CASE REPORT

Rhinology, 40, 217-219, 2002

Endoscopic treatment of so-called intranasal glioma*

Hidenori Yokoi[1], Ryo Wada[2], Ginichirou Ichikawa[1]

[1] Department of Otorhinolaryngology, Juntendo University, School of Medicine, Tokyo, Japan
[2] Department of Pathology, Juntendo Izunagaoka Hospital, Shizuoka, Japan

SUMMARY

Immunohistochemistry is useful to establish the pathological diagnosis of nasal glioma for which surgical excision is the unique treatment. Here we report a case of intranasal glioma found in a 5-month-old male patient. The tumor was successfully removed by endoscopic surgery. In the absence of a connection between the tumor and endocranial contents, we suggest to remove intranasal glioma by endoscopic surgery.

Key words: endoscopic treatment, intranasal glioma, immunohistochemistry

INTRODUCTION

Nasal glioma, a rare benign neoplasm consisting of heterotopic glial tissue is congenitally found in the nasal base and/or nasal cavity. Among the gliomas, extranasal, intranasal and mixed types account for 60%, 30% and 10%, respectively (Karma et al., 1977). Similar to other intranasal tumors, intranasal glioma presents rhinologic symptoms including nasal obstruction, epistaxis, snoring and poor weight gain due to the disturbed suckling. Through inspection and palpation, intranasal glioma has an appearance similar to that of nasal polyp, although it is elastic hard in consistency and has a smooth and opaque surface. Histological and immunopathological examinations are essential to establish its definitive diagnosis. Surgical excision is the unique treatment of nasal glioma of either intranasal or extranasal glioma. However, this treatment should be carefully performed because recurrences are often encountered, and for cases presenting intracranial connection, fatal outcomes may occur due to post-operative meningitis. We report a case of intranasal glioma found in a 5-month-old male patient, and this tumor was successfully removed using an intranasal endoscopy.

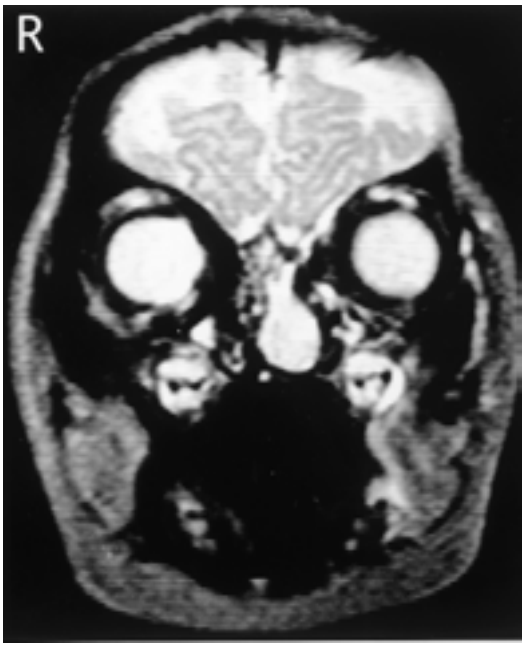

Figure 1. Coronal magnetic resonance image (MRI) showed that the tumor has high-signal intensity on T2-weighted image.

CASE REPORT

A 5-month-old male baby was brought to our department by his parents who had noticed his left nasal discharge and obstruction from birth. Anterior rhinoscopy on the first visit revealed a grayish white, partly reddish and elastic hard mass with a smooth surface occupying the left nasal cavity. The pedicle of the mass could not be seen. After a full term delivery, the patient showed normal weight gain. No remarkable abnormalities were noted in his general conditions or family history. Plain computed tomographic (CT) scan of the paranasal sinuses showed a low-density, homogeneous and neoplastic lesion completely occupying the left nasal cavity. Although bone destruction was not noted, deviation of the nasal septum to the normal side suggested an expansive growth of the tumor. Coronal magnetic resonance image (MRI) showed that the tumor has low-signal intensity on T1-weighted image and high-signal intensity on T2-weighted image (Figure 1). A connection between the tumor and endocranial contents was not detected. Brush cytology performed to rule out malignancies showed that the tumor was belonging to class 3b of the Papanicolaou classification. The

