

# Single cervical spinal extramedullary tuberculous lesion in a young female – case report

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## ABSTRACT

Skeletal tuberculosis is the main extrapulmonary site for *Mycobacterium tuberculosis* infection dissemination. As for the nervous system tuberculosis or spinal tuberculous disease in particular, the osseous elements are more frequently involved than the cerebral tissue or the spinal cord. We present the case of a previously healthy 32 year old female with no known TB history, referred to our clinic for neck pain thought to be due to degenerative spinal disc disease. In the absence of general signs of the disease, the right surgical management and biopsy were the key factors for correct diagnosis.

**Keywords:** spinal tuberculosis, nervous system tuberculosis, cervical neuralgia, tuberculous granuloma

## INTRODUCTION

Extrapulmonary tuberculosis (TB), especially spinal TB, is a very rare entity nowadays, even in Romania, a country that as of 2020 is still an endemic zone for pulmonary tuberculosis according to the latest ECDC reports [1].

One in five patients infected with *Mycobacterium tuberculosis* are expected to manifest extrapulmonary tuberculosis at some point in life [2,3]. The most common extrapulmonary form of this disease is the skeletal type, with a predilection for the spine, with osseous TB being more common than spinal cord TB.

Nervous system tuberculosis is still a major challenge, both in developed and underdeveloped countries, not only with regard to the surgical management but also when it comes to reaching the right diagnosis [3].

Spinal TB presents with local pain and spinal deformity that leads to gait dysfunction, sometimes followed by sensory or motor dysfunction in connection with the degree of compression or invasion [3,4].

Skeletal TB is primarily discovered on plain X-rays, but further imagery studies such as MRI (both plain and with intravenous contrast enhancement) help characterise the lesion and clarify its etiology [5,6].

We present the case of a previously healthy 32 year old female that addressed her family physician for cervical pain that was initially managed as degenerative cervical disc disease.

## CASE PRESENTATION

A 32 year old female patient, previously healthy and with no significant medical history presented

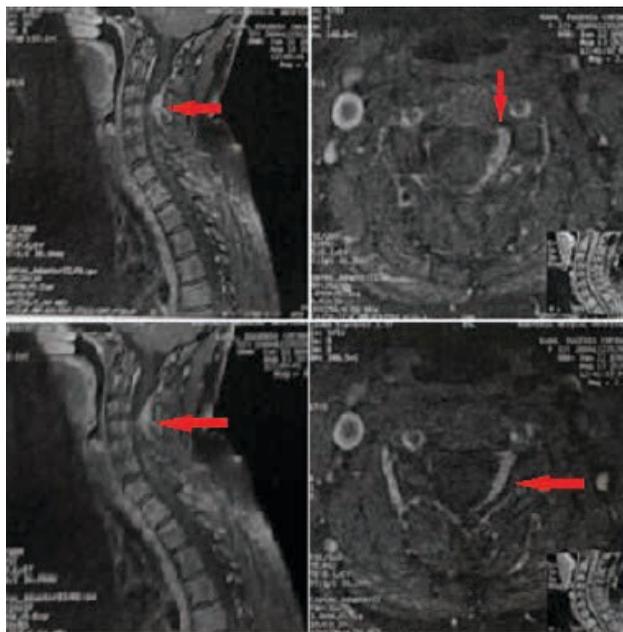
with intermittent neck pain irradiating to the shoulders bilaterally, accompanied by tingling on the same site. Symptoms started suddenly roughly 3 months prior to admission. Her primary physician had started pain management with anti-inflammatory drugs and muscle relaxants, without much relief.

Patient complaints were intermittent cervical C3 and C4 neuralgia and tingling in the neck and shoulders over nearly three months.

On neurological examination the patient did not have neurological deficits, muscle tone was normal, reflexes within normal limits with neither upper nor lower motor neuron signs.

Local examination revealed neither stiff neck nor dystonia.

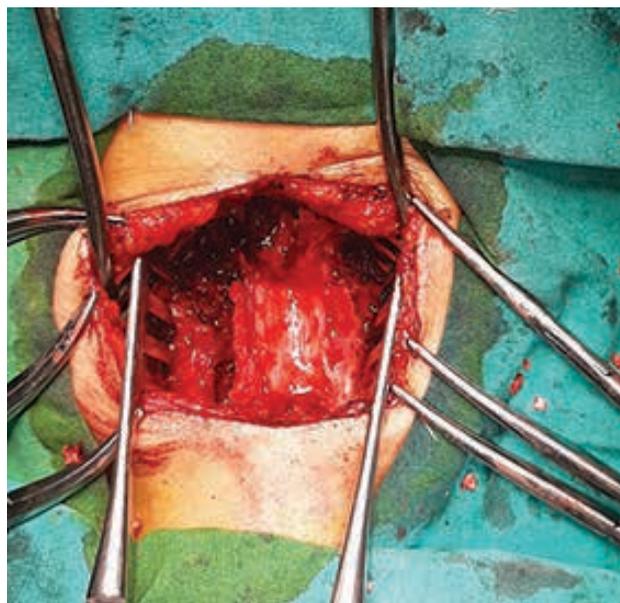
She underwent a cervical spinal and cerebral MRI, both plain and with intravenous contrast enhancement, that revealed a unique lesion – a space occupying mass located extramedullary, extradural and posteriorly in the cervical spinal canal between C2 and C4, about 2 centimeters long and 0.5 cm thick. Bone structure at this level was within normal limits, but the C2 laminae was thinner, which is thought to be a result of local bone compression. Said lesion was not the contrast capturing type (figure 1).



