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Meningioma of the paranasal sinus: A case report

Kazuyuki Kainuma [a,*], Yutaka Takumi [a], Takeshi Uehara [b], Shin-ichi Usami [a]

[a] *Department of Otolaryngology, Shinshu University School of Medicine, Asahi 3-1-1, Matsumoto 390-8621, Japan*
[b] *Department of Pathology, Shinshu University School of Medicine, Matsumoto 390-8621, Japan*

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Abstract

Extracranial meningioma of the paranasal sinus is a very rare condition of unclear etiology. Surgical excision is currently the only curative treatment but sometimes entails difficulties because of the complicated anatomic loci of the tumor. For the case reported here, we used a navigation system in endoscopic surgery for an extracranial meningioma of the paranasal sinus and were able to remove the tumor without complications by a transnasal approach alone. This is the first report of the use of such a system with endoscopic surgery for this condition. We discuss the clinical presentation, diagnosis, and treatment of this case as well as present a review of the literature.

Keywords: Extracranial meningioma; Paranasal sinus; Navigation system; Endoscopic surgery

1. Introduction

Meningiomas are benign tumors, commonly occurring in the intracranial region with an annual incidence of 6 per 100,000 population [1]. However, extracranial meningiomas are very rare at 1–2% of all meningiomas [2,3]. Diagnosis is established by endoscopic biopsy of the tumor through the nasal cavity, and immunohistochemical studies are helpful for accurate diagnosis. The only curative treatment is surgical extirpation and we found a navigation system to be very useful for safe endoscopic surgical resection of the tumor in a 42-year-old patient with an extracranial meningioma of the paranasal sinus.

2. Case report

A 42-year-old Japanese male presented in December 2003 with complaints of headache and temporary right visual disorder beginning the previous month. After a biopsy through the nasal cavity with an endoscope on 17 December 2003, the nasal tumor was pathologically diagnosed as a meningioma. Computed tomography (CT) demonstrated a mass extending from the right ethmoid sinuses and involving the nasal cavity and sphenoid sinus (Fig. 1). There was bone erosion through the posterior skull base and around the sphenoid sinus, but no intradural invasion. Magnetic resonance imaging (MRI) showed an enhanced mass similar to the CT findings. The apertura of the sphenoid sinus was completely obstructed by the tumor and the intrasphenoid sinus was filled with fluid collection (Fig. 2).

We performed angiography, and the result showed the tumor had moderate feeding arteries from the external carotid artery and there was no relationship between the tumor and the intracranial region regarding vascular feeding (Fig. 3).

We performed endoscopic sinus surgery on 27 February 2004. To avoid surgical complications (for example, cerebrospinal fluid leakage or damage to the orbit and optic canal), we used a navigation system (Stealth Station® TREON™, Medtronic Surgical Navigation Technologies, Inc., Colorado, USA) (Fig. 4a and b). The application software was Landmarx ver 3.0.

The final pathological diagnosis was meningothelial meningioma (grade I: WHO classification, 2000) (Fig. 5a and b). The postoperative course went well and all complaints disappeared. The patient was discharged on 12 March 2004. There was no evidence of tumor recurrence in the 6 months following surgery.

* Corresponding author. Tel.: +81 263 37 2666; fax: +81 263 36 9164.
E-mail address: kazuyuki@hsp.md.shinshu-u.ac.jp (K. Kainuma).

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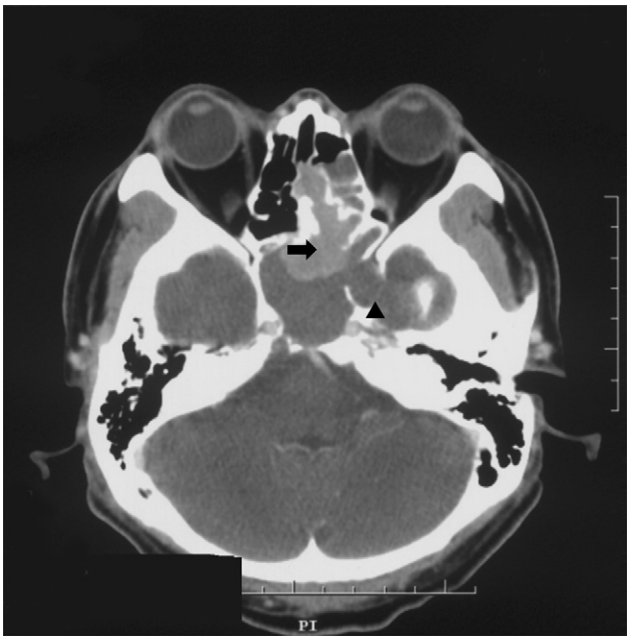

Fig. 1. Computed tomography (horizontal) of the nasal cavity and paranasal sinus revealing a tumor mass (arrow) extending from the right ethmoid sinuses and involving the nasal cavity and sphenoid sinus. The sphenoid sinus is filled with fluid collection and there is a bone defect region (arrowhead) at the lateral wall of the sphenoid sinus.

