Intracranial Subfrontal Schwannoma: Case Report

İntrakraniyal Subfrontal Schwannom: Olgu Sunumu

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ABSTRACT

Intracranial schwannomas most frequently arise from the vestibular portion of the VIIIth cranial nerve. Schwannomas arising from other cranial nerves are rare. Subfrontal schwannoma is extremely rare. We report a case of a subfrontal schwannoma and review the related literature.

KEY WORDS: Schwannoma, subfrontal tumour

ÖZ

İntrakranial schwannomalar çoğunlukla VIII. kranial sinirin vestibüler bölümünden kaynaklanır. Diğer kranial sinirlerden çıkan schwannomalara ender rastlanır. Subfrontal schwannomalar oldukça nadir görülür. Bu makalede literatürü gözden geçirerek alışılmadık yerleşimli bir subfrontal schwannoma olgusunu sunuyoruz..

ANAHTAR SÖZCÜKLER: Schwannoma, subfrontal tümör

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INTRODUCTION

Up to 10% of all intracranial tumours are schwannomas that arise from the VIIIth cranial nerve and involvement of the Vth, IXth, Xth and VIIth cranial nerves in descending order may also occur rarely (6, 8, 9). On rare occasions, these tumours arise within the cerebral parenchyma without any apparent connection to the peripheral nervous system (2, 4, 5, 9, 12, 14, 15-19). A case of a subfrontal schwannoma in a 24-year-old female is reported and the possible origin of schwannomas in this unusual location is discussed.

CASE REPORT

A 24-year-old female presented with a one-year history of progressive headaches, lethargy, and loss of concentration. The patient experienced decreased vision in her right eye six months before admission. There was no neurological deficit except a right temporal field defect in the right eye. Papilledema was present on both sides. The examination of other cranial nerves revealed normal findings. Motor and sensory examinations were also normal. A large, homogenous, extra-axial mass (6x5x5 cm) was documented at the floor of the anterior cranial fossa by gadolinium-enhanced magnetic resonance imaging (MRI) (Figure 1 A, B). The tumour showed extension into the frontal lobes, but appeared distinct from the brain. Neither peritumoural edema nor evidence of a dural tail was present. The patient was operated with a preoperative diagnosis of an olfactory groove meningioma. After bicoronal craniotomy, we cut the sagittal sinus and falx in order to relax both frontal lobes. The frontal lobes were elevated and the large, firm, extra-axial mass observed. The tumour was totally removed (Figure 2 A, B). An attachment to the dura or olfactory nerves was not noted. Histological examination revealed schwannoma (Figure 3 A, B). The patient had on uneventful postoperative course and was discharged home on the tenth post-operative day. On follow-up examination 3 months after the operation there were no complaints and no neurological deficit.

