Article published online: 2023-01-09

The Greater Superficial Petrosal Nerve Schwannoma: A Brief Report

Mohammad Sarwar[1] Laxminarayan Tripathy[1] Gobinda Pramanick[2] Sanhita Chatterjee[3]

[1] Medica Institute of Neurological Diseases, Medica Superspecialty Hospital, Kolkata, West Bengal, India
[2] Department of Radio-diagnosis, Apollo Gleneagles Hospital, Kolkata, West Bengal, India
[3] Department of Pathology, Medica Superspecialty Hospital, Kolkata, West Bengal, India

Address for correspondence Mohammad Sarwar, MBBS, MS, Medica Institute of Neurological Diseases, Medica Superspecialty Hospital, 9 /C/1, Picnic Garden Road, Aman Residency, Block-B, 1st floor, Kolkata, West Bengal, 700039, India (e-mail: drsarwar262@gmail.com).

Indian J Neurosurg

Abstract

Schwannoma of greater superficial petrosal nerve (GSPNS) is a rare tumor of middle cranial fossa. We report a case of GSPNS presenting with twitching of face and eyelid. We describe its characteristic radiological appearance. Total excision of the GSPNS was done through a subtemporal approach with complete relief of symptoms. GSPNS is a rare tumor of middle cranial fossa. Preoperative diagnosis may be misleading. A high index of suspicion is important to make a correct diagnosis and choose an appropriate approach for surgery as it is amenable to complete excision.

Keywords

- greater superficial petrosal nerve
- GSPN
- schwannoma

The greater superficial petrosal nerve schwannoma (GSPNS) is a rare middle cranial fossa lesion and a very rare cranial nerve sheath tumor. Varying degrees of facial nerve involvement have been reported in such cases. We present a case of GSPNS, presenting with intermittent attacks of facial twitching, which was excised through a subtemporal craniotomy.

A 32-year-old male patient presented with a history of intermittent left upper eyelid and facial twitching for the last 2 years along with two episodes of drooling of liquids from left angle of mouth from which he recovered each time in short period. He also complained of left eye dryness and foreign body sensation. General physical and neurological examination did not reveal any abnormalities. He had normal facial nerve functions. Contrast-enhanced computed tomographic scan of brain showed a well-defined extra-axial lesion in left middle cranial fossa, with patchy calcification, heterogeneous enhancement, and adjacent bony rarefaction along the course of GSPN in the region of facial hiatus (►**Fig. 1A, B**).

Magnetic resonance imaging demonstrated a T2 hyperintense lesion in left middle cranial fossa showing heterogeneous enhancement and extending to left Meckel's cave (►**Fig 2A, B**).

We performed neuronavigation-guided left subtemporal craniotomy. Tumor was approached extradurally. Dura had to be opened to resect the tumor with the capsule that was part of the middle fossa floor dura mater. The GSPN was not seen separately at surgery, and we believe that it might have been destroyed by the tumor, which was extending along its whole length from the geniculate ganglion region up to the foramen lacerum (►**Fig. 3A, B**).

Postoperatively, he developed House-Brackmann grade II facial nerve dysfunction in the left side. Histopathology section showed cellular compact Antoni A areas and hypocellular Antoni B areas with many hyalinized blood vessels and foam cell aggregates (►**Fig. 4A**). Immunohistochemistry (SOX-10 and S-100 [neural markers] were positive, epithelial membrane antigen (EMA) [meningioma marker], glial fibrillary acidic protein

DOI https://doi.org/10.1055/s-0042-1759490.
ISSN 2277-954X.

