

How to Cite:

Khattak, S. N., Rehman, S., Younis, M., Waleed, W., Tariq, M. U., & Aman, R. (2023). Post infectious granuloma masquerading intradural extramedullary spinal tumor: Case report. *International Journal of Health Sciences*, 7(S1), 2029–2034.
<https://doi.org/10.53730/ijhs.v7nS1.14449>

Post infectious granuloma masquerading intradural extramedullary spinal tumor: Case report

Shahid Nawaz Khattak

Associate Professor Neurosurgery Department Gomal Medical College, DI Khan, Pakistan

Sarah Rehman

Lecturer Community Medicine Department Gomal Medical College, DI Khan Pakistan

Corresponding author email: toobaumme0@gmail.com

Maria Younis

Medical Officer Neurosurgery Department Gomal Medical College, DI Khan Pakistan

Waleed

House Officer Neurosurgery Department Gomal Medical College, DI Khan Pakistan

Muhammad Usman Tariq

House Officer Neurosurgery Department Gomal Medical College, DI Khan Pakistan

Raza Aman

Assistant Professor Neurosurgery Department Gomal Medical College, DI Khan Pakistan

Abstract---Background: There are several non-neoplastic lesions which mimic intradural extramedullary spinal cord neoplasm in their radiographic and clinical presentation. Intradural extramedullary granulomas are granulomas that form within the dura mater, which is the outermost protective layer surrounding the spinal cord. Variety of infections, such as Tuberculosis or Fungal infections (histoplasmosis and coccidioidomycosis), and inflammatory conditions, such as sarcoidosis, can cause granulomas to form within the dura mater. Case description: The authors report a very rare case of intradural extramedullary non-specific inflammatory lesion of unknown origin, with no signs of infection at present. However, the patient had a

history of fever and backache 3 months back for which he was treated at periphery. He has recovered from fever but backache has gradually worsened. Conclusions: Intradural extramedullary lesions that mimic a tumor can be various and difficult to interpret. Preoperative MRI does not allow a certain diagnosis because these lesions have a very similar signal intensity pattern. Specific tests for infective pathologies are useful for diagnosis, but histological examination is essential for establishing a certain diagnosis. In our case, the final histological examination and the specific tests that we performed have not cleared our doubts regarding the nature of the lesion that remains controversial.

Keywords---spinal tumor, post infectious, intradural extramedullary granulomas.

Introduction

There are several non-neoplastic lesions which mimic intradural extramedullary spinal cord neoplasm in their radiographic and clinical presentation (1). Intradural extramedullary granulomas are granulomas that form within the dura mater, which is the outermost protective layer surrounding the spinal cord. These granulomas can be caused by a variety of infections and other conditions, including:

- Tuberculosis: Tuberculosis is a bacterial infection caused by *Mycobacterium tuberculosis* that can cause granulomas to form within the dura mater. (2)(3)(6).
- Fungal infections: Some types of fungal infections such as *cryptococcus*, *histoplasmosis* and *coccidioidomycosis*, can cause granulomas to form within the dura mater. (4)(6).
- Inflammatory conditions: Inflammatory conditions, such as *sarcoidosis* can cause granulomas to form within the dura mater. (5)(7).

Although biopsy may be indicated in many cases, an erroneous diagnosis of intradural extramedullary neoplasm can often be eliminated pre-operatively.

Case report

A 17-year-old male patient presented to the neurosurgery clinic with 3 months history of worsening back pain and weakness in bilateral lower limbs. He reported that the pain was constant and worsened with activity, and that he had noticed a decrease in strength and sensation in both lower limbs in the past few weeks. The patient has insignificant past medical history. He had no history of tobacco or substance abuse, and had not recently traveled to any areas with a high prevalence of tuberculosis. On physical examination, the patient had mild tenderness to palpation over his lower thoracic spine, decreased sensation in lower limbs, muscle power was 2/5 in both lower limbs and he was unable to walk. He had normal strength and sensation in his upper extremities. An MRI of the thoracic spine was obtained, which revealed diffuse leptomeningeal nodular

