

Tentorial Schwannoma in a 64-Year-Old Female

—Case Report—

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Abstract

A 64-year-old woman presented with the history of transient global amnesia. Magnetic resonance imaging with contrast medium showed a lobulated heterogeneously enhanced cystic lesion attached to the superior surface of the right tentorium, indenting the right temporal lobe laterally and midbrain medially. A small part of the lesion was located under the right tentorium and did not involve the right trigeminal nerve. The lesion was subtotally resected via the subtemporal approach and did not affect the trochlear and trigeminal nerves. Histological examination showed that the lesion was schwannoma. Intracranial schwannomas usually arise from the cranial nerves. The present case of tentorial schwannoma not associated with the cranial nerves is extremely rare. Schwannoma should be included in the differential diagnosis of tumors arising from the tentorium.

Key words: schwannoma, tentorium, tentorial nerve, subtemporal approach, supratentorial schwannoma

Introduction

Schwannomas represent 8% of intracranial tumors and account for about 80–90% of tumors in the cerebellopontine angle.²⁾ Intracranial schwannomas arise most commonly from the vestibular nerve, less frequently from the trigeminal nerve and the facial nerve, and rarely from the vagus and the glossopharyngeal nerve.²⁾ Schwannomas of the central nervous system not associated with cranial nerves are extremely rare. We present the case of a 64-year-old female with a tentorial schwannoma attached to the tentorium cerebelli and affecting the right temporal lobe and midbrain.

Case Report

A 64-year-old woman without stigmata of neurofibromatosis presented with a history of transient global amnesia. Physical examination showed she was neurologically intact. Computed tomography without contrast medium showed a large cystic component attached to the superior surface of the right tentorium, but no hyperostosis or erosion in the adjacent bone. Magnetic resonance (MR) imaging with contrast medium showed a lobulated heterogeneously enhanced cystic mass along the superior aspect of the tentorium with no involvement of the right trigeminal nerve, and T₁-weighted (D), T₂-weighted (E), and fluid-attenuated inversion recovery (F) magnetic resonance images without contrast enhancement showing peritumoral edema.

not involve the right trigeminal nerve. The lesion appeared slightly hypointense to the brain on T₁-weighted imaging, isointense to the brain on T₂-weighted imaging,

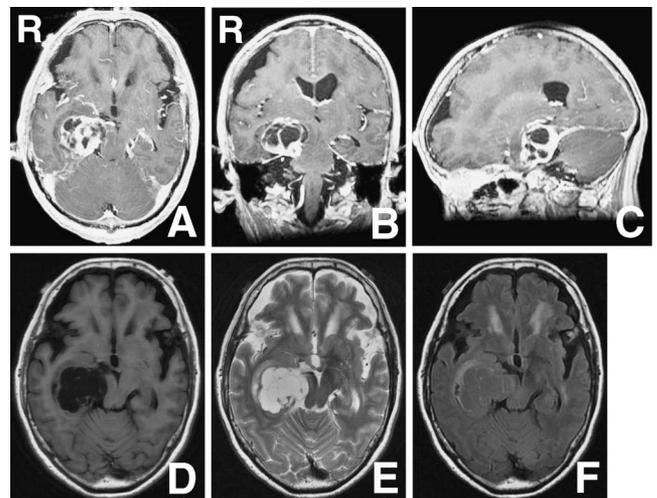


Fig. 1 Axial (A), coronal (B), and sagittal (C) T₁-weighted magnetic resonance images showing a heterogeneously enhanced cystic mass along the superior aspect of the tentorium with no involvement of the right trigeminal nerve, and T₁-weighted (D), T₂-weighted (E), and fluid-attenuated inversion recovery (F) magnetic resonance images without contrast enhancement showing peritumoral edema.

