Annals of Clinical Case Reports

Case Report
Published: 26 Dec, 2019

Spinal Tuberculosis - Treatment Options Beyond Guidelines

Inês Esteves Cruz[1], Pedro Ferreira[2], Sara Brandão Machado[1], João Mourato Torres[1], Cláudia Miranda[1] and Isabel Antunes[1]*

[1]*Hospital de Egas Moniz, Centro Hospitalar de Lisboa Ocidental, Portugal*

[2]*Hospital de Santa Maria, Centro Hospitalar Lisboa Norte, Portugal*

Abstract

Spinal tuberculosis, a presentation of extrapulmonary tuberculosis, usually presents with chronic back pain or deformity. The diagnosis is often delayed due to the insidious and nonspecific nature of the initial symptoms. The thoracic spine is more commonly affected, but it can affect other segments or be multisegmental. The site and extent of the lesion will determine the resulting neurological deficits which can lead to significant morbidity and functional impairment. Combination chemotherapy for 6 months is recommended, but some experts may recommend therapy for 9 to 12 months depending on the circumstances. Adjunct corticotherapy and surgery are also options in specific cases. Further studies will be needed in order to better understand the role of these therapies in severe tuberculosis, and in particular spinal tuberculosis.

Learning Points

- Neurologic abnormalities appear in 10% to 27% of cases and can be associated with significant morbidity and functional impairment.
- Expert opinion supports the extension of combined chemotherapy for 9 to 12 months in selected cases.
- Extended combined chemotherapy and adjunct corticotherapy might be considered in spinal tuberculosis with evidence of cord compression and severe neurological compromise.
- Patients with severe neurological impairment due to tuberculous spondylitis may have a good prognosis.

Keywords: Tuberculosis; Spinal tuberculosis; Spinal cord compression; Paraplegia; Corticosteroid therapy; Mycobacterium tuberculosis

Introduction

Tuberculosis (TB) is a multisystemic disease that mainly affects the lungs, but can involve any other extrapulmonary site. According to the World Health Organization (WHO), extrapulmonary TB has a prevalence of up to 20% to 25% in countries with a mandatory TB notification policy. The most frequent sites other than the lungs are the lymphatic system, pleura and bone [1]. Other forms of the disease with pericardial, meningeal or disseminated involvement have a higher mortality rate but are also less frequent. Extrapulmonary TB can present with signs and symptoms related to the affected organ system or as a chronic systemic inflammation, namely with fever, night sweats, asthenia, weight loss or cachexia. The presentation can be insidious, which often undermines and delays the correct diagnosis.

Case Presentation

A 21-year-old woman, with no relevant previous medical history, reported loss of strength and sensation in the lower limbs that slowly progressed to the upper extremities over a period of 2 years. The patient also reported neuropathic pain in the cervical region, anorexia, asthenia and a vespertine fever. She had been living in Guinea-Bissau and was sent to Portugal to seek further medical care. There, she presented to the emergency department and was subsequently admitted for further investigation. The neurological examination revealed a spastic paraplegia, with only mild decrease in muscular strength in the upper extremities (4/5) and loss of pain and light-touch sensation as well as deep sensation in the lower limbs. Deep anal pressure and voluntary anal contraction were preserved. Increased stretch reflexes in the lower extremities and a positive bilateral Babinsky sign were present. The clinical examination also revealed an enlarged and painless cervical lymph node

OPEN ACCESS

Correspondence:
Inês Esteves Cruz, Hospital de Egas Moniz, Centro Hospitalar de Lisboa Ocidental, Avenida Gomes Pereira, 311 Lisbon, Portugal, Tel: +351-918627106; E-mail: inescruz07@hotmail.com

Received Date: *29 Nov 2019*
Accepted Date: *17 Dec 2019*
Published Date: *26 Dec 2019*

Citation:
Cruz IE, Ferreira P, Machado SB, Torres JM, Miranda C, Antunes I. Spinal Tuberculosis - Treatment Options Beyond Guidelines. Ann Clin Case Rep. 2019; 4: 1776.

ISSN: 2474-1655

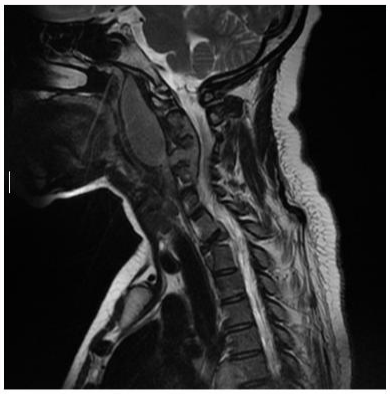

Figure 1: Cervical MRI showing retropharyngeal abscess (C1-C5) extending to the anterior epidural space at C4-C5 and compressing the spinal cord at this level.

