Turkish Neurosurgery 2008, Vol: 18, No: 4, 412-414

Nasal-Subfrontal Giant Schwannoma

Nazal-Subfrontal Dev Şvannom

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ABSTRACT

Subfrontal schwannomas are rare lesions. They can be misdiagnosed as olfactory meningiomas or neuroblastomas. We report a case of giant schwannoma involving the anterior cranial fossa; the frontal and ethmoid sinuses and nasal cavities. The patient presented with a year-long history of increasingly severe headache associated with insomnia. Examination revealed no neurological deficit except for the anosmia. Magnetic Resonance Imaging revealed a 9x5x3 cm intranasal-subfrontal extraaxial mass. Nasal biopsy indicated the presence of a schwannoma. The lesion was totally removed through a bifrontal craniotomy and the skull base was repaired with periosteal flap, fibrin glue and a split craniotomy graft. In addition to the cosmetic advantages over standard transfacial approaches, the extended subfrontal approach also provides early dissection of neural tissues, avoiding an inadvertent cerebrospinal fluid leak.

KEY WORDS: Schwannoma, Anterior Cranial Fossa, Nasal Cavity, Paranasal Sinuses, Surgery

ÖZ

Subfrontal şvannomlar nadir lezyonlardır. Olfaktor menenjiom veya nöroblastom olarak yanlış tanı konulabilirler. Biz anterior kranial fossayı, frontal ve etmoidal sinüslerle nazal boşluğu dolduran dev bir şivannomayı bildiriyoruz. Hasta bir yıldan beri devam eden, uykusuzluğun eşlik ettiği giderek artan şiddetli baş ağrısı öyküsüyle başvurdu. Muayenede anosmi dışında nörolojik defisit tespit edilmedi. Manyetik Rezonans Görüntüleme 9x5x3 cm boyutlarında intranazal-subfrontal ekstraaksiyel bir kitleyi ortaya çıkardı. Nazal biyopsi bir şvannom varlığını gösterdi. Lezyon bifrontal kraniotomi ile total olarak olarak çıkarıldı ve kafa tabanı periost flebi, fibrin yapıştırıcı, ikiye ayrılmış kraniotomi flebi ile tamir edildi. Standart transfasial yaklaşımlara karşı kozmetik avantajlarının yanısıra, genişletilmiş subfrontal yaklaşım nöral dokuların erken diseksiyonunu ve istenmeyen beyin omurilik sıvısı sızıntılarından kaçınmayı sağlar.

ANAHTAR SÖZCÜKLER: Şvannom, Ön Kafa Çukuru, Burun Boşluğu, Paranazal Sinüsler, Cerrahi

Received : 15.09.2008
Accepted : 12.10.2008

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INTRODUCTION

Schwannomas are benign neoplasms arising from Schwann cells of the peripheral, cranial and autonomic nerves. Subfrontal schwannomas are rare and Adachi et al could find only 26 reported cases in the English and Japanese literature until 2007 (1). However, the differences in nomenclature and classification could increase the total number.

We report a 33-year-old patient with a giant schwannoma involving the anterior cranial fossa; the frontal and ethmoid sinuses and nasal cavities.

CASE REPORT

A-33-year-old female presented with a year-long history of increasingly severe headache associated with insomnia. On examination, the tumor completely occupied bilateral nasal cavities and no neurological deficit except for anosmia was found. There was no evidence of von Recklinghausen disease.

Magnetic Resonance Imaging showed a 9x5x3 cm extra-axial mass in the midline inferior frontal region with sinonasal extension. It was isointense on the T1W (T1-weighted) images and predominantly hyperintense on the T2W (T2-weighted) images. Multiple punctate and curvilinear hypointensities were seen within this lesion on T2W images. After contrast administration the lesion showed heterogeneous but fairly intense enhancement. It was seen to compress the inferior frontal lobes with minimal peritumoral edema. There was extension into the ethmoidal air cells, upper and middle nasal cavity, frontal sinus on the left side, and sphenoid sinus on the right side. The cribriform plate of the ethmoid bone showed destruction. The tumor was expansile resulting in bowing of the lateral walls of the ethmoidal sinus and nasal cavity toward the orbits and upper maxillary sinuses (Figure 1A,B,C).

Nasal biopsy indicated the presence of a schwannoma. The lesion was totally removed through a bifrontal craniotomy and the skull base was repaired with a periosteal flap, fibrin glue and a split craniotomy graft (Figure 2A,B,C).

Histological examination of the subfrontal mass demonstrated a tumour composed entirely of neoplastic Schwann cells and forming two basic pattern in varying proportions; areas of compact, elongated cells with occasional nuclear palisading (Antoni A pattern) and less cellular, loosely textured cells with indistinct processes and variable lipidization (Antoni B) (Figure 3). The Antoni A areas consisted of closely apposed tumour cells, forming nuclear palisades (Verocay bodies) (Figure 4). Immunohistochemical staining revealed that the tumour cells were positive for S-100.

The postoperative course was uneventful, and one-year follow-up was uncomplicated except for persisting anosmia.