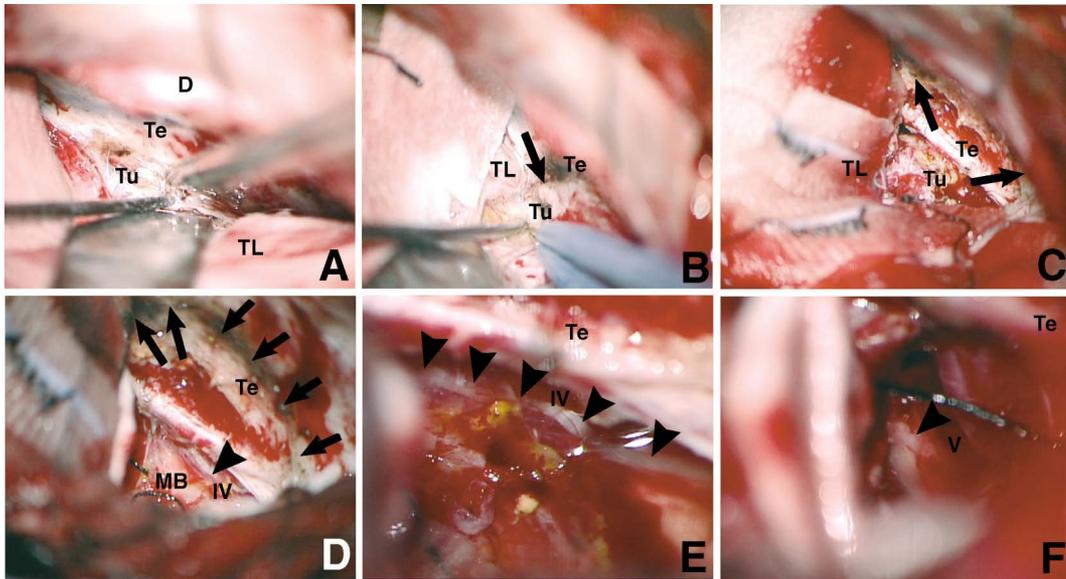


Fig. 2 Intraoperative photographs showing the tumor attached to the tentorium (A), separation of the anterior edge (arrow) of supratentorial part of the tumor (B), the supratentorial part detached from superior surface (arrows) of tentorium (C), a border (arrows) of the tentorial attachment of the tumor after removal (D), and the right trochlear nerve (D, E, arrowheads) and trigeminal nerve (F, arrowhead) remaining intact after tumor resection. D: dura of middle fossa, MB: midbrain, Te: tentorium, TL: temporal lobe, Tu: tumor, IV: trochlear nerve, V: trigeminal nerve.

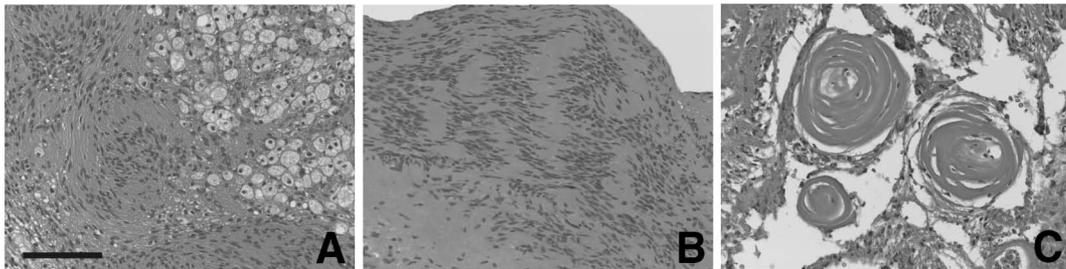


Fig. 4 Photomicrographs showing typical biphasic architecture of schwannoma with Antoni A and B regions (A), rows of fusiform cells with nuclear palisading (B), and extensively hyalinized vessels (C). Hematoxylin and eosin stain, original magnification $\times 200$.