* Received for publication: March 21, 2002; accepted: July 17, 2002

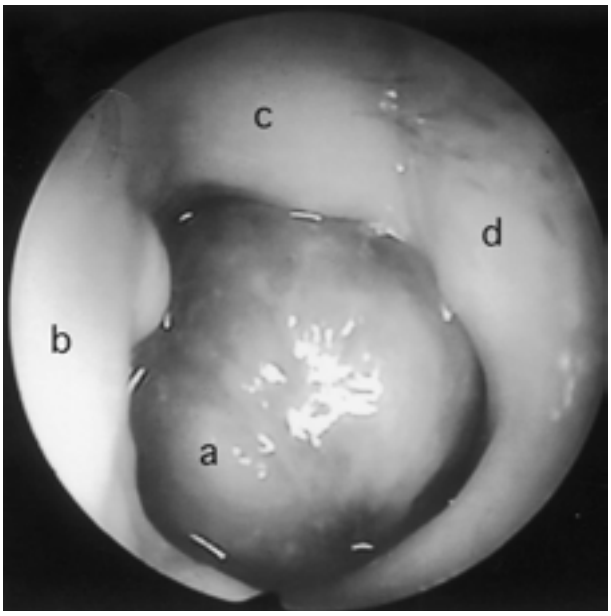

Figure 2. Pre-operative endoscopic photograph of the left nostril occupied by the mass: (a) Mass, (b) Nasal septum, (c) Agger nasi and (d) Inferior nasal turbinate.

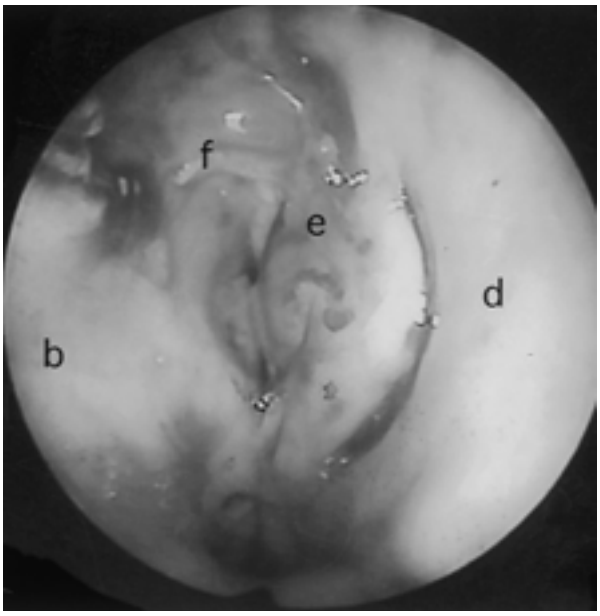

Figure 3. Post-operative endoscopic photograph of the left nasal cavity: (e) Olfactory cleft and (f) Middle nasal turbinate.

tumor partly adhered to the nasal septum and middle turbinate. We furthermore observed that the tumor pedicle was attached to the mucosa of the nasal septum or middle turbinate in the olfactory cleft (Figure 2). For the definitive diagnosis and treatment, total endoscopic resection of the tumor was performed under general anesthesia using the technique of snare polypectomy because of the absence of an intracranial connection (Figure 3). Before surgery, aspiration of the tumor was performed to confirm the absence of CSF leakage. The histological examination during the operation suggested a nasal glioma. Since the pedicle was not in continuity with the frontal sinus or skull base, the tumor was resected en bloc. Two years after surgery, no evidence of recurrence is noted.

PATHOLOGY

Pathological findings showed fibrous and edematous tissues, and areas rich in cell components (Figure 4A). The staining with anti-GFAP suggested the presence of corn shaped cells that were thought to be astrocytes in these areas (Figure 4B). Considering the age and area of occurrence, the tumor was diagnosed as nasal glioma.

