

Minimally invasive transnasal approach for primary ectopic meningioma of the paranasal sinuses

Kornel Szczygielski, Barbara Gałusza, Szczepan Cierniak, Dariusz Jurkiewicz

Department of Otorhinolaryngology, Military Institute of Medicine, Warsaw, Poland

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Abstract

Endoscopic sinus surgery is a standard procedure in the treatment of various pathologies such as chronic sinusitis or some types of neoplasms. The transnasal approach to tumours of paranasal sinuses is favourable due to functional and aesthetic reasons. We report a rare case of a large primary ectopic meningioma of the paranasal sinuses in a 48-year-old woman referred to the Otolaryngology Clinic due to the incidental finding of a pathologic mass visualised on the orthopantomography picture. After diagnosis, the patient was successfully treated with radical transnasal surgery performed under endoscopic vision. In a 1-year follow-up there were no signs of tumour recurrence.

Key words: meningioma, paranasal sinuses, endoscopic endonasal approach.

Introduction

Meningiomas are one of the most common neoplasms of the central nervous system, but in rare cases (1% to 2%) they are diagnosed in extracranial locations such as the nose and paranasal cavities. Primary ectopic tumours have no direct connection with the cranial cavity. Symptoms are not specific and are correlated with pressure on surrounding structures. The prognosis is usually good because of the benign character of tumour growth. Neoplasms located in the area of the nose and paranasal sinuses should be carefully examined on computed tomography (CT) and magnetic resonance imaging (MRI) scans. The analysis should concern the size, location and expansion of the tumour. When bony gaps to the cranial cavity or orbit occur, it is necessary for the patient to consult a neurosurgeon and ophthalmologist. In most cases of meningiomas the treatment of choice is radical surgery. The transnasal approach to ectopic meningiomas of paranasal sinuses is associated with a shorter period of hospitalisation and a better aesthetic effect [1].

Case report

The 48-year-old woman was referred to the Otolaryngology Department by the orthodontist due to an incidental, worrying finding in the left maxillary sinus visualised on the orthopantomography picture. The CT and magnetic resonance imaging revealed an extensive pathologic mass located in the left anterior ethmoid cells, expanding to the nasal cavity, maxillary sinus, modelling the nasal septum and medial orbital wall, as well as involving the middle and upper nasal turbinate (Photos 1 A, B). After admission of contrast, the mass was enhancing. No intracranial pathologies or bony gaps between the nasal cavity and cranium were described. The patient did not report any problems with breathing through the nose, pathologic discharge from the nose, facial pain or visual disorders. Anterior rhinoscopy revealed normal mucous membrane without evident changes of anatomical structures. In the medical history the patient reported hypothyroidism. She denied exposure to high doses of radiation and hormone therapy in

Address for correspondence

Barbara Gałusza MD, Department of Otorhinolaryngology, Military Institute of Medicine, 128 Szaserów St, 04-141 Warsaw, Poland, phone: +48 501 069 584, e-mail: bgalusza@gmail.com