**FIGURE 1.** MRI sequences of the cervical spine. Arrows point to the extradural C3-C4 mass

Pre-operative workup, including blood work and pulmonary films did not reveal any abnormal findings: no anemia, no inflammatory markers, no suspicious radiological findings.

The patient underwent surgery and C3-C4 laminectomies were performed in order to expose and access the spinal canal. We immediately discovered the space occupying lesion seen on the MRI exam, which was gray-yellow and soft, avascular, about 2.5 cm long and 0.5 cm thick, slightly thicker and far more spread to the left side. It quickly allowed for a dissection plane to be found and complete removal was easily possible with complete preservation of the cervical dura mater integrity. The dura mater at this level did not look infiltrated and its colour and aspect were normal (figure 2).



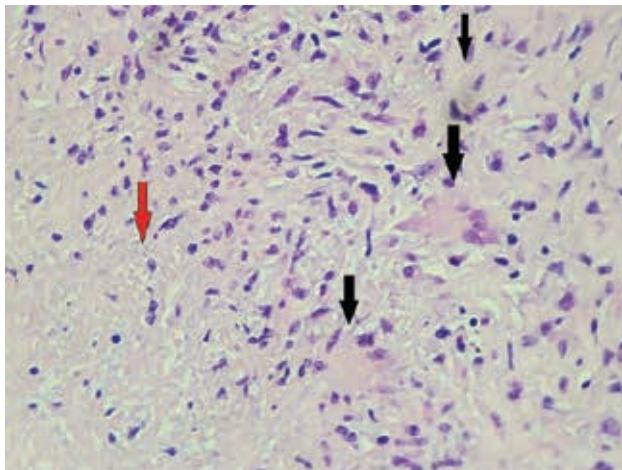
**FIGURE 2.** Intraoperative aspect of the cervical dura mater – no infiltration

The intraoperative pathology report raised a high suspicion of a tuberculous granuloma (figure 3 and 4) and since no intradural nor intramedullary abnormalities were found on the imagery, the decision was made not to open the dura mater, in order not to spread any germs through CSF fluid to the central nervous system.

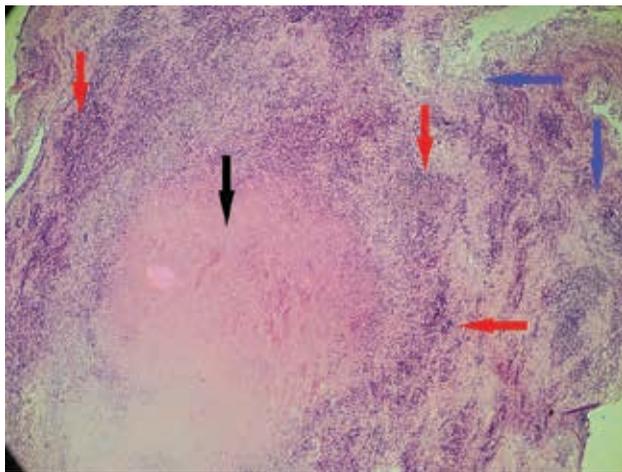
## DISCUSSION

The surgical management of the space occupying lesion in this patient's cervical spinal canal consisted of neurological decompression and total and safe ablation of the lesion.

Symptomatic lesions in the spinal canal need to benefit from a biopsy, at least, if surgical removal is not possible. Although the patient did not present any sign of systemic disease, spinal malignancy was one of our preoperative concerns [6,7].



**FIGURE 3.** Pathology sequence showing tuberculous granuloma. Black arrows point to giant cell with multiple nuclei. Red arrow points to central caseous necrosis



**FIGURE 4.** The pathology findings from the cervical spinal lesion as seen under microscope – a tuberculous granuloma. Black arrow points to caseous necrosis. Blue arrows point to external ring of cells – e.g. lymphocytes

Following the histopathology definitive report we completed the scanning of the patient's spine

*Conflict of interest:* none declared

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and brain with MRI imaging [8]. Fortunately no other abnormalities were found.

Commonly, tuberculous lesions in the extramedullary compartment have been described in the last twenty years in patients who had previously suffered from tuberculous meningitis. However, these lesions were intradural and not extradural, as was the lesion we encountered [9,10].

During the postoperative period we completed TB workup with dosing of serum IgM and IgG, with negative results. After surgery the patient no longer had any neurological complaints and was discharged on day three. On discharge the patient was referred to a pneumology clinic for further treatment.

## CONCLUSIONS

This particular case we encountered stands out mainly because it is about a unique symptomatic lesion in the absence of pulmonary or chronic infectious disease manifestations. The more interesting aspect of the case is that it presented in a young person with no prior disease symptoms, no comorbidities and no immunity disorder. Considering that the patient had not had any prior complaints nor findings that would indicate a TB infection, both primary or disseminated, we conclude that the right imaging studies, followed by the adequate surgical approach and management and a quality pathology report, were our key tools for the right and complete diagnosis. We did not find any lesion of this type and with extramedullary position in more recent literature.