

## Case Report

# Spinal Epidural Tuberculoma: A Novel Case Report

Ali Riza Guvercin<sup>1</sup>, Gürkan Gazioglu<sup>1</sup>, Ugur Yazar<sup>1</sup>, Iskender Samet Daltaban<sup>2</sup>, Mehmet Feryat Demirhan<sup>3</sup>, Gözde Evcim<sup>4</sup>, Erhan Arslan<sup>1</sup>

<sup>1</sup>Department of Neurosurgery, Karadeniz Technical University Faculty of Medicine, Trabzon, Turkey

<sup>2</sup>Department of Neurosurgery, Bozok University Faculty of Medicine, Yozgat, Turkey

<sup>3</sup>Department of Neurosurgery, Kanuni Training and Researching Hospital, Trabzon, Turkey

<sup>4</sup>Department of Pathology, Kanuni Training and Researching Hospital, Trabzon, Turkey

### Abstract

Mortality and morbidity rates due to the involvement of the central nervous system (CNS) tuberculosis are higher than those due to the involvement of other organ systems. Spinal tuberculosis is very rare and constitutes only 2% of CNS tuberculosis cases. A 17-year-old male patient presented with complaints of progressive loss of strength in both legs that started with numbing of the legs for three months. One-fifth loss of strength in both legs and an increase in patellar reflex were found in the motor examination. On performing unenhanced lumbar magnetic resonance imaging, the mass lesion extending from L1–L4 that was thought to be a subacute epidural hematoma was tracked. The patient was taken into operation immediately after the pre-diagnosis of subacute epidural hematoma was made. The lesion reached from the L1 vertebral corpus to the L4 corpus and had a size of 6×1 cm. Progressive improvement was seen in the paresis of the patient postoperatively. In the histopathological examination, histiocytes, lymphocytes showing caseous necrosis, and necrotizing granuloma inflammatory reaction showing granuloma structures formed by single neutrophils were observed. In line with the examination report, the patient was given a three-step anti-tuberculosis therapeutic protocol (ethambutol, rifampicin, and isoniazid) for nine months.

**Keywords:** Epidural, spinal, tuberculoma, tuberculosis

**Cite This Article:** Guvercin A, Gazioglu G, Yazar U, Daltaban I, Demirhan M, Evcim G, Arslan E. Spinal Epidural Tuberculoma: A Novel Case Report. *EJMO*. 2017; 1(3): 174-178

Tuberculosis (Tbc) is a disease characterized by granulomatous inflammation seen after being exposed to the bacillus *Mycobacterium tuberculosis* usually through inhalation.<sup>[1]</sup> Tbc is widely seen in developing countries and it constitutes 15%–20% of all cases with central nervous system (CNS) involvement. The mortality and morbidity rates of the CNS involvement of Tbc are higher than those of other organ involvements. While spinal Tbc is very rare, it constitutes only 2% of CNS Tbc cases.<sup>[2]</sup>

Intracranial Tbc is most frequently seen as meningoencephalitis, while spinal Tbc is observed as spondylitis and arachnoiditis. CNS Tbc is not frequently encountered as tuberculoma, but intramedullary and very rare epidural tu-

berculoma cases have been mentioned in the literature.<sup>[2]</sup> Spinal epidural tuberculomas are confused with other tumoral structures radiologically and clinically.<sup>[3]</sup>

In the case of the patient in this study, an event of spinal epidural tuberculoma with complaints of loss of strength at 17 years of age is presented, where distinguishing from hematoma and tumor was not possible.

### Case Report

The 17-year-old male patient was referred to us by an external center with complaints of progressing loss of strength in both legs in the 10 days prior, which started with numbing of the legs for duration of three months. The patient

**Address for correspondence:** Ali Riza Guvercin, MD. Department of Karadeniz Technical University Faculty of Medicine Neurosurgery, Trabzon Turkey