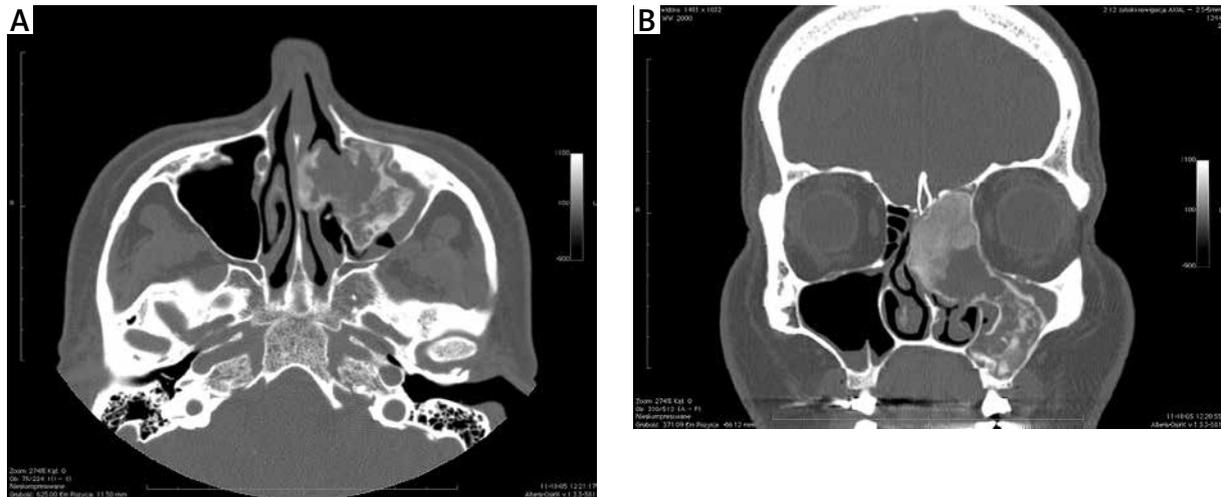


Photo 1. A. Preoperative axial CT scan showing large tumour mass involving left nasal cavity, maxillary and ethmoid sinuses. There is no involvement of the cranial cavity. **B** – Preoperative coronal CT scan

the past. She has never been treated because of any other tumour and did not have any head trauma.

The biopsy of the tumour was performed under general anaesthesia with endoscopic vision. The histopathological finding was metaplastic meningioma. The immunohistochemical staining revealed co-expression of EMA (+), Vim (+), S-100 (+), and Ki67 (+) (in less than 1% of tumour cells), which is a typical finding for meningiomas. The patient was qualified for radical tumour removal surgery. The procedure was performed through the nose using 30° and 70° endoscopic vision. Medial maxillecto-

my, ethmoidectomy and total turbinectomy were performed. Ethmoidal roof, lamina papyracea and lateral walls of the maxillary sinus were drilled with a diamond burr. The tumour was removed in pieces. Consistency of the tumour was variable: some of the tissue was spongy in palpation, but some was tough like bone. All the remaining mucous was macroscopically normal. The final pathological diagnosis was psammomatous meningioma (WHO grade I) (Photo 2). Endoscopy of the nose and imaging examinations in the 1-year follow-up did not reveal any signs of tumour recurrence (Photo 3). The only patient's complaint after the surgery was excessive nasal discharge from the left nasal cavity due to chronic rhinosinusitis which developed after removal of anatomical structures of the nose. After the treatment with nasal steroid spray the ailment was reduced.

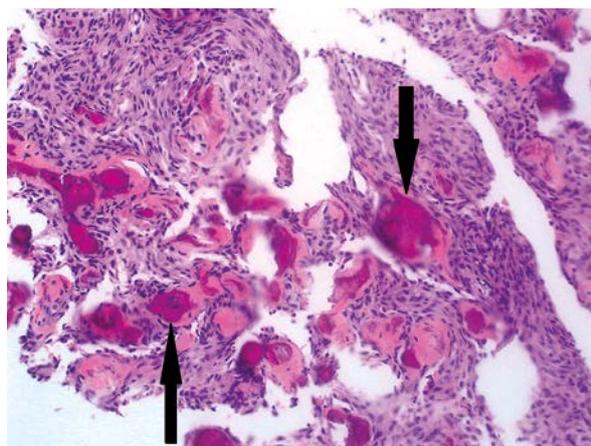


Photo 2. H&E stain (black and white picture; original magnification 200×). There are numerous calcifications called “psammoma bodies” (indicated by arrows) characteristic for psammomatous meningioma

Discussion

Meningiomas are common neoplasms of the central nervous system but can also be diagnosed in other parts of the body such as the orbit, scalp, nasal cavities and salivary glands as well as on the skin or in the abdomen [2]. Extracranial localisation can be primary or secondary. The secondary extracranial meningiomas grow from the cranium to the surrounding structures. About 20% of intracranial tumours have a tendency to expand outside of the cranium. This type is more common than primary extracranial meningioma, which does not have any

level as in classical surgery. At the same time, the postoperative morbidity is reduced [13]. For patients it is important that endoscopy provides better functional and aesthetic results. That is why endoscopic surgery is the method of choice in the treatment of the majority of sinonasal tumors.

