Sphenoid sinus mucoceles

Report of two cases

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Two cases of mucocele of the sphenoid sinus that involved visual impairment and headache are presented. A transpalatal approach is considered best for cases with extensive sphenoidal bone destruction in which the preoperative diagnosis is uncertain.

Key Words • mucocele • mucocele of sphenoid sinus • transpalatal approach

Mucoceles of the sphenoid sinus are rare. Although they are benign and curable by simple endonasal drainage, they are often misdiagnosed as malignant or pituitary tumors, and unnecessary treatment such as radiotherapy or craniotomy is performed. We are reporting two cases of mucocele of the sphenoid sinus, in which preoperative diagnosis was difficult. Resection of the lining membrane was successfully performed by a transpalatal approach.

Case Reports

Case 1

A 44-year-old woman was admitted because of an aching left eye with throbbing left occipital headache of 3 months' duration, and impairment of left visual acuity of 2 months' duration. She was almost blind in the left eye on admission. She had been operated on for sinusitis 20 years earlier.

Examination. Only light perception was present in the left eye. Third, fourth, and sixth cranial nerve palsy, and decreased sensation to pin prick over the first and second divisions of the fifth nerve distributions were noted on the left side. Ear, nose, and throat examinations were negative. Endocrine study was normal. Skull x-ray films demonstrated erosion of the sella turcica on the left side (Fig. 1). The left superior orbital fissure was enlarged, as was the left optic canal (Fig. 2). Carotid arteriogram showed lateral shift of the proximal portion of the left ophthalmic artery. Orbital venogram revealed a partial defect and lateral shift of the left cavernous sinus.

Operation. Supportive steroid therapy was initiated 1 week before surgery. A transpalatal transseptal sphenoidotomy was performed (Fig. 3). Under general anesthesia, a midline incision was made from 1 cm behind the incisor to the uvula. The soft palate was bisected and the oral sides of the hard palate mucosa was separated subperiosteally. The junction of the hard and soft palate mucosa on the nasal side was divided transversely with no incision of the oral side mucosa. Then
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Fig. 1. Case 1. Left: X-ray film, lateral projection, of the skull showing cloudiness of the sphenoid sinus with erosion of its roof. Right: Lateral midline laminagram showing a large expanded sphenoid sinus with destruction of its anterior wall (arrows) and the sella turcica.

Fig. 2. Case 1. X-ray views of the optic canals showing destruction of the sphenoid strut bilaterally. Left: Left optic canal showing its pronounced enlargement. Right: Right optic canal.
the oral hard palate mucosa was retracted bilaterally with a mastoid retractor, and the soft palate was pulled laterally by a cerebellar retractor. The posterior two-thirds of the hard palate was removed, together with the posterior nasal septal cartilage. The posterior nasal septal mucosa was separated laterally and sphenoidotomy was performed widely under the Nagashima operating microscope* with a 300-mm objective lens. The osseous floor of the sphenoid sinus was well developed, and the underlying mucosa was friable. The sinus was filled with odorless, greenish-brown, viscous fluid. The interseptum was absent and the roof of the sinus in the region of the sella turcica was soft with no bone tissue. The entire mucous membrane was carefully removed. Wide endonasal opening of the sphenoid sinus was performed. Bacteriological study of the contents was negative and no cholesterol crystals were seen. Histological investigation showed connective tissue with chronic inflammation.

Postoperatively, the patient did well, and vision in her left eye returned to 20/260. The external ocular muscle palsy was completely recovered.

*Operating microscope made by Nagashima Medical Instruments Company, Ltd., 1-24-5 chome Hongo Bunkyo-ku, Tokyo, Japan 113.
the external bone cortex of the clivus were done (Fig. 7). About 20 ml of brownish viscous fluid was drained. The mucosa, which was very friable, thin, and adherent to the dura mater, was carefully removed. Since the anterior portion of the sinus was not accessible by this approach, the rhinoseptal approach was added in order to remove the mucosa from the anterior portion of the enlarged sinus. Bacteriological examination of the contents was negative. Histological study showed that the mucosa consisted of respiratory epithelium with mild inflammatory signs. The postoperative course was uneventful, the visual field became full, and no more palsy was seen in external ocular muscles.

Discussion

Mucoceles of the sphenoid sinus are rare, and only about 100 cases have been reported since Berg's description in 1889. Although their etiology is still controversial, they may be considered either as retention cysts resulting from occlusion of the sinus ostium by chronic sinusitis, or as cystic dilatation of the goblet-cell gland. Usually the mucocele wall is composed of fibrous connective tissue with round-cell infiltration. Nugent, et al., reviewed 63 cases of sphenoid sinus mucocele, and found headache and ocular symptoms to be common. In their series, headache was most often unilateral, periorbital, and persistent; the ocular symptoms were due to expansion into the apex of the orbit. Impairment of visual acuity was noted in 41 cases, paresis of the extraocular muscles was present in 19 patients and exophthalmos was seen in 20 cases. In 29 patients, there was a history of previous otolaryngological disease in the form of sinusitis, intranasal polyps, nasal mass, or nasal discharge. Symptom-free in-
FIG. 5. Case 2. Left: An anteroposterior view of the left carotid arteriogram reveals lateral displacement of the C-4 portion of the left internal carotid artery. Right: Lateral view shows posterosuperior displacement of the C-4 and C-5 portion of the left internal carotid artery.

Intervals of months or years were not uncommon.

Because the ophthalmoplegia is sometimes transient and recovers spontaneously as in our second case, it is very important to make a differential diagnosis from ophthalmoplegic migraine.2,7,9 According to Norman and Yanagisawa,8 radiological signs of mucocele of the sphenoid sinus are as follows: 1) opacification of the sphenoid sinus; 2) smooth outlining and rarefaction of the bone wall; 3) destruction of the sella turcica with occasional concomitant changes in the anterior and posterior clinoid processes; 4) destruction of the interseptum; 5) displacement of the internal carotid artery on arteriogram; and 6) widening of the optic foramen and the superior orbital fissure and lateral displace-

FIG. 6. Case 2. Orbital venogram showing lateral displacement of the superior ophtalmic vein (small arrow) and the cavernous sinus (large arrow) on the left side.

FIG. 7. Case 2. Intraoperative x-ray film showing suction tip in the sphenoid sinus through the transpalatal approach.
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ment of the lamina papyracea in the late stage when the mucocele expands anterolaterally.

A review of the world literature revealed 20 cases in which intracranial operation was performed in an attempt to treat a presumed intracranial lesion.5,4,6,8 Surgical complications included four deaths due to infection and two instances of meningitis. One patient in whom the craniotomy was followed by an endonasal approach developed a problem with CSF rhinorrhea.9 Our experience with a transpalatal approach to the sella and the clivus for sphenoidal destructive lesions, even in cases where the lesion extended into either clivus or orbit, suggests that this approach can give better exposure than a transnasal, ethmoidal, or transmaxillary approach. In the case of sphenoid sinus mucocele, radical resection of the mucous membrane can be performed under direct vision with this approach. Even in a lesion of the sphenoid sinus other than a mucocele, more definitive treatment could be made with this approach than with a simple transnasal one. This approach is particularly valuable in cases in which preoperative diagnosis is obscure.

References
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