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# Totally Cystic Schwannoma of the Tenth Cranial Nerve Mimicking an Epidermoid

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**Summary:** A rare case of a vagus nerve schwannoma exhibited an atypical MR feature, ie, it did not enhance after administration of contrast medium; however, MR did show the extent of the tumor, its configuration, and cyst-like contents.

**Index terms:** Schwannoma; Nerves, vagus (X); Brain neoplasms, magnetic resonance

Schwannomas are usually characterized by a mass that displays rapid and intense contrast enhancement on computed tomography (CT) and magnetic resonance (MR) imaging. Although some cases are associated with cyst formation, a solid component is nearly always visualized.

Schwannomas can be associated with any nerve. Schwannomas of the ninth, 10th, and 11th cranial nerves, also called neurinomas of the jugular foramen nerves, however, are very rare compared with the common eighth cranial nerve schwannomas (acoustic neuromas) (1–3). In the literature, these cases are typified by widening of the affected jugular foramen (4), although this feature is absent in purely intracisternal cases.

We present a case of a totally cystic schwannoma of the tenth cranial nerve, in which the MR appearance markedly resembled that of an epidermoid.

## Case Report

A 72-year-old woman presented with a history of hoarseness for 2 months and a mild headache in the vertex for 1 month. The physical examination showed paralysis of the left vocal cord. No other neurologic defects were found except for diminished hearing bilaterally. She was examined on an MR imager operating at 1.5 T and was found to have a cystic extraaxial mass in the lateral paramedullary cistern. On axial and sagittal T1-weighted images, the tumor showed a relatively well-defined lobulated contour and homogeneous low-signal intensity, of slightly

higher intensity than cerebrospinal fluid (CSF) (Fig. 1). The tumor caused mild mass effect on the medulla. No enlargement of the jugular foramen or skull base erosion was seen. The tumor was slightly hyperintense to CSF on proton-density sequence and isointense with CSF on T2-weighted sequence and, therefore, difficult to delineate (Fig. 1C). After administering 0.1 mmol/kg of Gd-DTPA, axial and sagittal T1-weighted images showed no contrast enhancement except for three tiny punctate foci of enhancement within the tumor, which were presumed to be vessels enveloped by the tumor or reactive dura (Fig. 1D).

Surgery was performed via a suboccipital craniotomy. An expansile mass was found attached to cranial nerve IX, X, and XI and the left cerebellar hemisphere. The wall of the tumor was of the consistency of rather thick arachnoid and the material inside the cyst was gelatinous clear fluid. The cyst was opened and had multiple components, most of which communicated with each other. The 10th cranial nerve could not be clearly identified between the ninth and the 11th cranial nerves and the brain stem. The tumor was totally resected with sacrifice of the somewhat degenerated fibers of the 10th nerve. The cystic contents and the resected tumor wall were sent to neuropathology and a benign schwannoma (Antoni type B) was diagnosed.

## Discussion

Schwannomas are usually easily diagnosed when an enhancing mass is noted attached to a specific cranial nerve in a patient with cranial nerve palsy. This case is unusual in two ways. First, schwannomas of the 10th cranial nerve are uncommon. Second, totally cystic schwannomas are extremely rare.

In this case, MR imaging clearly depicted the tumor extent, which was restricted to the cisterns. The tumor had a slightly higher signal intensity than CSF on T1-weighted images, due to the difference between its gelatinous content and CSF. The nodular configuration of the lesion, combined with its signal intensity resembling CSF

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Fig. 1. A, Sagittal T1-weighted image (TR/TE/excitations:500/20/2) shows the tumor (arrow) to have slightly higher signal intensity than CSF.

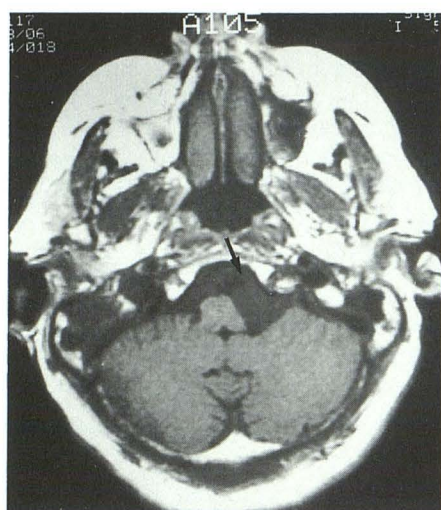
B, On axial T1-weighted image (500/20/4), the tumor (arrow) has a relatively well-defined lobulated contour and homogeneous low signal intensity. Mild mass effect on the medulla at the lateral paramedullary cistern is seen.

C, On this T2-weighted image (2500/90/1), the tumor is isointense with CSF and is difficult to delineate.

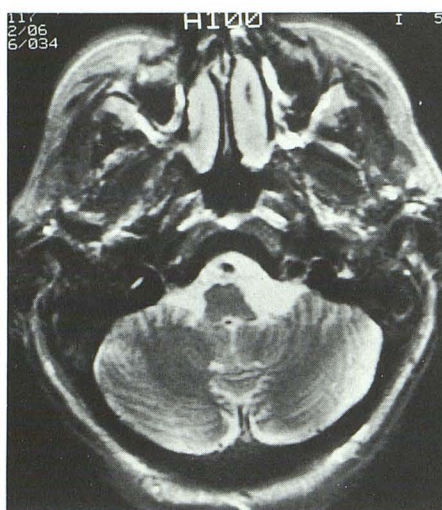
D, Axial T1-weighted image (500/20/4) after the administration of 0.1 mmol/kg of Gd-DTPA shows no contrast enhancement of the tumor except for three small high-intensity foci within the tumor (small arrows), which were initially interpreted to be vessels enveloped in the tumor or reactive dura.



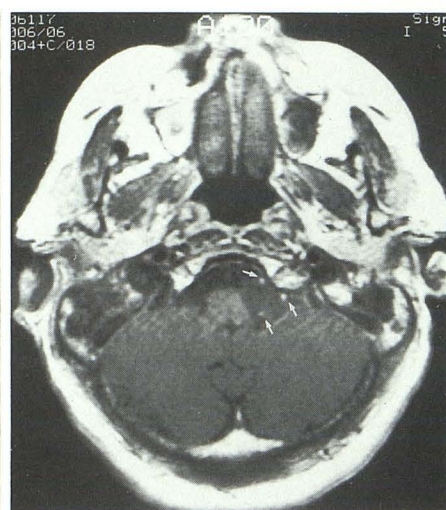
A



B



C



D

and its lack of enhancement, suggested the diagnosis of epidermoid (5). Arachnoid cyst was considered less likely because of the nodular indentation of the mass onto the brain stem. Since the tumor had no enhancing solid component, other extraaxial tumors, such as neuroma or meningioma, were felt to be less likely, although in retrospect, the three tiny foci of enhancement, presumed to represent vessels or dura, could have been due to punctate tumor nodules. In the correct clinical setting, racemose cysticercosis could also have been included in the differential diagnosis (6).

In conclusion, in this case of a totally cystic schwannoma originating from the 10th cranial nerve, MR accurately demonstrated the extent of the tumor, its nodular configuration, and its homogeneous cyst-like contents. The lack of a

significant enhancing solid component, however, made it very difficult to give a correct preoperative diagnosis.

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