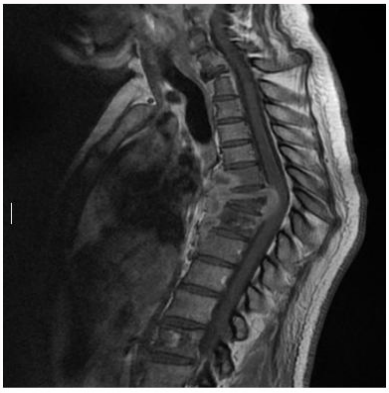

Figure 2: Dorso-lumbar MRI demonstrates a severe deformity of the body of D7, pre- and paravertebral abscess between D6-D8, extending to the anterior epidural space and into the left intra-thoracic region.

without other significant findings.

The laboratory results showed an anemia (Hemoglobin 9.9 g/dL), neutrophilia (76.4%) and increased inflammatory parameters (Sedimentation Rate 82 mm/h, C reactive protein 6.91 mg/dL). Autoimmunity screening was negative (ANA, Anti-dsDNA, cANCA/pANCA, Anti-MPO, Anti-PR3) as were tests for Human Immunodeficiency Virus (HIV), hepatitis B and C.

Magnetic Resonance Imaging (MRI) revealed a retropharyngeal abscess (C1-C5) extending to the anterior epidural space at C4-C5 and compressing the spinal cord at this level (Figure 1). In the dorso-lumbar region, a severe deformity of the body of D7 was apparent. In addition, a pre- and paravertebral abscess between D6-D8 was found, extending to the anterior epidural space and into the left intra-thoracic region (Figure 2 and 3). Bone scintigraphy was suggestive of multifocal spondylodiscitis at the dorso-lumbar region as well as osteoblastic activity in the 8th left costal arch and right iliac bone.

Cerebral Spinal Fluid (CSF) analysis showed an elevated protein level (185 mg/dL), with normal white blood cell count (>1 cell/uL) and glucose level. CSF smear looking for acid-fast bacilli and culture was negative.

Biopsies of the cervical lymph node, retropharyngeal and intra-thoracic abscesses were performed. Ziehl–Neelsen staining for acid-fast bacilli was negative in all, but Polymerase Chain Reaction (PCR)-based assay was positive for Mycobacterium tuberculosis complex in one (intra-thoracic abscess). Eventually, *Mycobacterium tuberculosis* complex was also isolated from the cultures of these samples and two other sputum samples. Susceptibility testing showed no mutation in the inhA, katG or rpoB genes and good susceptibility to all the first line anti-tuberculous agents.

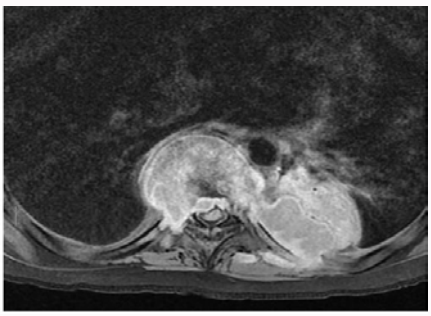

Figure 3: Dorsal and Lumbar RM: pre- and paravertebral abscess between D6-D8 extending to the anterior epidural space and into the left intra-thoracic cavity.

The patient was thus started on isoniazid (300 mg), rifampin (600 mg), pyrazinamide (1500 mg) and ethambutol (1200 mg) (HRZE). Despite the severe neurological impairment, there was no indication for surgery.

After two weeks without clinical improvement, and given the severity of the neurologic deficits, treatment with prednisone 1 mg/Kg/day (60 mg/day) was instituted. Finally, after 3 months of therapy with HRZE and 8 weeks of prednisone (2 weeks full dose with tapering over a period of 6 weeks) the patient began to recover. Control MRI at 4 and 8 weeks revealed a significant reduction in size of the large abscesses in the dorso-lumbar region and an improvement in cord compression at C4-C5. In view of the considerable outspread of the infection, treatment with isoniazid and rifampin was extended for 12 months.

Around this time, the patient continued her rehabilitation program in a Rehabilitation Center. At the time of discharge from the center, she was able to walk without the need of any assistive device, had sphincter control and was independent in all other activities of daily living.

Discussion

Tuberculous spondylitis, also known as Pott disease, should be considered when there's a history of chronic back pain, progressive stiffness and spine deformity. Neurologic abnormalities appear in 10% to 27% of cases and are associated with the level of spinal injury [2]. Injury to the thoracic spine is the most common, followed by lumbar and, less frequently, the cervical spine. Multisegmental spondylitis occurs in 50% of the patients. Progressive bone destruction leads to fractures and deformity of the spine. Abscesses in the spinal canal can lead to compression of the spinal cord or reach soft tissue structures, like the psoas muscle.

In our case, there was extensive involvement, which included the lungs, the lymphatic system, multiple segments of the spinal column and other bones (costal grid and right iliac bone). That type of extension is unusual for a non-immunocompromised patient and is probably best explained by the long time period over which the disease was allowed to progress (2 years).