hypointensity extending from T8 to T10. It showed low T1-T2 signals causing central canal stenosis and cord compression. Neural foramina are spared. Post contrast study shows extensive enhancement of thickened leptomeninges. There is possibility of leptomeningeal neoplastic process which may be primary or secondary. The neurosurgeon recommended surgical removal of the mass in order to alleviate the patient's symptoms and prevent further compression of the spinal cord. The patient underwent excision of the mass at the level T8 -T10. On 3rd post op day, patient's neurology improved to +4 power in both lower limbs. Tissue sample was sent for histopathological analysis which revealed an intradural extramedullary post infectious granuloma showing dense fibroconnective tissue with aggregates of chronic inflammation including CD-68+ macrophages and lymphocytes (CD-3 > CD-20). There is no evidence of neoplasm. Sample is negative for microorganisms on H&E and GMS stains. Further testing, including a tuberculin skin test and PCR testing for *Mycobacterium tuberculosis*, were negative. Based on the pathology results, the patient was started on a 6-month course of oral antibiotics. He made a full recovery from the surgery, and his back pain and weakness in bilateral lower limbs resolved within a week. He was able to return to his normal activities without any limitations.

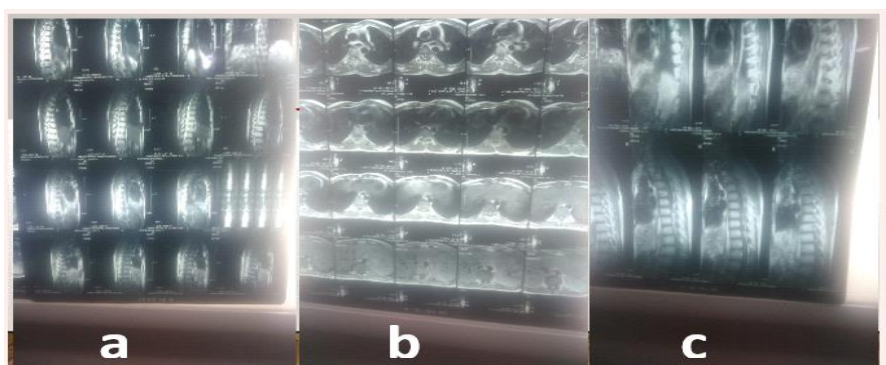


Figure 1

Preoperative MRI: sagittal (a/c) and axial (b) T1 weighted images with contrast showing intradural extramedullary spinal lesion at level T8-T10.

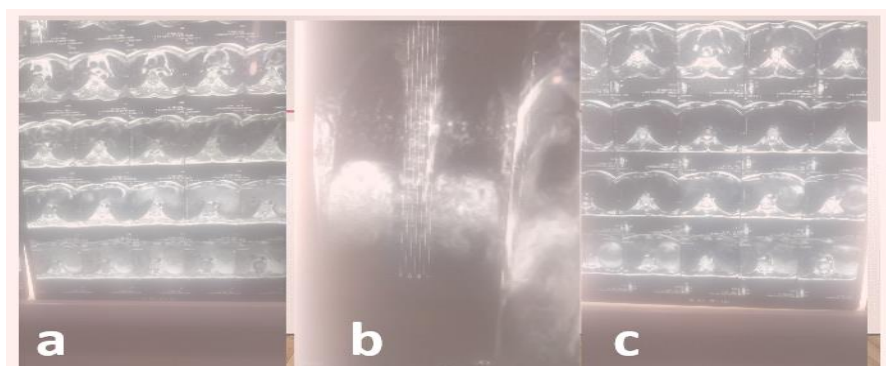


Figure 2

Preoperative MRI: axial T1 weighted images with contrast showing intradural extramedullary spinal lesion.

Discussion

We will discuss in detail the differential diagnosis we considered:

Neoplastic lesions

Spinal tumors comprise 5-10% of all CNS tumors with an estimated 70-80% being intradural extramedullary in location (9). Intradural extramedullary tumors arise from arachnoid matter (Meningiomas), nerve root (Schwannomas, Neurofibromas), Spinal cord base (Filum Terminale, Ependymoma) (8)(9). Because the clinical characteristics of neoplastic and non-neoplastic spinal cord lesions may be very similar, we rely on MRI for making a correct diagnosis. The MRI makes it possible to locate tumours in the extradural, intradural or extramedullary spaces, or within the cord itself; the tumour's location and its MRI characteristics may actually identify its specific type. In some instances, however, it is quite difficult to identify the exact nature of the pathological changes without a complete and detailed history and clinical examination. In addition, due to the extreme heterogeneity of the symptoms and radiological aspects of these lesions, which causes many difficulties in differential diagnosis, it's very important to perform a histological examination, and an extemporaneous histological finding during surgery. Cytological analysis of our lesion did not show the presence of glial-type tumoral cells. In addition, the non-neoplastic nature of the lesion was confirmed by isolation, using immunohistochemical techniques of macrophages and lymphoid cells. This histological pattern indicated the possibility of a granulomatous inflammatory intradural extramedullary lesion.