DISCUSSION

Nasal glioma is histologically different from malignant glioma in the central nervous system (Samuel et al., 1981). Although the origin of nasal glioma has not been well established, it is reported that a part of an encephalocele has been separated from the brain, and meanwhile isolated from the nasal cavity during the closing process of the cranial suture (Scthmidt et al., 1900). On CT and MRI, nasal glioma does not show characteristic findings helpful for its differentiation from other neoplasms in the nose and paranasal sinuses. However, the finding of bone destruction on the CT image may suggest a malignant tumor. MRI is also essential for pre-operative assessment of nasal tumors because it shows the extent of invasion and development of the tumor.

Histological and immunopathological examinations are required for establishing a definitive diagnosis of nasal glioma. The pathological feature of nasal glioma is characterized by an irregular arrangement of glial tissue mingled in abundant blood vessels and fibrous components. Immunopathology is helpful for the diagnosis of nasal glioma. Nerve cell specific antigens such as neuron specific enolase (NSE), glial fibrillar acidic protein (GFAP) and S-100 protein have been used for this purpose (Eng et al., 1971; Kindblom et al., 1984; Tashiro et al., 1995; Dini et al., 1998). Surgical resection is the first choice treatment of nasal glioma for either intranasal or extranasal type.

It is noteworthy that a fibrous pedicle is continuous with intracranial structures in 20%, and CSF leakage is encountered during surgery in 10% of nasal gliomas (Samuel et al., 1981). Smith has suggested that craniotomy should be performed before tumor resection to confirm the presence or absence of intracranial connections (Smith et al., 1963). However, this procedure may increase the risk of a post-operative meningitis. In addition, it is described that the indications for craniotomy are encephalocele, positive Furstenberg's sign, history of meningitis, CSF leakage and bone defects in the skull base (Dupin and Le Jeune, 1978). In case of intranasal glioma,

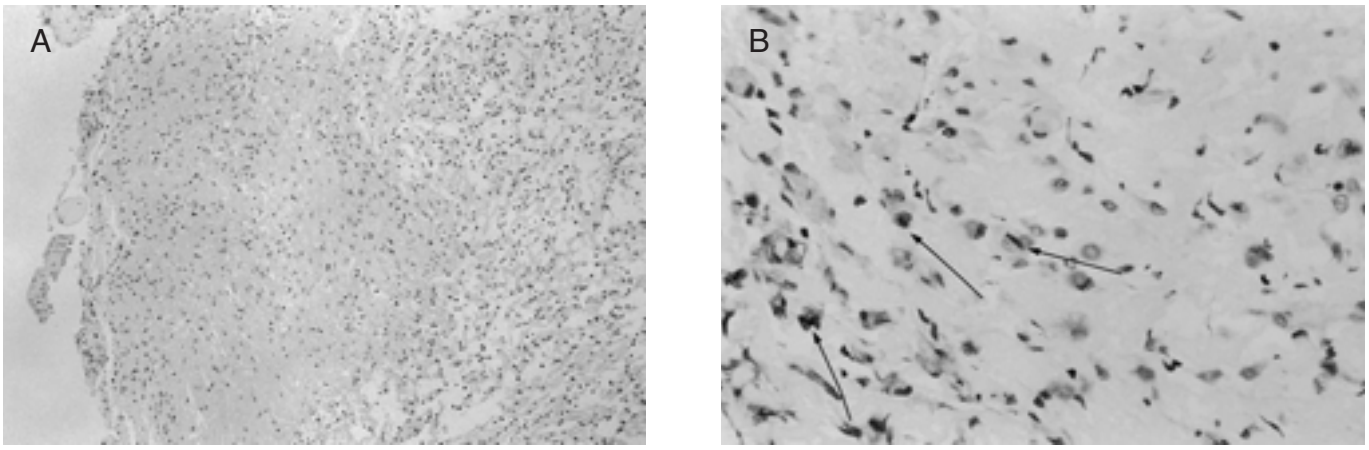

Figure 4. Pathological findings show (A) fibrous, edematous tissue and areas rich in cell components (hematoxylin and eosin stain, x40). (B) From the same areas, corn shaped cells positive to anti-GFAP (arrow) antibody can be seen, and these are astrocytes (x200).

