabilisation with posterior instrumentation with medical screws. D 11-L5 and rods were inserted medical

screws, right D 11, 12 L1, three and five and D 11, L1, two, three, four, fiOn decompression L2 and L4 vertebral bodies was done via pedicles and white caseous pus discharge was noted with necrotic tissue. Diagnostic samples and histopathological-biopsy were taken and sent for gram staining, ZN staining, culture, sensitivity, gene expert studies and histopathological studies, tight closure with anatomy reconstruction of muscle layers, fascia, fat layer, subcutaneous, layer, sutures, and skin closure was done and a drain was inserted into the operative site, the procedure lasted lasted for five hours with estimated loss of 500 ML. No other incident was recorded. No other operative findings were noted.

From the recovery room, the patient was taken directly to the lying-in wards for post operative phase of care. In the post operative phase, the patient was place on parentral iv antibiotic inj cefazoline 1gm twice daily and analgesic paracetamol 1gram twice daily, inj tramadol one ampule at night followed by oral analgesics for four hours of nil by mouth, tab diclofenac twice daily tab tramadol 200 mg twice daily. Antitubercular treatment was started with intensive phase constituting four tablets Isoniazid 300 mg, Rifampicin 600 mg, Pyrazinamide 20 mg, Ethambutol 15 mg for 2 months along with pyridoxine (vitamine B6) and taylors brace while sitting and walking.

3. Discussion

Spinal tuberculosis (Pott's spine) is the most common form of skeletal tuberculosis and accounts for approximately half of all cases of musculoskeletal tuberculosis worldwide. Despite advances in diagnostic modalities, spinal tuberculosis continues to present significant diagnostic challenges because of its highly variable clinical and radiological manifestations. The disease typically involves two adjacent vertebral bodies with destruction of the intervening disc space and associated paravertebral abscess formation. However, atypical forms may present with isolated vertebral involvement, non-contiguous skip lesions, posterior element disease, preservation of intervertebral discs, and multifocal skeletal lesions, thereby closely mimicking metastatic malignancy, lymphoma, multiple myeloma, or other neoplastic disorders.6,7

The present case represents an unusual manifestation of spinal tuberculosis in which multifocal vertebral lesions involving D12, L1, L2, L5, and S1 vertebrae, together with PET-CT findings of multiple hypermetabolic skeletal lesions, hepatosplenomegaly, and abdominal lymphadenopathy, strongly suggested disseminated metastatic disease or lymphoma. Such atypical presentations are uncommon but well recognized in the literature. Fard et al. described non-contiguous multilevel spinal tuberculosis presenting as multiple vertebral lesions resembling metastatic spinal disease, emphasizing the diagnostic difficulty encountered in such cases.7 Similarly, Garg et al. reported a case of spinal tuberculosis that initially masqueraded as malignancy because of atypical imaging findings and the absence of classical features of infection.8

Magnetic resonance imaging remains the most sensitive imaging modality for detecting spinal tuberculosis; however, its specificity in differentiating tuberculosis from malignant spinal lesions remains limited. Both conditions may demonstrate vertebral body destruction, marrow infiltration, epidural extension, soft tissue masses, and neural compression. In atypical spinal tuberculosis, MRI findings such as skip lesions, isolated vertebral body involvement, preserved disc spaces, and extensive marrow edema frequently overlap with those seen in metastatic disease. Jain and Kumar highlighted that these atypical radiological patterns often result in delayed diagnosis and inappropriate management if tissue diagnosis is not obtained.9 In the present case, MRI findings were interpreted as metastatic disease from an unknown primary malignancy, illustrating the significant radiological overlap between these entities.

The PET-CT findings further increased diagnostic uncertainty. Fluorodeoxyglucose positron emission tomography is widely used for the evaluation of malignancy because of its ability to detect metabolically active lesions. However, activated macrophages and inflammatory cells within tuberculous granulomas demonstrate increased glucose uptake, leading to intense FDG accumulation that may be indistinguishable from malignant lesions. Go et al. reported a case of disseminated skeletal tuberculosis in which PET-CT findings closely resembled widespread metastatic disease, resulting in considerable diagnostic confusion.10 Therefore, although PET-CT may identify the extent of disease involvement, it lacks sufficient specificity to reliably distinguish tuberculosis from neoplastic pathology.

An important clinical lesson highlighted by this case is the need to maintain a high index of suspicion for tuberculosis in endemic regions, even when radiological investigations strongly suggest malignancy. The absence of an identifiable primary tumor despite extensive evaluation should prompt reconsideration of alternative diagnoses. Khattry et al. emphasized that atypical spinal tuberculosis should always be included in the differential diagnosis of destructive vertebral lesions, particularly in countries where tuberculosis remains prevalent.11 Failure to consider tuberculosis may lead to delays in treatment, progression of neurological deficits, spinal deformity, and unnecessary oncological investigations.

The definitive diagnosis in the present case was established following surgical decompression and biopsy. Histopathological examination remains the cornerstone of diagnosis in atypical spinal tuberculosis. Tissue sampling allows differentiation between infective, inflammatory, and neoplastic conditions and provides material for microbiological confirmation. In many atypical cases reported in the literature, diagnosis could only be achieved following surgical or image-guided biopsy because radiological findings alone were insufficient for accurate characterization.9 11The intraoperative discovery of caseous necrotic material and purulent discharge in the present patient provided strong evidence of tuberculous infection and highlighted the limitations of relying solely on imaging studies.