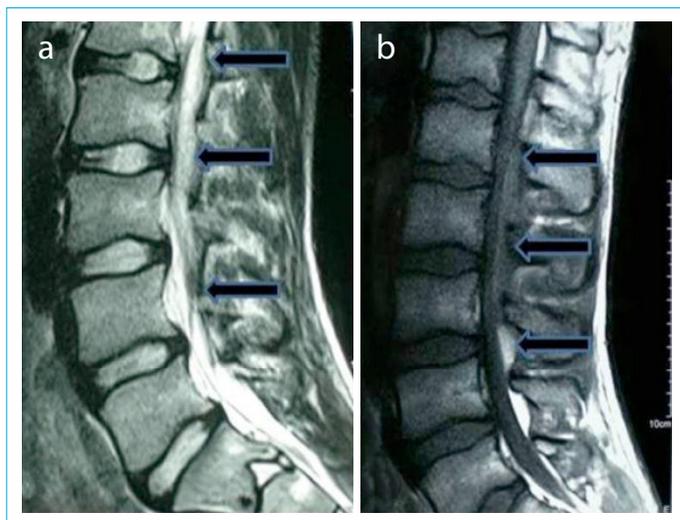
**Phone:** +90 561 616 14 72 **E-mail:** aliguvercin@hotmail.com

**Submitted Date:** August 04, 2017 **Accepted Date:** September 06, 2017 **Available Online Date:** September 29, 2017

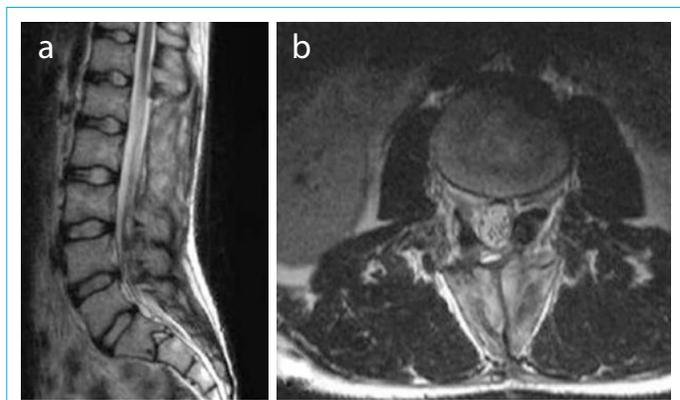
©Copyright 2017 by Eurasian Journal of Medicine and Oncology - Available online at [www.ejmo.org](http://www.ejmo.org)



did not have any history of illness or drug usage in his file. One-fifth loss of strength in both legs and an increase in patellar reflex were found in motor examination. In the unenhanced lumbar magnetic resonance (MR) imaging, the mass lesion extending from L1–L4 that was thought to be a subacute epidural hematoma was tracked (Fig. 1a,b). The patient was taken into operation immediately after the pre-diagnosis of spinal subacute epidural hematoma. After L1-L2 total and L3 partial laminectomy, the epidural mass was revealed and the total was excised. The lesion reached from the L1 vertebral corpus to the L4 corpus, and had a size of 6x1 cm. The epidural lesion adherent to dura mater, peripheral connective tissue and bone tissue, with occasional hard consistency and occasional abscess formation, was removed (Fig. 2a, b). A progressive improvement was observed in the paresis of the post-operative patient



**Figure 1.** (a) Hyperintense mass lesion extending between L1 and L4 in T2 MRI (black arrows), (b) Isointense mass lesion extending between L1 and L4 in T1 MRI.



**Figure 2.** (a) T2 MRI sagittal image following L1- L2 total and L3 subtotal laminectomy, (b) T2 axial image following L1- L2 total and L3 subtotal laminectomy.