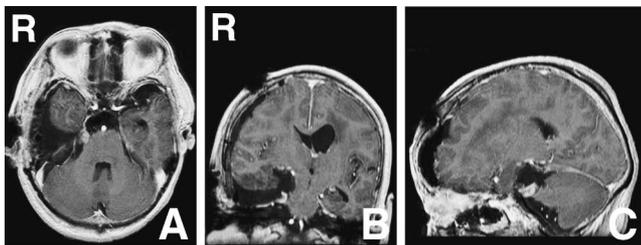


Fig. 3 Axial (A), coronal (B), and sagittal (C) T₁-weighted magnetic resonance images showing a small residual tumor attached to the inferior aspect of the tentorium. Supratentorial part of the tumor was resected.

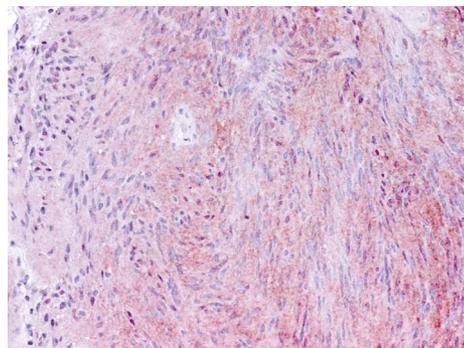


Fig. 5 Photomicrograph showing tumor cells positive for S-100 protein. S-100 protein immunohistochemical stain, original magnification $\times 200$.

Table 1 Reported cases of tentorial schwannomas

| Author (Year) | Age (yrs)/ Sex | Presenting symptoms | Neurological findings | MR imaging findings | | |
|---|-------------------|---|---|--------------------------------------|-------------------------------|--------------------|
| | | | | Appearance | Localization* | Dural tail sign |
| Flickinger et al. (1988) ⁽⁸⁾ | 22/M | headache | decreased left hearing acuity | homogeneous mass lesion | T7, supra- and infratentorial | + |
| Jabbour et al. (2002) ⁽⁹⁾ | 9/F | headache, dizziness, vomiting, gait disturbance | right sixth cranial nerve paresis, horizontal nystagmus, static cerebellar syndrome | homogeneously enhanced mass lesion | T2, infratentorial | + |
| Oikawa et al. (2002) ⁽¹⁰⁾ | 41/F | headache, positional vertigo | truncal ataxia, gait disturbance | heterogeneously enhanced mass lesion | T2, infratentorial | + |
| Du et al. (2003) ⁽³⁾ | 17/F | headache, occasional diplopia | nystagmus, left ptosis | heterogeneously enhanced mass lesion | T1, infratentorial | - |
| Ozawa et al. (2003) ⁽¹¹⁾ | 29/M | headache, transient diplopia | normal | heterogeneously enhanced mass lesion | T2, infratentorial | + |
| Anton et al. (2006) ⁽¹⁾ | 23/M | dizziness, swallowing difficulty | normal | heterogeneously enhanced mass lesion | T2, infratentorial | - |
| Chung et al. (2007) ⁽⁴⁾ | 49/F | headache, neck pain, vomiting, unsteadiness of gait | right facial paresis, right facial paresthesia | heterogeneously enhanced mass lesion | T2, infratentorial | + |
| Calisaneller et al. (2008) ⁽³⁾ | 60/F | headache | normal | homogeneously enhanced mass lesion | T7, infratentorial | + |
| Present case | 64/F | transient global amnesia | normal | heterogeneously enhanced mass lesion | T2, supratentorial | - |

*According to the localization of tentorial meningiomas by Yasargil⁽¹³⁾: T1, anterior inner ring (free edge) of tentorium; T2, middle inner ring of tentorium; T3, posterior inner ring of tentorium; T4, intermediate; T5, posterior outer ring of tentorium; T6, middle outer ring of tentorium; T7, anterior outer ring of tentorium; and T8, falcatentorial involving straight sinus. F: female, M: male, MR: magnetic resonance.

was not sharply delineated, and contained numerous intratumoral cysts (Fig. 1D–F). T₂-weighted imaging and fluid-attenuated inversion recovery imaging showed peritumoral edema.