Patients with bone TB should be treated with combination chemotherapy for 6 months, during which isoniazid and rifampin should always be administered. During the first 2 months, additional first line drugs should be given (pyrazinamide, ethambutol and streptomycin) [1,3]. Currently, there is no evidence that longer treatment regimens result in added benefits and therapy for 12 months is only recommended for meningeal TB. However, the studies on which the guidelines are based did not include patients with multiple vertebral involvement, cervical lesions or major neurologic deficits. Faced with these limitations, some experts recommend therapy for 9 to 12 months in selected cases [4,5]. With that in mind and given the extensive neurological compromise in our case, it was decided to prolong treatment for 12 months, even though there was no evidence of meningeal involvement.

Adjunct corticotherapy in TB remains a point of debate in the scientific community. On the one hand, it inhibits the inflammatory process and reduces its side effects, but on the other it can hinder an appropriate immune response, promoting bacillary proliferation, delaying the resolution of the infectious process or increasing the susceptibility to other unwanted infections [5]. There is also concern about its potential to interact with other anti-tuberculous agents and interfere with its tissue distribution, possibly reducing its effects [6].

Corticotherapy should be initiated concurrently with anti-tuberculous agents and continued for 6 to 8 weeks. At the moment, it's only recommended in meningeal TB, but could also be considered when there is pericardial involvement [3-5]. In pulmonary and pleural TB, its use was associated with an earlier symptomatic improvement but showed no additional benefit in the long term [7-9]. There are currently no recommendations for its use in bone tuberculosis because there aren't enough studies from which to draw conclusions from. According to the Infectious Diseases Society of America (IDSA) Guidelines, spinal TB with associated meningitis should be treated with adjunct corticotherapy [4]. Even though our patient didn't present with signs of meningitis, by again taking into account the evidence of cord compression and serious neurologic compromise, corticotherapy was instituted for 8 weeks.

Surgery in these cases is also controversial. A Cochrane systematic revision comparing surgical intervention alongside treatment with anti-tuberculous agents and an exclusive conservative approach found no significant statistical difference in respect to degree of kyphosis, neurologic deficits, vertebral fusion or mortality [10,11]. The commonly held opinion amongst experts is that surgery should be considered in the following situations: absence of response to conservative treatment with persistence or exacerbation of the infection, no improvement or recurrence of neurologic abnormalities and spinal instability [4]. Other situations where it could be considered are drainage of abscesses that might compromise oropharyngeal and respiratory function or paravertebral abscesses which have not responded to a 3 to 6 months course of therapy [12].

Conclusion

Even patients with severe spinal TB may achieve a good clinical and functional outcome. In our case, given the severe neurological compromise, not only was combination chemotherapy extended for a longer period of time, but adjunct corticotherapy was also administered (both decisions stepping outside currently available guidelines). It is impossible to know for sure to what extent these decisions influenced the observed outcome, but it is fair to say that further studies should be held to better understand the role of such therapies in severe TB with spinal or bone involvement.

References

1. World Health Organization. Stop TB Initiative (World Health Organization. Treatment of tuberculosis: guidelines). Geneva: World Health Organization; 2010.
2. Pigrau-Serrallach C, Rodríguez-Pardo D. Bone and joint tuberculosis. Eur Spine J. 2013;22(Suppl 4):S556-66.
3. Guidelines for treatment of drug-susceptible tuberculosis and patient care. 2017 update. Geneva: World Health Organization; 2017.
4. Nahid P, Dorman S, Alipanah N, Barry P, Brozek J, Cattamanchi A, et al. Official American Thoracic Society/Centers for Disease Control and Prevention/Infectious Diseases Society of America clinical practice guidelines: Treatment of drug-susceptible tuberculosis. Clin Infect Dis. 2016;63(7):e147-95.
5. Internal Clinical Guidelines Team (UK). Tuberculosis: Prevention, Diagnosis, Management and Service Organisation. London: National Institute for Health and Care Excellence (UK); 2016 Jan. (NICE Guideline, No. 33.)
6. Evans DJ. The use of adjunctive corticosteroids in the treatment of pericardial, pleural and meningeal tuberculosis: Do they improve outcomes? Respir Med. 2008;102(6):793-800.
7. Singh SK, Tiwari KK. Use of corticosteroids in tuberculosis. J Assoc Chest Physicians. 2017;5(2):70-5.
8. Ryan H, Yoo J, Darsini P. Corticosteroids for tuberculous pleurisy. Cochrane Database Syst Rev. 2017;(3)CD001876.
9. Critchley JA, Orton LC, Pearson F. Adjunctive steroid therapy for managing pulmonary tuberculosis. Cochrane Database Syst Rev. 2014;12(11).CD011370.
10. Ferrer MF, Torres LG, Ramírez OA, Zarzuelo MR, del Prado González N. Tuberculosis of the spine. A systematic review of case series. Int Ortho (SICOT). 2012;36:221.
11. Jutte PC, van Loenhout-Rooyackers JH. Routine surgery in addition to chemotherapy for treating spinal tuberculosis. Cochrane Database of Syst Rev. 2006;25(1):CD004532.
12. Rasouli M, Mirkoohi M, Vaccaro A, Yarandi K, Movaghar V. Spinal tuberculosis: diagnosis and management. Asian Spine J. 2012;6(4):294-308.