Isolated Primary MDR Tuberculosis of a Lumbar Spinous Process, in an Immunocompetent Patient, Mimicking a Spinal Tumour

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Abstract
Spinal tuberculosis (STB) accounts for a large proportion of extra-pulmonary tuberculosis. STB usually begins in the peri-discal region of the vertebral bodies and isolated involvement of the posterior elements of the spine is very rare. MDR-TB is a global concern and has been described from patients with spinal tuberculosis as well. MDR-TB in an immunocompetent patient is an extremely rare condition. The authors present a case report of an isolated MDR-TB of a lumbar spinous process in an immunocompetent patient which mimicked an osseous tumour. The diagnosis, both radiological and bacteriological, and management of this rare condition is discussed and the authors stress the need for a high degree of suspicion in its diagnosis and management.

Introduction
STB is the commonest form of extra-pulmonary TB described in literature. In the spine disco-vertebral lesions are the commonest location of the infection at presentation. TB involving only the posterior elements (Neural arch Tuberculosis (NAT)) is extremely rare and constitutes less than 6% of all STB cases. NAT is usually misdiagnosed on routine radiological investigations including MRI. Multi Drug Resistant (MDR) TB has been reported in spinal cases. We report an unusual lesion restricted to only the spinous process of a single lumbar vertebra which mimicked a tumour on imaging and turned out to be an MDR-TB. We discuss the radiology, pathology and management of this unusual lesion and stress the need for increased radiological suspicion in unusual cases.

Case Report
A 55 year old lady had presented to the neurosurgical OPD with a 2 month history of low back pain radiating to the flanks. The pain was of moderate severity and was relieved only partially with analgesics. She had no radicular pain in her lower limbs nor any sensory symptoms. She had no prior history of tuberculosis and was not immunocompromised. She did not demonstrate any neurological deficit on examination. Her chest x-ray was normal as were her routine pre-operative blood investigations except for ESR which was 65 mm/1hr. Figures 1 and 2 outline the lesion on her MRI and CT images. She underwent surgical exploration with a working diagnosis of a spinous process tumour but intra-operatively pus was encountered on para-spinal muscle separation (Figure 3). Pus was tested for AFB (Acid Fast Bacilli) with routine Ziehl-Neelsen staining being negative and GeneXpert MTB/RIF revealed multi drug resistant tuberculosis (MDR-TB) resistant to Rifampicin. She was managed with four drug anti-tubercular therapy in consultation with an infectious disease specialist, including Ethambutol, Pyrazinamide, Streptomycin and Ofloxacin. At eighteen months follow up there was no local recurrence of the disease on MRI.

Discussion
Sir Percival Pott’s original description of STB was in 1872 and since then the disease has been eponymously called ‘Pott’s disease’. NAT usually occurs at the cervical, upper dorsal or cervico-dorsal junction. Lumbar...
Fig. 2: (a and d) demonstrate the lesion (white arrow) involving the mid-portion of the spinous process with complete destruction and non-visualization of the mid-1/3rd of the spinous process. (b and c) are axial images demonstrating the same location, as in our case is extremely rare.\textsuperscript{4} Abscess formation in NAT is very unusual and in a large series only 1 out of 17 patients had an abscess, the others had a solid lesion.\textsuperscript{4} The vertebral involvement in STB is spondylodiscitis in the adult and a discitis in children owing to the vascularity of lumbar discs in the latter.\textsuperscript{2}

Atypical STB (i.e with no involvement of the intervertebral disc) primarily involves the posterior lumbar spine as the commonest site.\textsuperscript{2,4} In a recent study of 59 atypical Pott’s spine cases posterior vertebral elements were involved in half the cases but isolated NAT was seen in only 3 patients (5%).\textsuperscript{2,4} No isolated spinal process involvement, as in this case, was described. The differential diagnosis of solitary involvement of a vertebral spinous process includes rare lesions such as a solitary osteochondroma among others.\textsuperscript{5} NAT is usually associated with bony destruction on CT scan as seen in our case, but distinguishing it from an osseous tumour is extremely difficult even on MRI.\textsuperscript{5}

MDR-TB is defined as tuberculosis that is resistant to Isoniazid and Rifampicin with or without resistance to other drugs.\textsuperscript{1} The incidence of MDR-TB in India has been noted to be as high as 25%, whereas its incidence in Pott’s spine has been reported to be about 10%.\textsuperscript{1,2} In a large series of 25 patients with MDR-TB of the spine, 4 patients had prior pulmonary tuberculosis and 16 had been on prior anti-tubercular therapy with two patients being immunocompromised with HIV.\textsuperscript{2} Primary MDR-TB of the spine such as in this patient, is extremely rare. This in conjunction with atypical radiological features made this a very unusual clinical report. The management of the MDR-TB has to be individualized as in our case.\textsuperscript{2} These patients may require 6 drugs during the intensive phase of the treatment and up to 60% may demonstrate some adverse reactions to the treatment.\textsuperscript{2}

**Conclusion**

NAT is a rare variant of spinal tuberculosis which both radiologists and clinicians should be made aware of in order to aid accurate pre-operative diagnosis and to minimize intra-operative surprises. The spine surgeon must consider NAT in the differential diagnosis of lesions involving the posterior elements of the vertebrae. GeneXpert MTB/RIF should be considered an indispensable diagnostic and prognostic tool. The treatment should be individualized and long term surveillance MRIs should be considered to identify early recurrences.

**References**