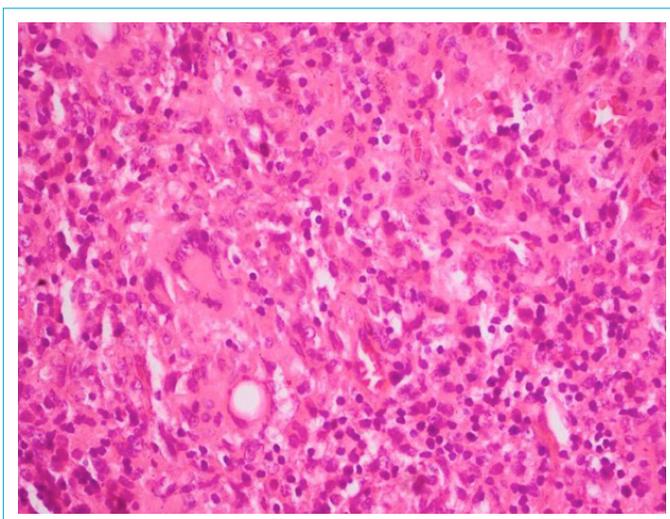
and he started to walk without support. In the histopathological examination, histiocyte, lymphocyte showing caseous necrosis, and necrotizing granuloma inflammatory reaction showing granuloma structures formed by single neutrophils with a tendency to converge in the fatty tissue and fibrocollagenous stroma, were observed (Fig. 3). Center of Tbc could not be found in the examinations and observations of the patient. In line with the histopathological examination report, the patient was given a three-step anti-Tbc treatment (ethambutol, rifampicin, and isoniazid) for nine months.

## Discussion

Tbc is widely seen in developing countries and it constitutes 15%-20% per cent of all cases with CNS involvement. [2] Extrapulmonary Tbc is mostly seen in young children and immunosuppressive individuals infected with Human Immunodeficiency Virus (HIV). [4]

When the literature was reviewed in terms of events of Tbc, it was seen that the first spinal epidural tuberculoma case was published in 1971 by Balaparameswara Rao. [5] In addition, the cases of epidural tuberculoma published since 1971 are rare, and these publications were made between 1971 and 1995. To this date, for about 21 years, there have been no new case statements on this issue. This may be caused by the diminishing frequency of Tbc cases in developed countries. Table 1 shows the spinal epidural tuberculoma cases presented in literature to date.

Griffith et al. categorized spinal tuberculoma into five types: 1) vertebral Tbc that leads to cord compression with abscess, granulation tissue or bone involvement; 2) spinal



**Figure 3.** Histopathological examination shows the granulomatous structures containing Langhans giant cells formed by epithelioid histiocytes in fibro-adipose tissue in which necrotic foci centrally.

**Table 1.** The spinal epidural tuberculoma cases presented in the literature to date

Authors	Age/Sex	Clinical presentation	Localization
Balaparameswararao 1971 <sup>[5]</sup>	25/M	Leg pain	L5–S1
Kak 1972 <sup>[9]</sup>	16/M	Loss of strength in legs	T5–T7
Burgielski 1975 <sup>[10]</sup>	Unknown	Unknown	Unknown
Ohaegbulam 1977 <sup>[8]</sup>	42/M	Loss of strength in legs	T11
Plese 1978 <sup>[11]</sup>	58/M	Leg pain	Unknown
Reichenthal 1981 <sup>[12]</sup>	70/F	Loss of strength and pain in legs	C5–T1
Chin 1983 <sup>[13]</sup>	Unknown	Spastic paraparesia	Unknown
Hamada 1991 <sup>[3]</sup>	76/F	Loss of strength in legs	T7–T10
Mantzoros 1993 <sup>[14]</sup>	Unknown	Unknown	Unknown
Bhatoe 1995 <sup>[15]</sup>	Unknown	Unknown	Unknown

tuberculoma that leads to cord compression or cauda equina syndrome with a course of extradural granulation tissue and without Tbc involvement in the bone; 3) spinal tuberculoma with a course of vascular thrombosis as a result of endarteritis of radicular arteries, and spinal cord ischemia; 4) intramedullary tuberculoma; and 5) tuberculous arachnoiditis as a result of Tbc meningitis leading to paraplegia.<sup>[6]</sup>

According to Griffith et al., the type that most frequently leads to Tbc paraplegia is the vertebra Tbc with abscess, granulation tissue or bone involvement. Our case corresponds to the 2nd type of spinal tuberculoma; spinal tuberculoma that leads to cord compression or cauda equina syndrome with a course of extradural granulation tissue and without Tbc involvement in the bone. The patient had paraparesis resulting from the pressure of extradural granulation tissue without bone involvement.