Surgery exposed the lesion totally attached to the tentorium (Fig. 2A) and compressing the right temporal lobe. The tumor was resected via the subtemporal approach. The supratentorial part of the lesion was resected from the superior surface of the tentorium, but the tentorium was not cut and the infratentorial part of the lesion was not resected (Fig. 2B–D). The main part of the lesion did not involve the trochlear nerve from its origin at the brainstem to the entry point at the tentorial edge, or the trigeminal nerves along the course, and these nerves were preserved anatomically (Fig. 2E, F).

Postoperatively, the patient had normal extraocular movements in all directions with no subjective diplopia, which implied no involvement of the trochlear nerve. Postoperative MR imaging revealed a small residual tumor attached to the inferior surface of the tentorium (Fig. 3). Histological examination showed nests of fusiform cells with nuclear palisading, and myxoid area with stellate cells and scattering hemosiderin laden phagocytes (Fig. 4). Immunohistochemical studies detected S-100 protein-positive staining in the tumor but no epithelial membrane antigen reactivity (Fig. 5). These findings were consistent with schwannoma.

Discussion

Only 8 tentorial schwannomas have been reported, of which 6 were located mainly in the posterior fossa attached to the tentorium and 2 extended over the middle and posterior cranial fossae equally (Table 1).^{1,3–5,8–11} The present case is the first supratentorial schwannoma attached to the tentorium. No previous cases were associated with neurofibromatosis. Mean age was 31.3 years, which is lower than that for intracranial schwannomas.² Seven patients presented with headache and one patient presented with dizziness. Five patients had clinical symptoms including truncal ataxia, nystagmus, ptosis, facial paresthesia, sixth or seventh cranial nerve paresis, and decreasing hearing acuity, and three patients had normal neurological conditions. The present patient was aged 64 years, the oldest among the reported cases of tentorial schwannoma, probably because supratentorial lesion tends to increase in size without symptoms.

The MR imaging findings in the present case were consistent with schwannoma, but other clinical entities such as meningioma were included in the differential diagnosis. The absence of dural tail sign supported the preoperative diagnosis of schwannoma. However, dural tail sign was observed in 5 of the 7 previous cases of tentorial schwannomas, suggesting that dural tail sign of the tentorium indicates not only tentorial meningioma but also tentorial tumors including schwannoma.³ Five previous cases and the present case were cystic mass lesions, and 3 previous cases were solid homogeneous mass lesions (Table 1). The preoperative diagnosis of schwannoma is difficult to establish for homogeneous mass lesions at-

tached to tentorium. In fact, the MR imaging findings indicated meningioma in these three cases.^{3,8,9}

The origin of tentorial schwannomas with no involvement of cranial nerves remains controversial. The most plausible explanation is origin from the Schwann cells of the tentorial nerves which contain many myelinated nerve fibers of medium size.^{7,12} Three to six closely grouped branches of tentorial nerve come off the superior edge of the ophthalmic nerve and follow recurrent courses posteriorly in the narrow isthmus of dura between the medial border of the trigeminal ganglion and the incisural edge, where the nerve bundles lie in close relationship to the trochlear nerve. The nerve bundles run between the 2 layers of dura in the tentorium, branching and spreading out to form an open plexiform pattern.⁷ The courses of the major branches of tentorial nerve may explain why tentorial schwannoma commonly occurs at the anterior and middle free edges of tentorium, and trochlear nerve schwannoma should be included in the differential diagnosis (Table 1). A second explanation is that tentorial schwannoma may arise from the perivascular Schwann cells in the tentorium. The third explanation is that mesenchymal cells may transform into ectodermal Schwann cells and ectopic Schwann cells in the tentorium.⁶ Regardless of the origin, schwannoma should be included in the differential diagnosis of tumors arising from the tentorium.

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