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Case Report

Intramedullary cervical spinal cord tuberculoma: A rare cause of paraparesis ☆

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ABSTRACT

Neurological manifestations of tuberculosis remain rare, even if recent years have been marked by an increase in these pathologies, notably due to the HIV pandemic. Intramedullary tuberculoma remains an exceptional localization. Magnetic resonance imaging in diagnosing intramedullary tuberculoma and specific medical treatment are of great interest. We report a case of cervical intramedullary tuberculoma in a 45-year-old woman, with a slow spinal cord compression syndrome. The nature diagnosis had been retained on a clinical and radiological basis, and appropriate medical treatment was established, without resorting to surgery.

Introduction

Tuberculosis is an endemic disease that constitutes a major public health problem in developing countries. The most common form of intradural spinal tuberculosis is meningitis, and intramedullary tuberculomas are rare [1].

MRI allows a complete lesion assessment to be performed and the characteristics of the intramedullary lesion to be specified, thus providing a diagnostic approach. If medical treatment is always indicated, surgical treatment is still very much discussed. The evolution depends on neurological disorders.

Patient and observation

The patient was a 45-year-old HIV-positive woman. The clinical history goes back 1 month marked by the onset of respiratory distress with fever, especially at night, and asthenia associated with a slow medullary compression syndrome. The clinical examination found a dyspneic patient in altered general condition, with paraparesis, and without sphincter disorders.

The thoracic scan showed a miliary tuberculosis (Fig. 1).

Regarding the spinal cord compression syndrome, an MRI of the spinal cord was indicated, which showed an in-

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Fig. 1 – Axial section of the thoracic scan showed a miliary tuberculosis.

tramedullary process opposite C7 with an iso signal in the T1 sequence and a T2 hyper signal, which was intensely enhanced after injection of contrast with a small central nonenhanced area extending over 14.4 mm in height.

Presence of a signal abnormality of the medulla above (C4 to C7) and below (C7 to D3) the lesion described above with a T2 hyper signal and STIR which is discreetly enhanced after injection of contrast medium (Figs. 2 and 3).

Based on these clinical and radiological findings, the diagnosis of tuberculosis was retained. Medical treatment was initiated according to the national anti-tuberculosis program.

The evolution was favorable, there was satisfactory recovery clinically. Unfortunately, we do not have control imagery.

Discussion

Tuberculosis (TB) is a transmissible infectious disease caused by the presence of a mycobacterium of the tuberculosis complex in the body (mainly M. tuberculosis hominis, also called Koch's bacillus or BK, more rarely M. bovis and M. africanum). The main localization of the infection is pulmonary but it can also be bone, lymph node, pleural, intestinal, peritoneal, or cerebro-medullary. This last location is quite frequent and serious and represents 10% to 30% of intracranial expansive processes [2].

Involvement of the central nervous system (CNS) is very often secondary, even if the primary site remains latent. Dissemination occurs via the hematogenous route, with clinical and radiological polymorphism. Its diagnosis must be made as soon as possible, in order to start the antibacillary treatment, and the role of imaging is to make a positive diagnosis without having to resort to invasive methods. MRI is much more sensitive than the computed tomography (CT) scan for the detection of early, small lesions, as well as lesions of topography poorly visualized by CT scan. Diffusion, perfusion, and spectroscopic imaging methods are sometimes useful in ruling out certain differential diagnoses [3].

Approximately 0.55%-2% of patients with systemic TB have CNS involvement. Meningitis, Pott's syndrome, and intracranial tuberculomas are the most common forms of CNS TB. The most common form of spinal tuberculosis is tuberculous spondylitis (Pott's disease). Meningitis is the most common form of intradural tuberculosis of the spine [4].

Tuberculomas form when Rich's foci enlarge without rupturing in the subarachnoid spaces. Tuberculomas are often isolated, but in some cases, they are associated with lesions of meningitis. They are formed by epithelioid and giant cells with lymphocytic cells in the center surrounding an area of caseous necrosis. The liquefaction fluid from the necrotic zone is always clear or straw-colored as opposed to pus.

Intramedullary tuberculoma usually presents with signs and symptoms of subacute spinal cord compression, with motor and sensory findings appropriate to the level of injury, and with systemic features of tuberculosis, such as fever, night sweats, weight loss, and anorexia.

