

Tuberculosis of the Posterior Arch: Case Report

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Abstract

Case Report

We report a rare case of vertebral tuberculosis involving the posterior arch of L4 and L5 without disc involvement in a 42-year-old patient, revealed by incomplete cauda equina syndrome (sensitivo-motor disorder, without genito sphincter disorder). The diagnosis was suspected on the basis of computed tomography (CT) and magnetic resonance imaging (MRI) and confirmed on anatomopathological and bacteriological studies. CT provides a good analysis of the bone lesion and its intra-ductal extension. MRI can also be used to analyse the impact on nerve structures.

Keywords: Posterior vertebral arch - MRI - Cauda equina syndrome - CT - Vertebral tuberculosis.

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INTRODUCTION

Osteoarticular tuberculosis remains a frequent condition in developing countries, whereas in Western countries it is rare with, however, a resurgence in certain at-risk populations: elderly subjects, the immigrant population originating from tuberculosis-endemic countries and spontaneous and iatrogenic immune conditions [1, 2].

If. Tuberculous spondylodiscitis is the most common site of osteoarticular tuberculosis (40-50% of cases) [3], involvement of the posterior vertebral arch without disc involvement is exceptional [4, 5].

We report a new case of tuberculosis of the posterior vertebral arch, revealed by a cauda equina syndrome, assessed by computed tomography (CT) and magnetic resonance imaging (MRI), in a 42-year-old Moroccan man who had a favourable outcome after surgery and anti-tuberculosis treatment.

PATIENT AND OBSERVATION

Mr A.M, aged 42, with a 5-year history of UC, on long-term corticosteroid therapy and no history of tuberculosis, presented for 3 months with a painless, soft dorsolumbar swelling associated with poorly systematised bilateral lumbosciaticgia. A month later, the clinical picture was complicated by increasingly intense low back pain and rapidly progressive heaviness of both lower limbs with tingling paresthesias, without genitourinary disorders, all evolving in a context of asthenia, emaciation and fever.

On admission, the clinical examination revealed an apyretic patient presenting with paraparesis, crural hypoesthesia and an abolition of osteotendinous reflexes (ROT) in the lower limbs. Physical examination revealed pressure pain in the lower lumbar spine, contracture of the lumbar paraspinal muscles, and a fluctuating, painless left lower lumbar paraspinal swelling with no inflammatory signs on the skin. Biologically, there was an inflammatory syndrome with a sedimentation rate (SR) of 78 mm at the first hour, a CRP of 90 mg/l and neutropenia of 800 /ml with mild microcytic hypochromic anaemia of 9.6 g/dl. The tuberculin skin test was positive at 11 mm. HIV serology was negative.

A lumbar CT scan (Figure 1) revealed an osteolytic process involving the posterior vertebral arch of L5 with heterogeneous tissue density, a hypodense centre, and moderate peripheral enhancement after injection of contrast. This process is responsible for a bony reaction of the left lamina of L5 ("spiky" appearance). There is bilateral epiduritis exerting a mass effect on the dural sheath.

MRI of the spinal cord (Figure 2) confirmed the CT scan data and revealed a lesional process involving the posterior arch of the lumbar vertebrae L4 and L5, with neighbouring paraspinal collisions in T1 hypersignal, T2 heterogeneous hypersignal, enhanced in the periphery after injection of gadolinium and communicating with other subcutaneous collections in the lumbar region.

These collections fused into the posterior extra-dural intracanal space, causing a posterior epiduritis with compression of the cauda equina roots, and extending laterally to the foramen of the L3-L4, L4-L5 and L5-S1 levels, with enhancement and thickening of the foramina and bilateral peri-radicular layers (Figure 2). This radiological appearance suggested infectious disease, particularly tuberculosis.

The patient underwent evacuation of paraspinal collections, and bacteriological examination of the pus showed the presence of Koch's bacilli (BK), while GeneXpert molecular biology revealed the presence of *Mycobacterium tuberculosis* DNA.

Treatment with quadruple anti-tuberculosis chemotherapy was started immediately, pending possible decompression surgery.

