



A Rare Case of Calcifying Pseudoneoplasms of the Neural Axis in Lumbar Spine

Venkatesan Ravi¹ Pammi Srinath^{1,✉}

¹Department of Spine Surgery, Apollo Hospitals, Chennai, India

Address for correspondence Pammi Srinath, MBBS, DNB, Department of Spine Surgery, Counter No, 14, Apollo Hospitals, No. 21, Greams Road, off Greams Lane, Thousand Lights, Chennai 600006, India (e-mail: drsrinath.p@gmail.com).

Indian J Neurosurg 2022;11:177–178

Abstract

Calcified pseudoneoplasm of the neural axis (CAPNON) is a very rare, non-neoplastic, calcified pathological entity occurring anywhere in the central nervous system (CNS). Overall, less than 100 cases were reported, of which less than 50% were from the spine. We present a case of a 53-year-old lady with a history of L4–L5 radiculopathy, known case of rheumatoid arthritis, and with no previous history of trauma, tumor or infection. MRI showed calcified intradural mass, extending into the right lateral recess, which was isointense on T1- and T2-weighted sequences. Fenestration on right side along with complete resection of the lesion was done. Mass was found adherent around the dura, extending in to right L5 nerve root foramen, and histopathological examination confirmed the diagnosis of CAPNON. At 6 months follow-up, the patient is pain-free with no radicular symptoms. This entity should be taken in as differential in cases of calcified intraspinal and intracranial lesions. Surgical resection is the treatment of choice.

Keywords

- ▶ CAPNON
- ▶ non-neoplastic
- ▶ calcified mass

Introduction

Calcified pseudoneoplasm of the neural axis (CAPNON) is a very rare, non-neoplastic calcified pathological entity occurring anywhere in the central nervous system (CNS). Overall, less than 100 cases were reported, of which less than 50% were from the spine.¹

They are also known as fibro-osseous lesions of the CNS. The exact etiology is still unknown, but it is believed to be reactive in nature. It was first described by Rhodes and Davis in 1978.² CAPNON may occur in the spine and also intracranially, although incidence in the latter is more common. We present a case of CAPNON in the spine, considering clinical presentation, imaging, histopathology, differentials, treatment options, and outcome. These lesions are benign in nature and the symptoms are due to mass effect. It is important to distinguish them from more neoplastic lesions, as complete resection is curative.

Case Report

We present a case of a 53-year-old female with complaints of back pain, radiating to right lower limb, with

no neurological deficit or gait instability. The patient is a known case of rheumatoid arthritis with no previous history of trauma, tumor or infection. On examination, there was tenderness at the L4–L5 level, straight leg raising test was negative with power 5/5 in both lower limbs, and deep tendon reflexes in the normal range.

MRI showed calcified intradural extramedullary mass, extending into the right lateral recess, which was isointense on T1- and T2-weighted sequences (▶**Fig. 1A, B**). Hemilaminectomy was done on the right side, mass was found around the dura, and adherent extending in to right L5 nerve root foramen. Mass was round and firm. Complete resection of the lesion was done. Histopathological examination showed multiple fragments of fibrocollagenous and degenerated tissue with foci of calcification, granular material surrounded by inflammatory cells composed of histiocytic aggregates and granuloma, and a giant cell reaction suggestive of calcified pseudoneoplasm of the neural axis (▶**Fig. 2**).

At 6 months follow-up, the patient is pain-free with no radicular symptoms.

published online
April 19, 2021

DOI <https://doi.org/10.1055/s-0040-1719221>
ISSN 2277-954X.

© 2021. Neurological Surgeons' Society of India

This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial-License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

Thieme Medical and Scientific Publishers Pvt. Ltd. A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

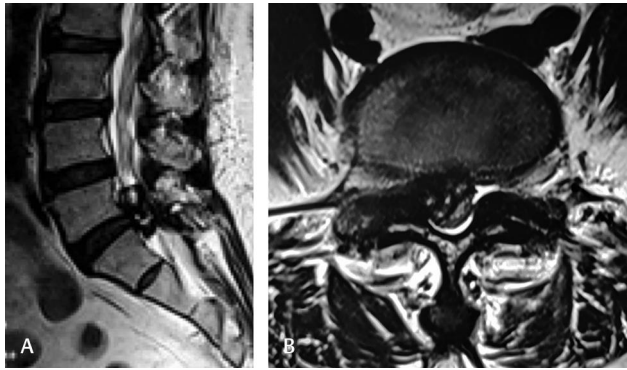


Fig. 1 MRI of lumbar spine, T2-weighted image—sagittal section (A) and axial section (B) showing the calcified mass at L4–L5 level extending in to the right L5 recess.