endoscopic surgery has been recently attempted for tumor resection because of its minimum invasiveness (Burckhardt and Tobon, 1999; Yokokawa et al., 1999). Before endoscopic resection, it is important to confirm whether the tumor fulfills or not Dupin's indications for craniotomy, and that an intracranial connection is not found on MRI. Recently, endoscopic resection has been applied to juvenile nasopharyngeal angiofibromas, which have been a topic of controversies on the viewpoint of surgical invasiveness (Newlands and Weymuller, 1999; Schick et al., 1999). Nasal glioma should be reminded during differential diagnosis of nasal neoplasms in newborns and infants.

Immunohistochemical methods using GFAP and other specific antigens are helpful to establish a definitive diagnosis. In some cases without intracranial connection, nasal endoscopy is a very useful approach for nasal gliomas with a good cosmetic result. The endonasal endoscopic or microscopic approach may also be used in mixed type case including duraplasty (Turgut et al., 2000).

REFERENCES

1. Burckhardt W, Tobon D (1999) Endoscopic approach to nasal Glioma. Otolaryngol Head Neck Surg 120: 747-748.
2. Dini M, Russo G, Colafranceschi M (1998) So-called nasal glioma: case report with immunohistochemical study. Tumori 84: 398-402.
3. Dupin CL, LeJeune FE, (1978) Nasal masses in infants and children. South Med J 71: 124-128.
4. Eng LF, Vanderhaeghen JJ, Bignami A, Gerstl B (1971) An acidic protein isolated from fibrous astrocytes. Brain Res 28: 351-354.
5. Karma P, Pasanen O, Karja J (1977) Nasal gliomas: A review and report of two cases. Laryngoscope 87: 1169-1179.
6. Kindblom LG, Angervall L, Haglid K (1984) An immunohistochemical analysis of S-100 protein and glial fibrillary acidic protein in nasal glioma. Acta pathol Microbiol Immunol Scand A 92: 387-389.
7. Newlands SD, Weymuller EA, Jr (1999) Endoscopic treatment of juvenile nasopharyngeal angiofibroma. Am J Rhinol 13: 213-219.
8. Samuel RW, Philip MS, Samuel MC (1981) Nasal Glioma. Arch Otolaryngol 107: 550- 554.
9. Schick B, el Rahman el Tahan A, Brors D, Kahle G, Draf W (1999) Experiences with endonasal surgery in angiofibroma. Rhinology 37: 80-85.
10. Schmidt MB (1900) Ueber Selteng Spaltbildungen im Bereiche des Mittleren Stirnfortsatzes. Virchows Arch Pathol Anat Physiol 162: 340-370.
11. Smith KR, Schwartz HG, Luse SA, Ogura JH (1963) Nasal gliomas. J Neurosurg 20: 968-982.
12. Tashiro Y, Sueishi K, Nakao K (1995) Nasal glioma: An immunohistochemical and ultrastructural study. Pathol Int 45: 393-398.
13. Turgut S, Ercan I, Pinarci H, Beskonakli E (2000) First experience with transnasal and transseptal endoscopic and microscopic repair of anterior skull base CSF fistulae. Rhinology 38: 195-199.
14. Yokokawa M, Inouye N, Mizuno F (1999) Endoscopic management of nasal glioma in infancy. Int J Otorhinolaryngol 51: 51-54.

Hidenori Yokoi, M.D., Ph.D.
Department of Otorhinolaryngology
Juntendo University School of Medicine
2-1-1 Hongo, Bunkyo-ku
Tokyo 113-8421
Japan

Tel: +81-3-5802-1094
Fax +81-3-5689-0547
E-mail: hiddy@aurora.dti.ne.jp