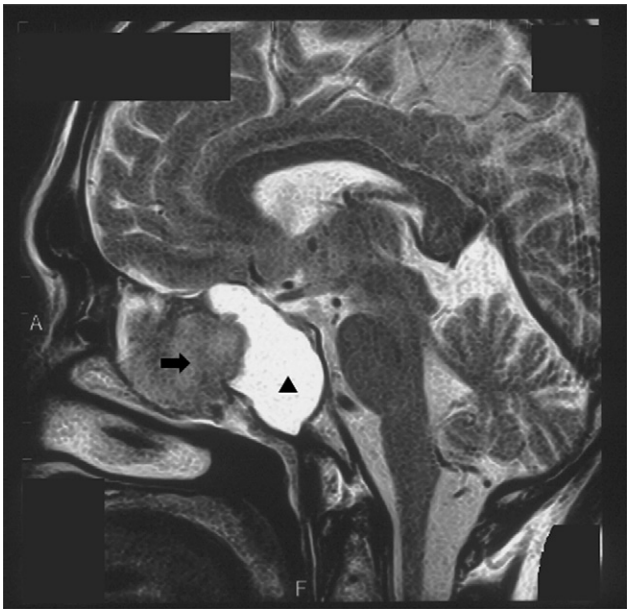

Fig. 2. Magnetic resonance imaging (sagittal) showing an enhanced tumor mass (arrow) that completely obstructed the apertura of the sphenoid sinus, and the intrashenoid sinus (arrowhead) filled with fluid collection.

3. Discussion

Meningiomas are benign, slow-growing, usually intracranial, tumors. They are the commonest benign intracranial tumor, accounting for 13–26% of all primary intracranial tumors [4]. Extracranial meningiomas are very rare with a reported incidence of 1–2% of all meningiomas [2,3]. Most

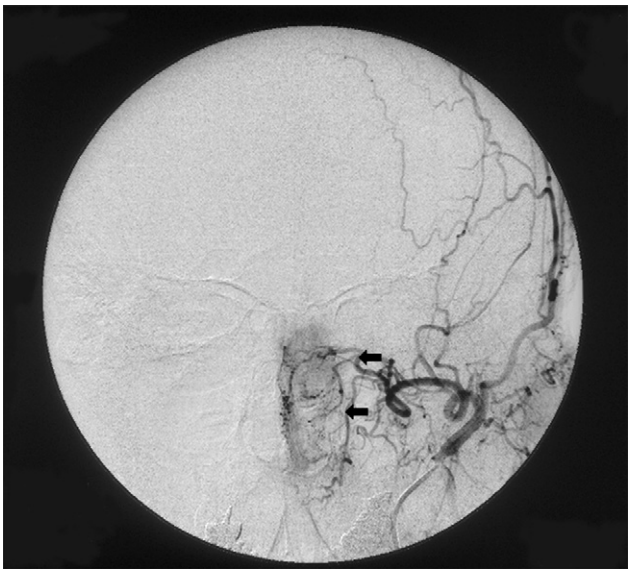

Fig. 3. Angioplasty showed the tumor had moderate feeding arteries (arrow) from the external carotid artery and there was no relationship of vascularity between the tumor and the intracranial.

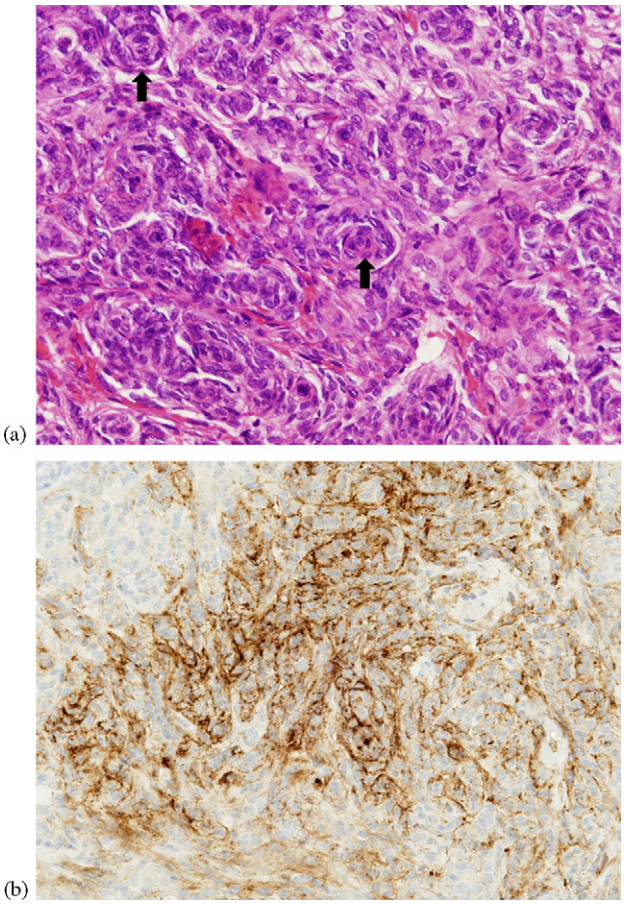

Fig. 4. The pathological findings: (a) Tumor cells partly form a whorl formation (arrow) (meningothelial meningioma grade I: WHO classification, 2000, H&E stain, original magnification × 100). (b) Tumor cells show strongly positive immunoreactivity with epithelial membrane antigen (EMA stain, original magnification × 100).