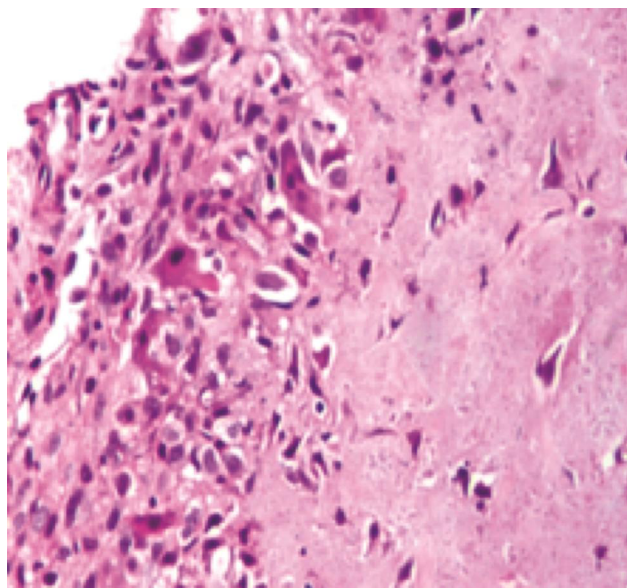


Fig. 2 Histopathological examination of epidural tissue from lumbar spine. Hematoxylin and eosin (H&E) staining with magnification—400x, showing histiocytes and giant cells at the periphery of a chondromyxoid area.

Discussion

CAPNON is a lesion of the CNS. Although there is no age predominance, occurrence is more among the male population.³⁻⁵ They are present with more prevalence in the brain than in the spine. Even in spine, presentation in lumbar spine is very rare. Symptoms in spine include local pain, or radiculopathy, and are usually due to mass effect. It is difficult to find on X-rays. In CT scan, there is an appearance of calcification without bony erosion.⁶⁻⁸ No contrast enhancement is reported. In MRI, lesions usually appear hypointense in both T1-weighted and T2-weighted sequences, but they may also present as isointense lesions. Contrast usually shows enhancement, which may be homogenous, nonhomogenous, or involve the lesion rim.^{1,7} Differential diagnosis may be a herniated calcified disc, meningioma, chordoma, schwannoma, or tuberculosis.^{3,9}

Histopathologically, there is a chondromyxoid matrix with variable amounts of fibrous tissue, and calcification with foreign body type giant cells.³ A complete resection is the treatment. There are no recommendations for any chemotherapy or radiotherapy after excision.¹

Recurrence in case of CAPNON is very unlikely. According to Stienen et al,¹ 92.3% of patients with spinal CAPNON and 93.7% of patients with intracranial CAPNON showed no signs of recurrence. Although many studies recommend complete resection, in terms of recurrence, there was no significant difference between complete and incomplete resection.¹

Conclusion

CAPNON in lumbar spine is a rare presentation. This entity should be taken as differential in cases of calcified intraspinal and intracranial lesions. Even though CT and MRI give a clue about the diagnosis, confirmation is only based on histopathology. Surgical resection is the treatment of choice.

Conflict of Interest

None declared.

Acknowledgements

The authors are thankful to Dr Ashok Parameswaran, Consultant Histopathology and Chief of Laboratory Services, Apollo Hospitals, Chennai for his insight and expertise with regard to the diagnosis of this case.

References

- 1 Stienen MN, Abdulazim A, Gautschi OP, Schneiderhan TM, Hildebrandt G, Lücke S. Calcifying pseudoneoplasms of the neuraxis (CAPNON): clinical features and therapeutic options. *Acta Neurochir (Wien)* 2013;155(1):9–17
- 2 Rhodes RH, Davis RL. An unusual fibro-osseous component in intracranial lesions. *Hum Pathol* 1978;9(3):309–319
- 3 Bertoni F, Unni KK, Dahlin DC, Beabout JW, Onofrio BM. Calcifying pseudoneoplasms of the neuraxis. *J Neurosurg* 1990;72(1):42–48
- 4 Mohapatra I, Manish R, Mahadevan A, Prasad C, Sampath S, Shankar SK. Calcifying pseudoneoplasm (fibro osseous lesion) of neuraxis (CAPNON) - a case report. *Clin Neuropathol* 2010;29(4):223–226
- 5 Jun C, Burdick B. An unusual fibro-osseous lesion of the brain. Case report. *J Neurosurg* 1984;60(6):1308–1311
- 6 Garen PD, Powers JM, King JS, Perot PL Jr. Intracranial fibro-osseous lesion. Case report. *J Neurosurg* 1989;70(3):475–477
- 7 Aiken AH, Akgun H, Tihan T, Barbaro N, Glastonbury C. Calcifying pseudoneoplasms of the neuraxis: CT, MR imaging, and histologic features. *AJNR Am J Neuroradiol* 2009;30(6):1256–1260
- 8 Liccardo G, Lunardi P, Menniti A, Floris R, Pastore FS, Fraioli B. Calcifying pseudo-tumor of the spine: description of a case and review of the literature. *Eur Spine J* 2003;12(5):548–551
- 9 Moser FG, Tourje EJ, Pressman BD, Blinderman EE. Calcifying pseudotumor of the cervical spine. *Am J Neuroradiol* 1994;15(3):580