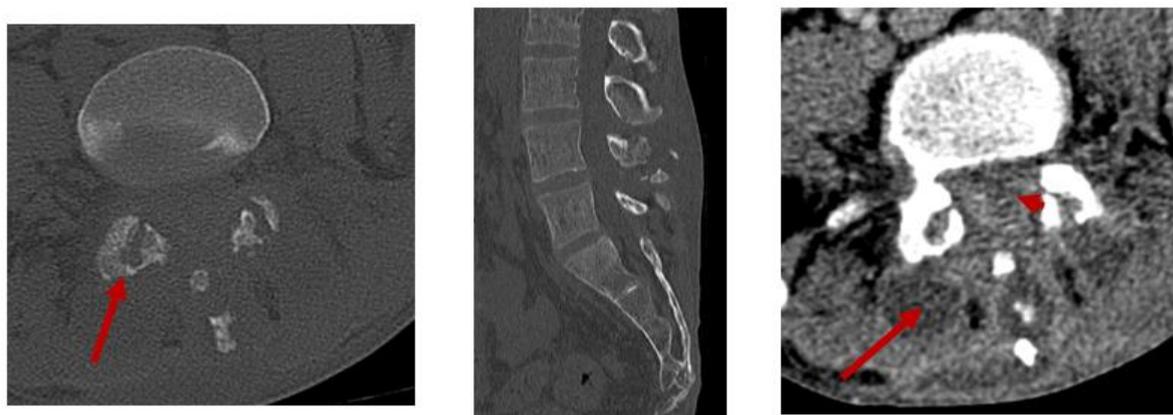


Figure 1: Lumbar CT scan without and with PDC injection: Osteolytic process involving the posterior vertebral arch of L5, hypodense, enhanced in the periphery after PDC injection (arrow), associated with bilateral epiduritis (arrowhead)