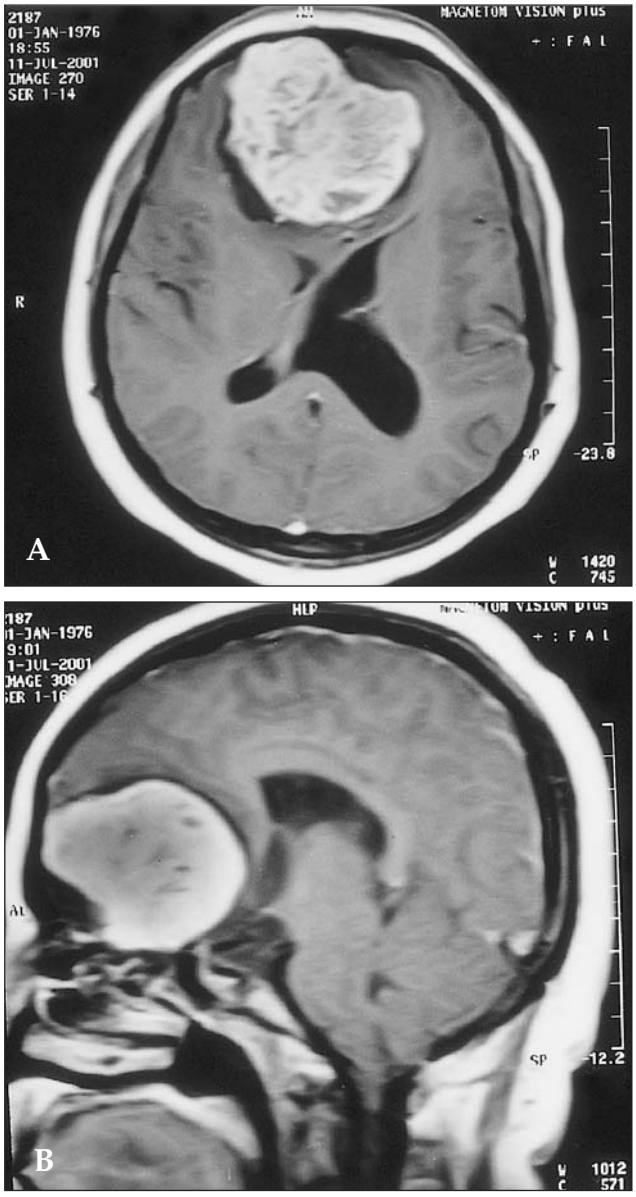

Figure 1 A, B: Axial and sagittal T1-weighted MRI. Gadolinium-enhanced image revealing a homogenously enhancing extra-axial lesion located subfrontally in the anterior cranial fossa.

DISCUSSION

Schwannomas may arise peripherally or intraspinally and are tumours of schwann cells. Schwannomas may therefore arise anywhere that a nerve has a schwann cell sheath (6, 8). The tumour may also originate from the intracranial nerves. The most frequent sites for intracranial schwannomas are the VIIIth cranial nerve followed by the trigeminal nerve (7-9, 15). On very rare cases, schwannomas may be observed in the cerebral parenchyma without connection to the peripheral nervous system (2, 4, 5, 9, 12, 14, 15-19).