The authors decided to perform transnasal removal of the large primary ectopic meningioma involving ethmoidal cells, maxillary sinus, spreading to the nasal cavity, modelling the nasal septum and orbital wall. This method provided oncological radicality, minimal postoperative ailments, and quick convalescence, which resulted in short hospitalisation (the patient was dismissed on the fourth day after surgery) and an excellent aesthetic effect.

Conclusions

We have presented a case of primary extracranial meningioma located in the nose and paranasal cavities. Primary meningiomas of paranasal sinuses are rare but should be taken into consideration in a differential diagnosis. When bony gaps to the cranial cavity or orbit occur, it is necessary to refer the patient to a neurosurgeon and oculist. Careful preoperative planning allows tumours to be successfully removed with an endoscopic approach.

Conflict of interest

The authors declare no conflict of interest.

References

1. Soltys J, Pietniczka-Zaleska M, Mlynczyk-Budzynowska K, et al. Neoplasms of paranasal sinuses in material of ENT Department MSS Hospital in Warsaw between 2006-2007. *Otolaryngol Pol* 2008; 62: 451-4.
2. Iaconetta G, Santella A, Friscia M, et al. Extracranial primary and secondary meningiomas. *Int J Oral Maxillofac Surg* 2012; 41: 211-7.
3. Yamashima T, Kida S, Yamamoto S. Ultrastructural comparison of arachnoid villi and meningiomas in man. *Mod Pathol* 1988; 1: 224-34.
4. Daneshi A, Asghari A, Bahramy E. Primary meningioma of the ethmoid sinus: a case report. *Ear Nose Throat J* 2003; 82: 310-1.
5. Preston DL, Ron E, Yonehara S, et al. Tumors of the nervous system and pituitary gland associated with atomic bomb radiation exposure. *J Natl Cancer Inst* 2002; 94: 1555-63.
6. Ron E, Modan B, Boice JD Jr, et al. Tumors of the brain and nervous system after radiotherapy in childhood. *N Engl J Med* 1988; 319: 1033-9.
7. Wiemels J, Wrensch M, Claus EB. Epidemiology and etiology of meningioma. *J Neurooncol* 2010; 99: 307-14.
8. Yamada SM, Yamada S, Takahashi H, et al. Extracranially extended meningotheial meningiomas with a high MIB-1 index: a report of two cases. *Neuropathology* 2004; 24: 66-71.
9. Lombardi D, Tomenzoli D, Butta L, et al. Limitations and complications of endoscopic surgery for treatment for sinonasal inverted papilloma: a re-assessment after 212 cases. *Head Neck* 2011; 33: 1154-61.
10. Busquets JM, Hwang PH. Endoscopic resection of sinonasal inverted papilloma: a meta-analysis. *Otolaryngol Head Neck Surg* 2006; 134: 476-82.
11. Gotlib T, Osuch-Wojcikiewicz E, Held-Ziolkowska M, et al. Endoscopic transnasal management of sinonasal malignancies – our initial experience. *Videosurgery Miniinv* 2014; 9: 131-7.
12. Saedi B, Aghili M, Motiee M, et al. Surgical outcomes of malignant sinonasal tumours: open versus endoscopic surgical approaches. *J Laryngol Otol* 2014; 128: 784-90.
13. Lund V, Stamberger H, Nicolai P, et al. European position paper on endoscopic management of tumors of the nose and paranasal sinuses and skull base. *Rhinology* 2010; Suppl. 22: 1-143.

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