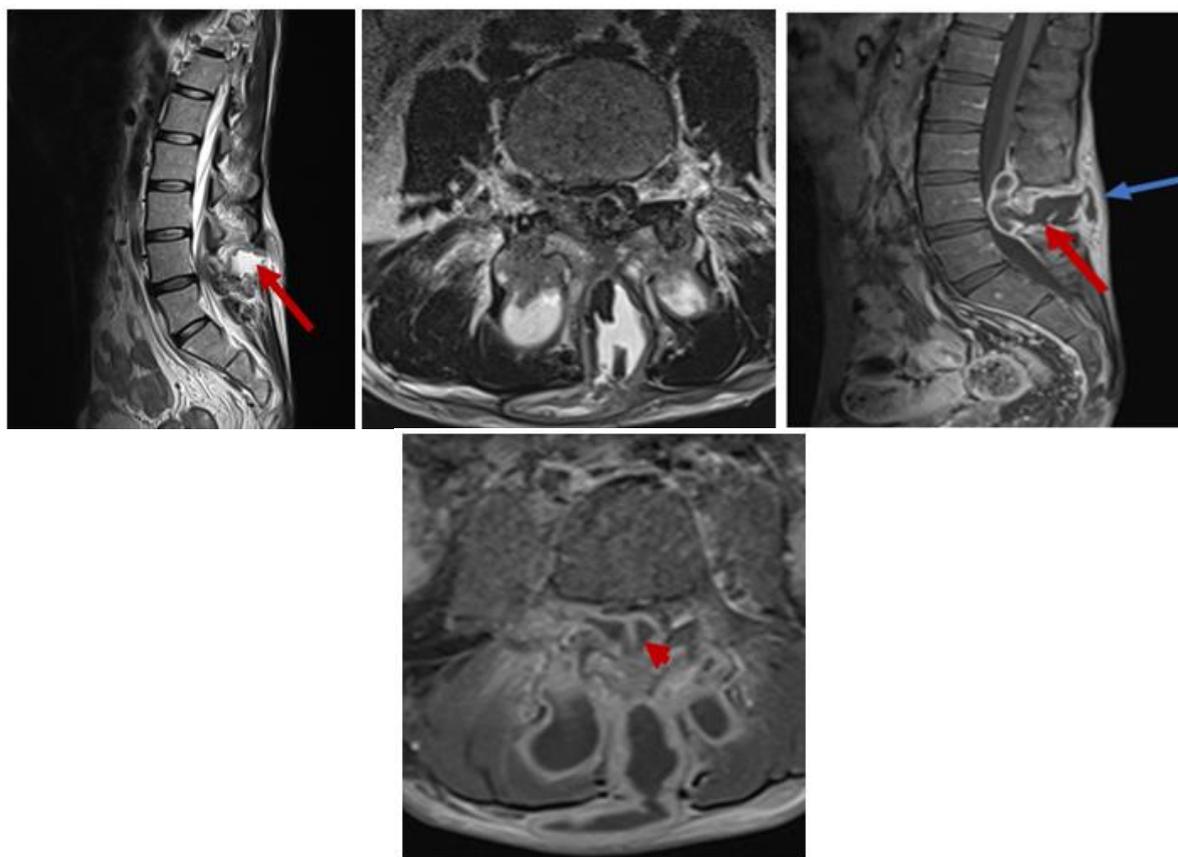


Figure 2: Spinal cord MRI: in gadolinium-injected T1 and T2-weighted axial and sagittal sequences: Lesional process of the posterior arch of the lumbar vertebrae L4 and L5 associated with neighbouring paraspinal collections in T1 hyposignal, T2 heterogeneous hypersignal (red arrow), enhanced in the periphery after injection of gadolinium (arrow) and communicating with other subcutaneous collections in the lumbar region (blue arrow); These collections fused into the posterior extra-dural intracanal space with posterior epiduritis (arrowhead) and bilateral radiculitis responsible for compression of the cauda equina roots

DISCUSSION

Osteoarticular tuberculosis accounts for approximately 30% of extra-pulmonary localisations of the disease [6]. It is dominated by Pott's disease, which is the most frequent and most serious form (40-50% of cases) of spinal involvement, usually resulting in spondylodiscitis [3, 6, 7, 8]. Isolated involvement of one or more posterior vertebral arches is rare [5-9]. First described by Lannelongue in 1888, its frequency varies from 1 to 3% of vertebral tuberculosis cases, depending on the series [9].

As Koch's bacillus spreads by haematogenous route, it initially localises in the subchondral region of the vertebral body, causing spondylitis. Later, it spreads to the adjacent disc, resulting in spondylodiscitis [8]. Involvement of the posterior arch is either contiguous (90% of cases) or isolated without disc or somatic involvement, which is rarer [1, 5, 6].

Spiral CT is of great help, showing an osteolytic lesion which may involve all the elements of the posterior arch: the laminae, the transverse processes and the spinous processes, but above all the intermediate segment (as in the case of our patient) or the pedicles [8, 9]. The lesion may sometimes extend to the posterior wall of a vertebra [6, 7]. In our patient, the posterior wall was intact. Certain features may be suggestive of tuberculosis, in particular the presence of calcifications and a thick dense ring whose contours appear irregular after injection of contrast medium; a peri- or intra-spinal collection may be associated [1]. CT scans reveal peri-vertebral abscesses, which are better identified after injection of contrast medium [1]. These abscesses may have a number of features that raise suspicion of tuberculosis: presence of calcifications, thick dense ring whose contours appear irregular after injection of contrast medium [7].

On MRI, lesions generally show a T1 hyposignal enhanced by paramagnetic injection, especially in the periphery, and a T2 hypersignal [6, 7]. Intraspinal (epidural) and paraspinal extension will be well visualised [7, 8]. On the other hand, calcifications (sequestration) and osteolytic images are better seen on CT [6]. MRI can also detect early granuloma lesions without obvious lysis on standard X-rays and CT [4]. The differential diagnosis may involve other aetiologies of lytic vertebral lesions associated with adjacent soft tissue abnormalities [5, 7, 8, 9]: 1- certain bone tumours: These include aneurysmal cysts, osteoblastoma and metastases; 2- Vertebral hydatidosis: CT or, better still, MRI can suggest the diagnosis by demonstrating multiple juxtaposed thin-walled cysts; 3- Plasmacytoma: which may present a similar MRI appearance. The diagnosis is histological and bacteriological; it is made after surgery or radioguided puncture and biopsy, and samples must be sent simultaneously for bacteriology and pathology [7].

The aim is to confirm the tuberculous nature of the lesions by showing the presence of Koch's bacillus (a rare occurrence) or epithelio-giganto-cellular granuloma with tuberculous caseous necrosis [7]. The presence of a second tuberculous site facilitates the diagnosis, as does the existence of a history or active tuberculosis [4]. The presence of Koch's bacilli in the pus led to the diagnosis in our patient.

Treatment is usually medico-surgical, with hemilaminectomy or decompressive laminectomy combined with antibacterials in patients with neurological involvement, sometimes combined with spinal stabilisation by osteosynthesis [3]. Conservative treatment combining anti-tuberculosis drugs and orthopaedic immobilisation is rarely recommended, and may be reserved for patients with no neurological involvement and no signs of spinal instability.

The prognosis for this condition is generally good, if treatment is initiated rapidly to avoid both neurological and orthopaedic complications.

CONCLUSION

Tuberculosis of the posterior vertebral arch is rare and can cause severe neurological complications. It should be suspected in the presence of lytic lesions of the posterior arch. CT and MRI scans provide a precise assessment of the lesions and their impact on neighbouring structures, particularly the nerves.

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