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

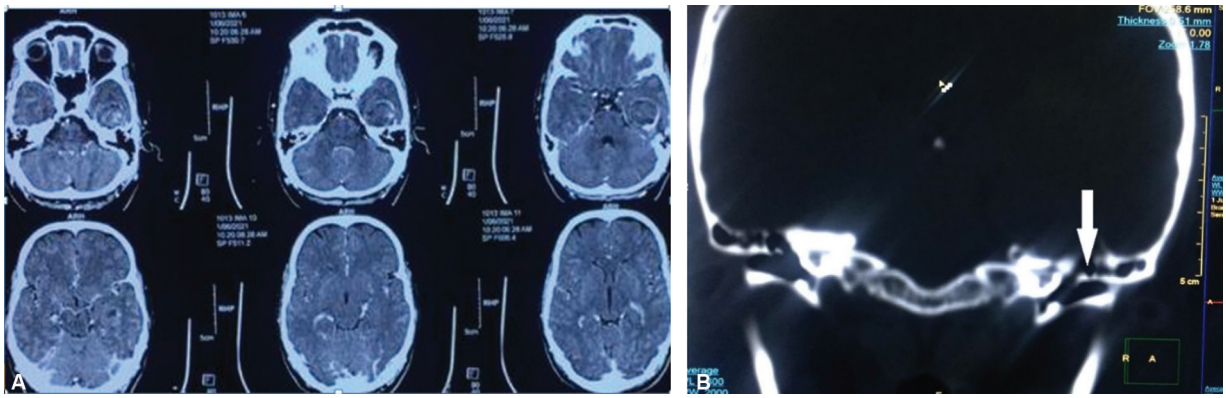

Fig. 1 **(A)** Contrast-enhanced computed tomographic scan of brain showing well-defined extra-axial lesion in left middle cranial fossa, with heterogeneous enhancement and **(B)** erosion of the anterior superior surface of the petrous bone (the course of greater superficial petrosal nerve, white arrow).

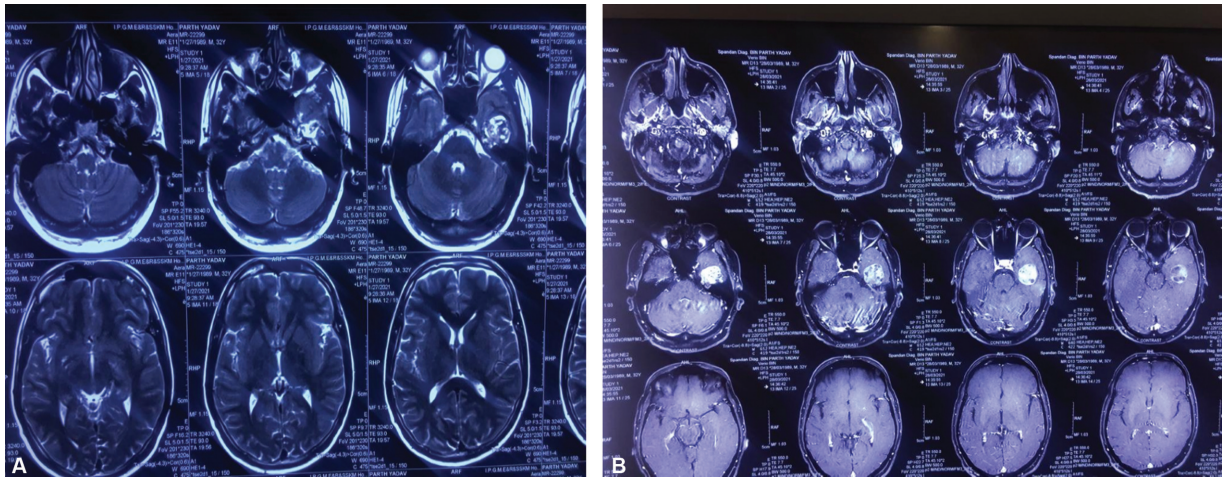

Fig. 2 (A, B) T2- and T1 postcontrast magnetic resonance imaging showing T2 hyperintense lesion in left middle fossa with heterogeneous enhancement extending up to Meckel's cave.

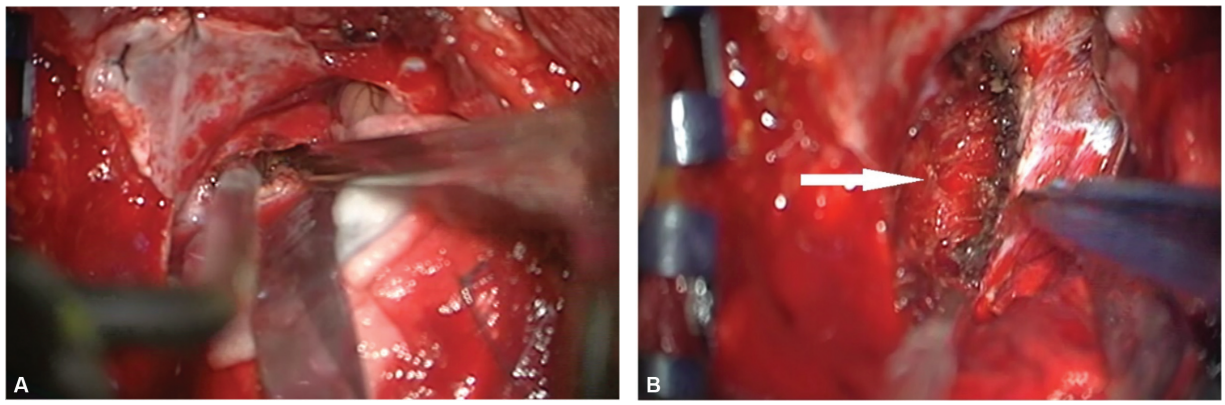

Fig. 3 (A) Tumor exposed after opening of dura. (B) Middle fossa floor after tumor excision (white arrow).