A history of past or concurrent tuberculosis, including exposure to the disease, is often obtained, and patients have frequently had tuberculous meningitis.

In the presence of consciousness disturbances or focal signs, a CT scan should be performed as the first line of investigation to rule out an expansive process before performing a lumbar puncture.

The CT scan can contribute to the diagnosis, mainly of atypical forms. It may show: [5,6]

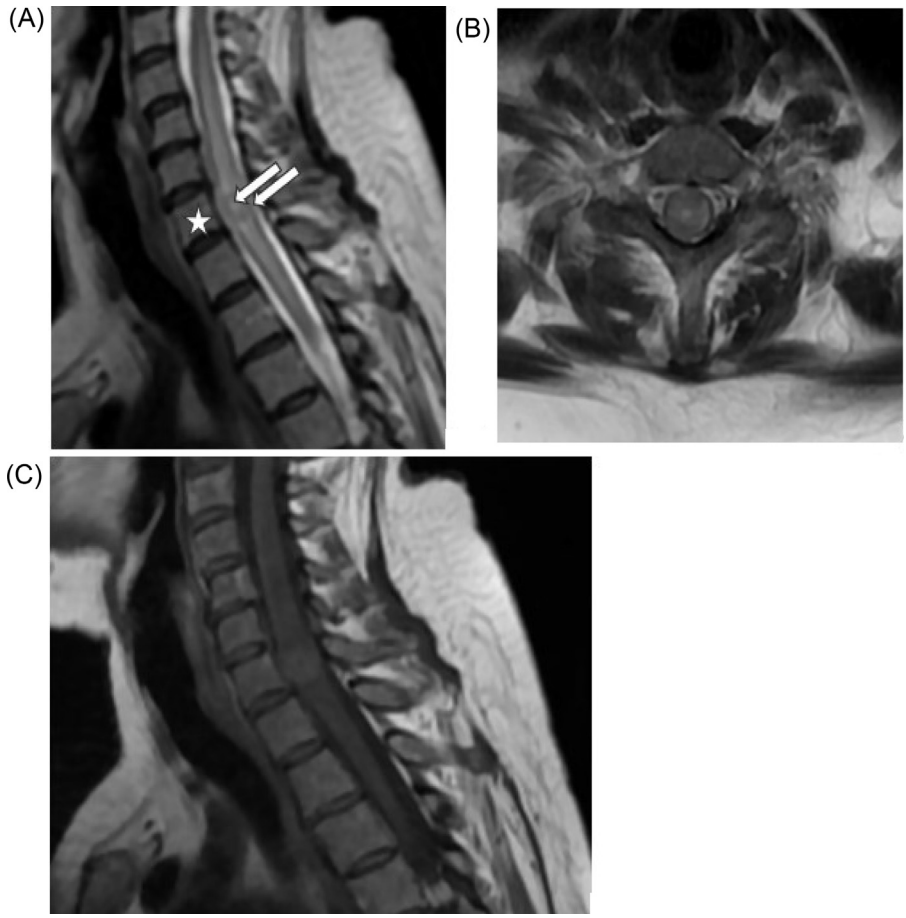

Fig. 2 – Sagittal and axial section in sequence T2 (A, B) and T1 (C): an intramedullary process (⇐) opposite C7 (☆) with an iso signal in T1 sequence and an hyper signal in T2 sequence.