Granulomatous inflammatory and infectious lesions

Granulomatous lesions affecting the spinal cord are principally tuberculosis, sarcoidosis, and fungal infections. In our case, the postoperative performance of Mantoux test, PCR for AFB and GMS test excluded the possibility of tuberculosis and fungal infection. Histological evaluation, in our case, did not show non-caseating granuloma, hence, excluded the possibility of sarcoidosis. In our experience, it was considered appropriate to perform decompression surgery as soon as the symptoms given by compression of cord manifested by worsening paraparesis or paraplegia. All of that is supported later by histological analysis that can guide intraoperative work towards the complete removal or to a simple biopsy then integrated with medical therapy.

Conclusion

Intradural extramedullary lesions that mimic a tumor can be various and difficult to interpret. Preoperative MRI does not allow a certain diagnosis because these lesions have a very similar signal intensity pattern. Specific tests for infective pathologies such as tuberculosis, fungal infections besides specific tests for sarcoidosis, are useful for diagnosis. Histological examination is often essential for establishing a certain diagnosis. In our case the worsening of symptoms oriented us to a decompressive surgical strategy and total removal of the lesion, also in relation to the extemporaneous histological examination: this proved correct because of the drastic improvement observed in symptomatology and the total

regression, without recrudescence, of symptoms and disease at 1-month follow-up. The final histological examination and the specific tests that we performed have not cleared our doubts regarding the nature of the lesion that remains controversial.

Consent statement

Written informed consent was obtained from the patient for preparation of this case report and any accompanying images.

Competing interests

The authors have not been influenced by any financial or personal relationship with people or organizations in preparation of this study.

References

1. Brinar M, Rados M, Habek M, Poser MC. Enlargement of the spinal cord: Inflammation or neoplasms? *Clin Neurol Neurosurg*. 2006;108:284–289. doi: 10.1016/j.clineuro.2005.11.023. [PubMed] [CrossRef] [Google Scholar]
2. Garg, R. K., & Somvanshi, D. S. (2011). Spinal tuberculosis: a review. *The journal of spinal cord medicine*, 34(5), 440–454.
3. S. Cruickshank & R. A. Johnston (1996) Intradural, extramedullary spinal cord compression from tuberculous granuloma, *British Journal of Neurosurgery*, 10:1, 93-95
4. Viswanathan S, Lai C, Yusoff S, Rose N (2017) Spinal Cryptococcoma Mimicking Spinal Cord Tumor Complicated by Cryptococcal Meningitis in an Immunocompetent Patient. *J Neurol Neurophysiol* 8: 432.
5. Ishiwata S, Iizuka Y, Mieda T, Hirato J, Koshi H, Kakuta Y, Honda A, Sonoda H, Tajika T, Chikuda H. Intradural Extramedullary Spinal Sarcoidosis Mimicking Meningioma. *Case Rep Orthop*. 2019 Aug 5;2019:3592980
6. Bucy, P. C., & Oberhill, H. R. (1950). Intradural Spinal Granulomas, *Journal of Neurosurgery*, 7(1), 1-12. Retrieved Jan 8, 2023, from <https://thejns.org/view/journals/j-neurosurg/7/1/article-p1.xml>
7. Bose, B. (2002). Extramedullary sarcoid lesion mimicking intraspinal tumor. *The spine journal : official journal of the North American Spine Society*, 25, 381-5 .
8. Ottenhausen, M., Ntoulas, G., Bodhinayake, I., Ruppert, F. H., Schreiber, S., Förchler, A., Boockvar, J. A., & Jödicke, A. (2019). Intradural spinal tumors in adults-update on management and outcome. *Neurosurgical review*, 42(2), 371–388.
9. Intradural Extramedullary Spinal Neoplasms: Radiologic-Pathologic Correlation, Kelly K. Koeller and Robert Y. Shih, *RadioGraphics* 2019 39:2, 468-490