Surgical intervention was performed because of persistent severe pain, extensive vertebral involvement, the requirement for definitive diagnosis, and concerns regarding spinal stability. Current recommendations suggest surgical

management in patients with neurological compromise, instability, progressive deformity, large abscesses, severe pain, or diagnostic uncertainty. Sakamoto et al. described successful surgical management in a patient with spinal tuberculosis initially mistaken for metastatic disease, demonstrating the important role of surgery in both diagnosis and treatment when non-invasive investigations fail to establish a definitive diagnosis.12 In the present case, posterior instrumentation from D11 to L5 provided immediate stabilization while simultaneously facilitating decompression and tissue diagnosis.

Recent advances in molecular diagnostics have significantly improved the diagnosis of spinal tuberculosis. The Gene Xpert MTB/RIF assay has emerged as a valuable diagnostic tool because of its rapid turnaround time, high specificity, and ability to detect rifampicin resistance. Karthek et al. demonstrated the clinical utility of Gene Xpert in spinal tuberculosis, reporting improved diagnostic yield compared with conventional microbiological techniques.13 Such molecular investigations are particularly useful in paucibacillary lesions where smear microscopy and culture may yield negative results.

Following confirmation of the diagnosis, the patient was commenced on standard four-drug antitubercular therapy consisting of isoniazid, rifampicin, pyrazinamide, and ethambutol. Early initiation of chemotherapy remains the cornerstone of management and is associated with favorable clinical outcomes when diagnosis is established before the development of severe neurological deficits. Dahlan et al., in their recent review of spinal tuberculosis, reported that combined surgical and medical treatment achieves excellent outcomes in selected patients with extensive disease, instability, or neurological involvement.14

The successful outcome in the present case underscores the importance of a multidisciplinary approach involving spine surgeons, radiologists, pathologists, and infectious disease specialists. Although advanced imaging modalities provide valuable information regarding disease extent, histopathological confirmation remains essential in atypical presentations. Recent reviews have emphasized that optimal management of spinal tuberculosis requires early diagnosis, individualized surgical decision-making, and prompt initiation of antitubercular therapy to prevent long-term disability and deformity.15

This case highlights the protean nature of spinal tuberculosis and its ability to masquerade as metastatic disease or lymphoma. In tuberculosis-endemic regions, clinicians should maintain a high degree of suspicion when evaluating multifocal vertebral lesions, particularly when no primary malignancy can be identified. Early tissue diagnosis and timely initiation of treatment are critical to achieving favorable clinical outcomes and avoiding unnecessary delays in management.

Figure 1 (a), (b): MRI film showing lytic lesion at lumber spine in sagital view

Figure 1: (c) MRI film showing lytic lesion in one of the lumber vertebrae in axial section.

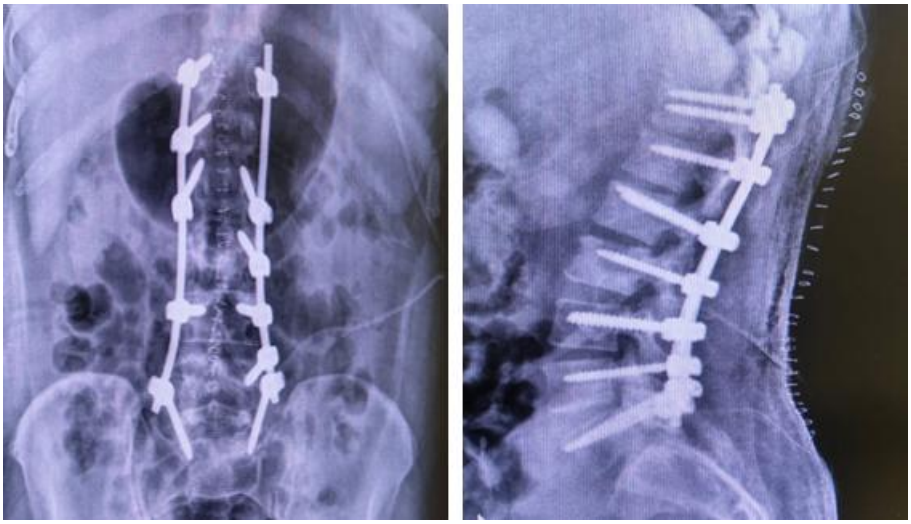

Figure 1: (d) Post op X-ray showing fixation from D11 to L5 after decompressing and taking biopsy from the vertebrae from D12 left, L2 right, L4 left pedical

4. Conclusion

Atypical presentations of Pott's spine can closely resemble lymphoma or metastatic spinal disease both clinically and radiologically. High clinical suspicion, especially in tuberculosis-endemic regions, along with timely tissue diagnosis, is essential to avoid misdiagnosis and unnecessary oncological interventions. Histopathological confirmation remains the cornerstone for accurate diagnosis in atypical spinal lesions.

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We declare no conflict of interest.

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