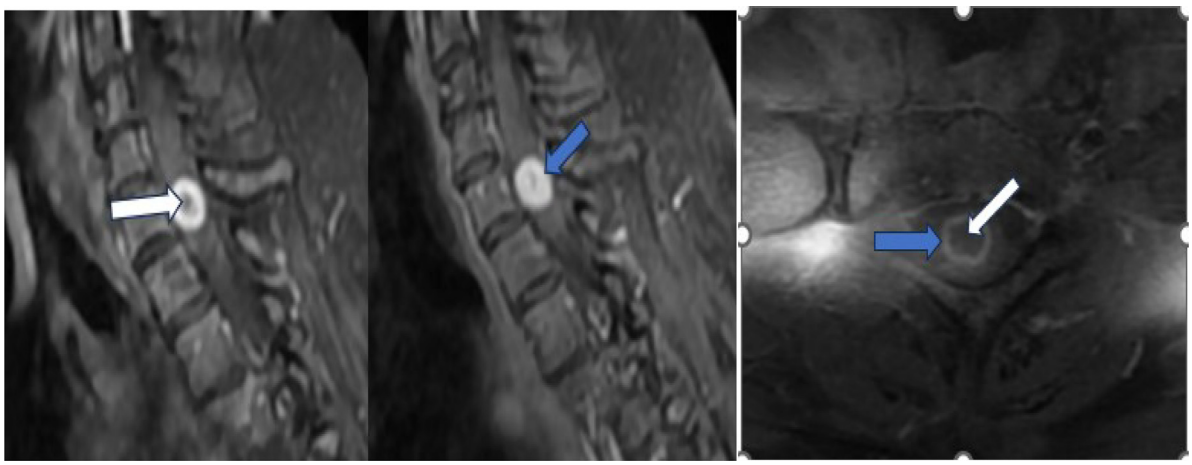

Fig. 3 – T1 sequence with injection: intense enhancement (⇒) after PDC injection, with a small central area nonenhanced (⇦).

- A dilatation of the ventricular system, at the first examination or during surveillance of a treated form, indicating the existence of hydrocephalus.
- A leptomeningeal thickening with significant enhancement after injection.
- Isodense or discretely hypodense images compared with the brain parenchyma with annular or nodular contrast enhancement suggestive of tuberculomas.
- A hypodense image encircled by thin contrast enhancement suggestive of a tuberculous abscess.

- Hypodensities without contrast enhancement suggestive of cerebral ischemia.

Magnetic resonance imaging is the reference radiological examination in the exploration of medullary tuberculomas and is much more sensitive than the CT scan for the early detection of small lesions, as well as possible encephalitis foci, and allows for better localization of lesions.

MRI is also more sensitive in detecting early lesions or lesions of topography poorly visualized by CT (convexity, posterior cerebral fossa).

Finally, it allows optimal guidance of a biopsy to confirm the diagnosis of infectious bacillary lesions.

It shows:

- At the meningeal level: before injection, usually no pathological meningeal image. After gadolinium injection, in T1 a significant contrast gain mainly at the basilar level.
- At the level of the ventricles: a ventricular dilatation.
- At the level of the brain parenchyma, different aspects can be noted:

Noncaseating tuberculomas give a T1 hyposignal and a T2 hypersignal with homogeneous contrast enhancement.

Caseous tuberculomas give a T1 and T2 iso or hyposignal with coronal contrast. Tuberculomas are usually surrounded by an edematous reaction that gives a T1 hyposignal and a T2 hypersignal.

A tuberculous abscess gives a T1 hyposignal and a T2 hypersignal in the central area with crown contrast as in a pyogenic abscess [7–10].

Different aspects are observed depending on the age of the tuberculoma and its degree of caseation. The most frequent appearance is that of a large marrow with iso or slight hyposignal in T1 and hypersignal in T2. This appearance changes after injection of gadolinium according to the evolutionary stage of the tuberculoma with homogeneous hyposignal in the initial inflammatory stage and cocardial hypersignal in the second stage [11].

The differential diagnosis can be made with an ependymoma, an astrocytoma, or an abscess. The characteristic appearance of a hypointense T1 and isointense T2 ring formation surrounding the lesion and enhanced by contrast medium has been reported in almost all recent publications [12].

Diagnostic confirmation is obtained by histological and/or bacteriological study of the surgical specimen or by scan-guided puncture in the case of associated potting disease. It can be evoked in the presence of a series of clinical and radiological arguments and in response to anti-bacillary treatment. There is no consensus on treatment. Surgery is still very much debated and is still indicated for diagnostic and decompressive purposes, particularly in the case of associated epiduritis. Total excision remains difficult and of little interest, and can even compromise the functional prognosis.

Conclusion

Intramedullary tuberculoma remains an extremely rare lesion and is particularly seen in immunocompromised patients. Magnetic resonance imaging in diagnosing intramedullary tuberculoma and specific medical treatment are of great interest.

Patient consent

I confirm that the legal representative of the patient whose case is reported in this article, gave consent for publication.

Author contributions

All authors contributed to the conduct of this research work. The authors have read and approved the final version of the manuscript.

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