The classical characteristics of epidural spinal tuberculoma in MR imaging were first described in the literature by Hamada et al. Epidural spinal tuberculoma lesions are usually observed as more hypointense in MR imaging on T1, rather than on the spinal cord.<sup>[3]</sup> In the study by Gupta VK et al. where they investigated MR imaging indications of intramedullary tuberculoma, it was reported that imaging signs may change based on the stage of the tuberculoma, and they may be observed as isointense in early stages and as hypointense and hyperintense in later stages.<sup>[7]</sup> In our case, the spinal lesion was observed as mildly hyperintense in T1 and T2-based MR imaging sections.

In this case, the acutely occurring paraparesis, young age and MR imaging indications made us think of spinal hematoma and tumors. The patient recovered rapidly following successful surgical operation and loss of strength was reversed. Later on, oral anti-Tbc treatment was completed in nine months.

This case made us think that Tbc, which may still be seen in developing countries while having diminished globally,

should be a consideration, at least for young patients who visit clinics with spinal cord compression.

## Conclusion

The reviewed literature reported 10 cases and it was observed that new case statements have not been made for 21 years. This may be caused by the diminishing frequency of occurrence of Tbc in developed countries. Moreover, it could be useful to consider Tbc, which is still seen in developing countries, for at least young patients who visit clinics with spinal cord compression.

## Disclosures

**Informed Consent:** Written informed consent was obtained from the patient who participated in this study.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** None declared.

## References

1. Yaman M. Pathogenesis of Tuberculosis. Istanbul University, Cerrahpaşa School of Medicine Continuing Education Center, Symposium on Tuberculosis in Adults and Children. 1999;15–20.
2. Li H, Liu W, You C. Central nervous system tuberculoma. *J Clin Neurosci* 2012;19:691–5. [\[CrossRef\]](#)
3. Hamada J, Sato K, Seto H, Ushio Y. Epidural tuberculoma of the spine: case report. *Neurosurgery* 1991;28:161–3. [\[CrossRef\]](#)
4. Golden MP, Vikram HR. Extrapulmonary tuberculosis: an overview. *Am Fam Physician* 2005;72:1761–8.
5. Balaparameswararao S, Dinkar I. Intramedullary tuberculoma of the spinal cord. A case with a five year follow-up. *Indian J Med Sci* 1970;24:647–9.
6. Griffith DL, Seddon HJ, Roaf R. *Pott's Paraplegia*. London; Oxford University Press: 1956; p. 4–21.
7. Gupta VK, Sharma BS, Khosla VK. Intramedullary tuberculoma: report of two cases with MRI findings. *Surg Neurol* 1995;44:241–3. [\[CrossRef\]](#)
8. Ohaegbulam SC. Spinal extraosseous extradural tuberculo-

- ma. *Tubercle* 1977;58:97–9. [\[CrossRef\]](#)
9. Kak VK, Pani KC, Chopra JS. Epidural spinal tuberculoma presenting as 'spinal tumour syndrome'. *Tubercle* 1972;53:139–42. [\[CrossRef\]](#)
  10. Burgielski R, Lechowski S. Epidural tuberculoma of the spinal canal. *Gruzlica* 1975;43:507–8.
  11. Plese JP, Elkis LC, Nogueira RG, de Barros JE, França IC. Radicular syndrome caused by epidural tuberculous granuloma. Case report. *Arq Neuropsiquiatr* 1978;36:160–3. [\[CrossRef\]](#)
  12. Reichenthal E, Cohen ML, Shalit MN. Extrasosseous extradural tuberculous granuloma of the cervical spine: a case report and review of intraspinal granulomatous infections. *Surg Neurol* 1981;15:178–81. [\[CrossRef\]](#)
  13. Chin D, Burrow D, Edis R, Lekias J. Extrasosseous extradural tuberculous granuloma of the spine. *Surg Neurol* 1983;19:428–30. [\[CrossRef\]](#)
  14. Mantzoros CS, Brown PD, Dembry L. Extrasosseous epidural tuberculoma: case report and review. *Clin Infect Dis* 1993;17:1032–6. [\[CrossRef\]](#)
  15. Bhatoe HS. Epidural spinal tuberculoma. *Australas Radiol* 1995;39:179–81. [\[CrossRef\]](#)