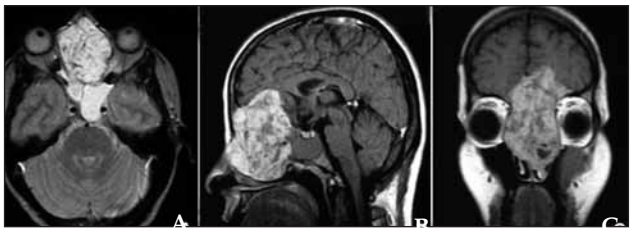

Figure 1: *Sinonasal subfrontal giant schwannoma. Preoperative* ***A****) T2W axial,* ***B****) T1W sagittal and* ***C****) T1W coronal postcontrast images. An extra-axial mass in the midline subfrontal region with sinonasal extension is seen. There is extension into the ethmoidal air cells, nasal cavity and frontal and sphenoid sinuses.*

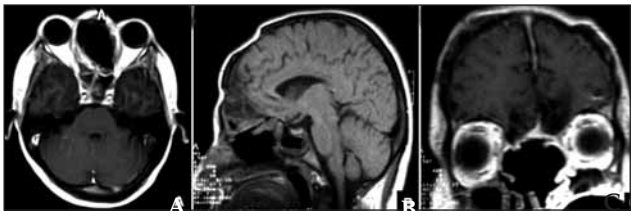

Figure 2: *Postoperative postcontrast T1W* ***A****) axial,* ***B****) sagittal,* ***C****) coronal images. The lesion was totally removed through a bifrontal craniotomy and the skull base was repaired with periosteal flap, fibrin glue and a split craniotomy graft. No residual mass is seen.*

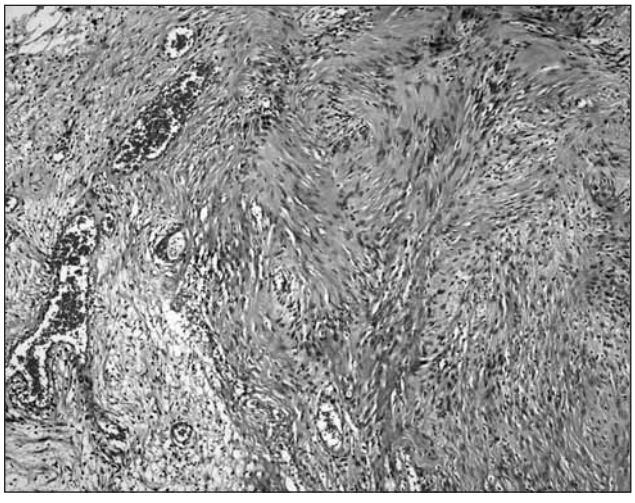

Figure 3: *Biphasic pattern with cellular Antoni A and hypocellular Antoni B areas (H&EX220).*

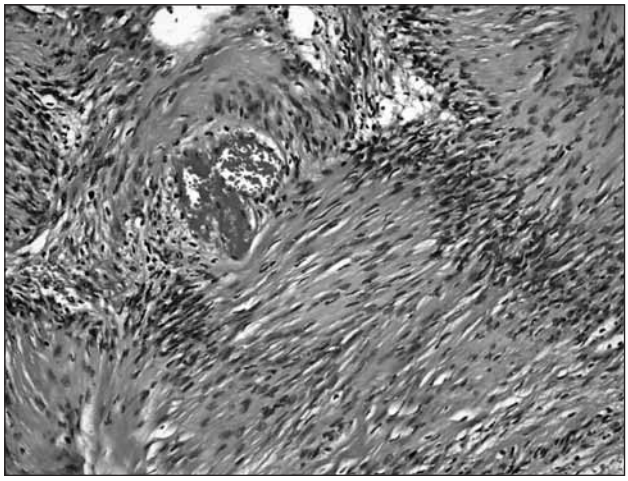

Figure 4: *Schwannoma cell nuclei forming palisades (Verocay body) (H&E X 440).*

DISCUSSION

Esthesioneuroblastoma, squamous cell carcinoma, adenocarcinoma, meningioma, lymphoma and metastases should be considered in the differential diagnosis in adults with a sinonasal mass with anterior skull base involvement. Lymphoma, rhabdomyosarcoma, and carcinoma may be considered in the pediatric age group. Subfrontal schwannoma can be misdiagnosed as an olfactory meningioma or a neuroblastoma. Establishment of the diagnosis of schwannoma versus neuroblastoma is important because it obviates the need for more aggressive craniofacial resection (5).

The possible origins of these lesions include the olfactory fila, anterior ethmoidal nerves, the meningeal branch of the trigeminal nerve, and small perivascular plexuses of small dural vessels (1,2,3,4,5,6)

Subfrontal schwannomas have been classified into two main types by Adachi: Schwannoma of the olfactory site (olfactory groove or cribriform plate) and others (which arise from non-olfactory sites) (1). We were unable to classify our case according to Adachi as all the anterior cranial fossa floor was eroded by the tumour and olfactory tracts could not be identified. In addition to the cosmetic advantages over standard transfacial approaches, the extended subfrontal approach also provides early dissection of neural tissues, avoiding inadvertent cerebrospinal fluid leak.

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