

Intractable Headache due to Schwannoma in the Right Thoracic Paraspinal Space

LEARNING POINT FOR CLINICIANS

A schwannoma on the sympathetic chain can produce headache through a mass effect. To enable appropriate treatment planning in patients with severe headache, it is important to exclude the rare but serious possibility of a paraspinal tumor.

A 49-year-old male disease came to our hospital emergency department complaining of a first-time severe headache that had persisted for 1 week with no systemic disease history. The headache persisted from minutes to hours and attacked several times a day. The intensity of headache could reach 9 points of numerical rating scale. Neck stiffness and nausea were also found. He had a 10 pack-year history. Funduscopic examination showed no papilledema of both eyes. Blood pressure was around 120/80 mmHg during admission. A chest radiograph revealed a lesion on the medial aspect of the upper lobe of his right lung over the level of 2nd thoracic vertebrae. Upon being admitted, brain magnetic resonance imaging (MRI) showed no lesions, and blood tests yielded normal results for immunological markers and no elevated tumor markers. Normal opening pressure was noted during lumbar puncture and cerebrospinal fluid (CSF) analysis revealed no white blood cells, no red blood cells, a high CSF glucose level (99 mg/dL), a normal CSF protein level (30 mg/dL), and no remarkable biochemical findings. A chest computed tomography examination revealed an enhancing nodule (~2.5 cm) suggestive of a neurogenic tumor in the right paraspinal region in the 2nd to 3rd intercostal space. A chest MRI scan showed a right paraspinal tumor with mixed signal intensity on T2-weighted images consistent with a solitary fibrous tumor, neurofibroma, or other neurogenic tumor [Figure 1a].

The patient's headache was treated pharmacologically with dihydroergotamine (10 mg/day), prednisolone (40 mg/day), and flunarizine (10 mg/day), and the tumor was later resected by a chest surgeon employing a video-assisted thoracoscopic approach. A smooth, round mass bulging from the posterior pleura had originated from the right sympathetic trunk but was removed without producing Horner syndrome. Pathology indicated that the tumor was a schwannoma [Figure 1b] characterized by proliferating spindle cells with wavy nuclei forming Antoni A and B patterns along with hyalinized vessels and positive immunohistochemical stains of S-100 and NSE (weakly positive). In the several months following the operation, the patient has shown no signs of neurological sequelae, and his headache symptoms have been alleviated.

Common etiologies of intractable headache include cerebralvascular disease (e.g., stroke, aortic dissection,

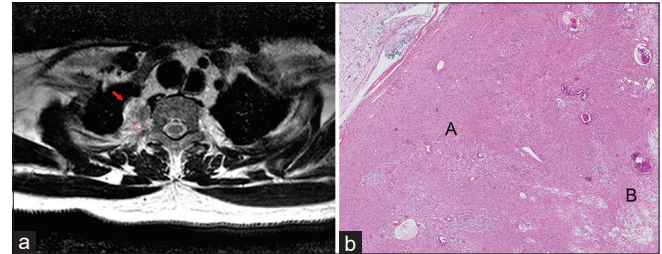


Figure 1: (a) T2-weighted magnetic resonance imaging scan revealing a mixed signal intensity lesion (arrow) with an "owl's eye" appearance budding from the right sympathetic trunk (circle). (b) Photomicrograph of a soft-tissue schwannoma section (HE × 40) showing a relatively well encapsulated mass lesion consisting of proliferating spindle cells with wavy nuclei forming compact Antoni A (Region A) and loose Antoni B (Region B) patterns along with hyalinized vessels

aneurysm, arteriovenous malformation, central venous thrombosis, or subdural arachnoid hemorrhage), meningitis, status migraines, tumors of the head and neck, abnormal intracranial cerebral pressure, iatrogenic, and psychogenesis.¹ Paraspinal tumors of the neck can cause severe headache due to compression of the dorsal root of a sensory nerve or compression of the dura mater of the spine.² Abdominally located paraspinal tumors can also compress the adrenal gland, causing epinephrine release, and severe hypertension as well as headache.³ Paraspinal tumors over the cauda equina may relate to papilledema and headache due to increased intracranial pressure.⁴ Headache due to paraspinal tumors of the thorax is rare. The cause of headache in this case may be slight compression of the sympathetic chain, insufficient to cause Horner syndrome.⁵ A schwannoma in association with a nerve sheath can have a mass effect on peripheral neurons and soft tissues.⁶ Usually, neurogenic tumors do not cause noticeable symptoms in the posterior mediastinum or chest wall.⁷ Our patient's headache improved dramatically after the tumor removal. Headache due to compression can also be alleviated with high-potency oral steroids, ergotamine derivatives, and selective calcium channel antagonists. If a patient with intractable headache has abnormal chest radiography findings, further imaging should be pursued. To facilitate treatment planning and prevent complications in patients with severe headache, it is important to exclude the rare but serious possibility of a paraspinal tumor.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his

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consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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