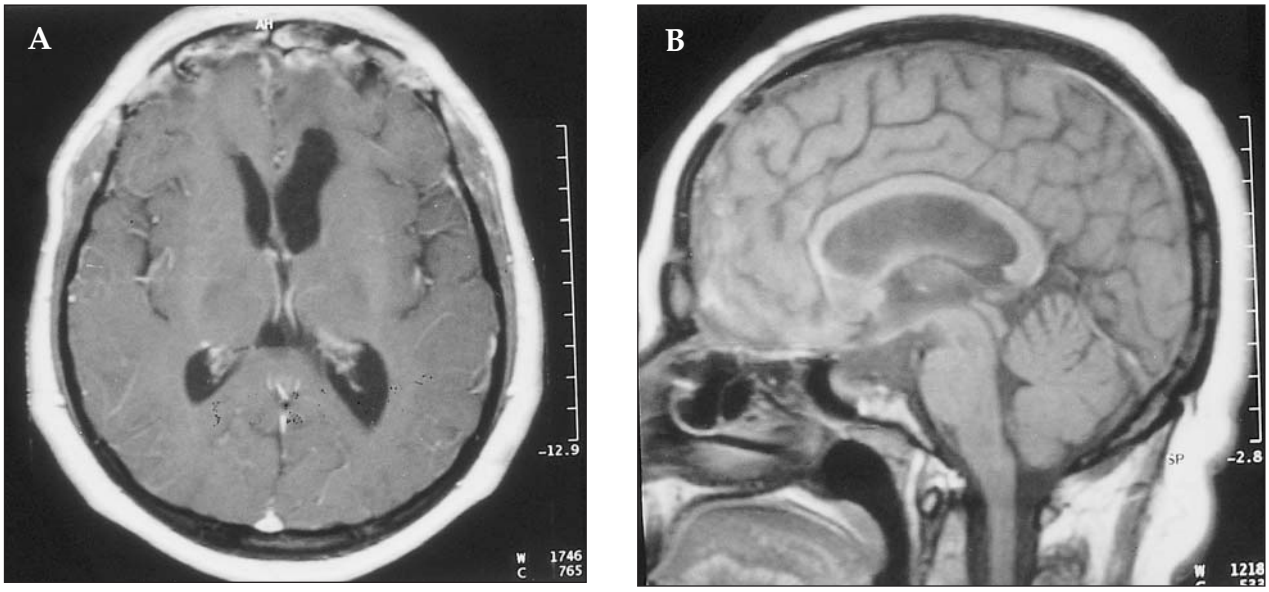

Figure 2 A, B: Post-operative axial and sagittal T1-weighted MRI

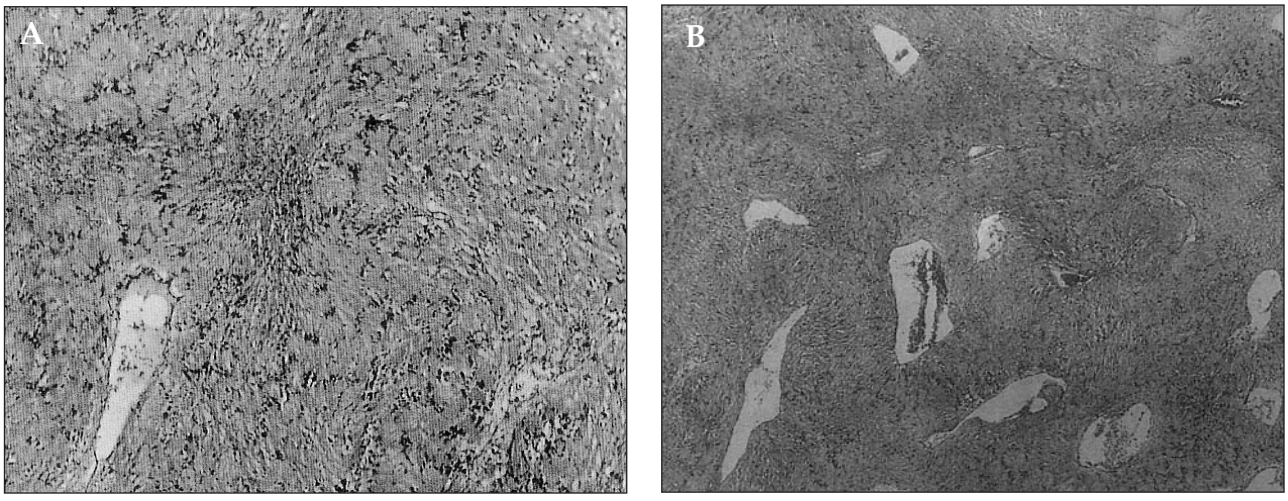

Figure 3: A: Photomicrograph showing the typical Antoni type A pattern of a schwannoma (HE x 100), **B**: photomicrograph of tumour showing positive immunohistochemical staining for S-100 protein (x 100)

Schwannomas might be indistinguishable from meningiomas with routine hematoxylin and eosin stains. These specimens should be examined using immunohistochemistry to make a correct diagnosis (9, 10)

Subfrontal schwannomas are very uncommon tumours. About 17 cases of subfrontal schwannomas have been described (2, 9, 11, 16-19). The origin of these tumours is a matter of debate. Schwann cells exit within the perivascular nerve plexuses around large arteries in the subarachnoid spaces (1, 3). However, schwann cells are clearly present in adrenergic nerve fibers innervating cerebral arterioles (13, 14). The anterior ethmoidal nerve and the meningial branch of the trigeminal nerve are suggested origins. The olfactory nerves are encased by glial cells and cannot give rise to schwannomas (3). Tumour invasion of dura and the olfactory nerve was not present in our case. The cribriform plate and the orbital plate of the frontal bone were intact. There was no connection with any structure. Finally, the site of origin of the subfrontal schwannoma is unclear.

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