(GFAP), and oligodendroglial lineage marker 2 (OLIG 2) [glial markers] were negative and Ki-67 [proliferation marker] was 4% in few areas) confirmed it to be a schwannoma (►**Fig. 4B**).

GSPNS is a very rare type of facial nerve schwannoma comprising 0.8% of all petrous bone lesions.[1] First case of GSPNS was described by Woodruff et al in 1981.[2] GSPN is the first branch of the facial nerve arising from the geniculate ganglion.[3]

Usual presenting symptoms are facial paresis, hearing loss or disturbances, headache, and eye pain.[4] Dry eye, although pathognomonic for GSPNS, may not be present in all cases, and only seen if parasympathetic nerve fibers have been destroyed by the tumor.

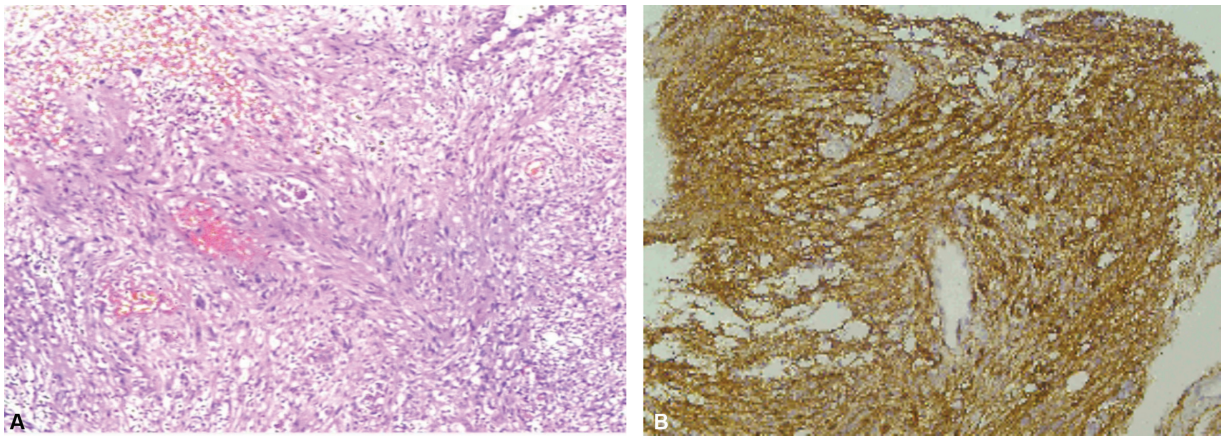

Fig. 4 **(A)** Hematoxylin and eosin section showing cellular compact Antoni A areas and hypocellular Antoni B areas with many hyalinized blood vessels and foam cell aggregates. **(B)**S-100 immunostain positive.

GSPNS is a rare tumor of middle cranial fossa. Preoperative diagnosis may be misleading. A high index of suspicion is imperative to make a correct diagnosis and choose an appropriate approach for surgery as it is amenable to complete excision and carries a good long-term outcome.

Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understand that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Financial Support and Sponsorship

Nil.

Conflicts of interest

None.

References

1 Aihara N, Yamada K, Matsuda F, Murakami S. Neurinoma of the greater superficial petrosal nerve developed acute facial palsy: case report and review of the literature. Skull Base 2001;11(01): 77–80
2 Woodruff JM, Godwin TA, Erlandson RA, Susin M, Martini N. Cellular schwannoma: a variety of schwannoma sometimes mistaken for a malignant tumor. Am J Surg Pathol 1981;5(08): 733–744
3 Swain SK. Greater superficial petrosal nerve and its surgical importance: a review. Int J Res Med Sci 2021;9:930–934
4 Amirjamshidi A, Hashemi SM, Abbassioun K. Schwannoma of the greater superficial petrosal nerve. J Neurosurg 2010;113(05): 1093–1098

