Pyocele of the Sphenoid Sinus

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Lesions of the paranasal sinuses often have to be considered in the differential diagnosis of sellar disease. The sphenoid sinus in particular may be a source of diagnostic confusion. Of the various lesions to which this sinus falls prey, one of the rarest is mucocoele or pyocele. The following case report illustrates several unusual features of importance to the neurosurgeon in the diagnosis and management of such lesions.

Case Report

J.W., a 30-year-old white male, began to suffer episodic visual disturbance in 1955. This began as a sudden loss of vision in his left eye which cleared completely within 3 weeks. No further symptoms occurred until 1960 when there was a sudden decrease in vision in both eyes accompanied by headaches. This was described as bifrontal pain of a continuous nature, enhanced and often precipitated by lying down and relieved by standing up. A diagnosis of retrobulbar neuritis was made, and a course of systemic steroids was given. Roentgenograms of the skull at this time were reported as normal as were studies of the cerebrospinal fluid. The visual acuity improved in the right eye to 20/50 within 6 weeks but remained at counting fingers in the left eye. It was noted for the first time that he had bilateral corneal dystrophy, worse on the left side.

In early 1962, he was aware of the complete loss of vision in the nasal field of the left eye, and only motion of the hand was perceived in the rest of the field; vision was unchanged in the right eye. In June 1962, a constant left-sided headache developed in the parietal region; this too was relieved by the erect posture. In October 1962 roentgenograms of the skull revealed erosion in the floor of the pituitary fossa. A pneumoencephalogram and bilateral carotid angiograms were performed and a presumptive diagnosis of pituitary tumor was made. On Oct. 25, 1962 a right frontal craniotomy revealed extensive frontal cerebral edema and the sellar region could not be explored. Because of the edema the bone flap was left out. A second exploration at the same site on Nov. 6, 1962 was also unsuccessful for the same reasons.

In November 1962 the patient was referred to the Branch of Ophthalmology of the National Institute of Neurological Diseases and Blindness, for treatment of the corneal dystrophy, and further neurosurgical evaluation was requested from the Branch of Surgical Neurology, where he was seen for the first time on Nov. 20, 1962.

Examination. He was a well-looking individual with a healed coronal incision of the scalp and absence of bone in the right frontal area. The remaining findings were entirely within normal limits with the exception of the ocular findings which were compatible with corneal dystrophy and are summarized briefly as follows: dystrophic changes in both corneas, mainly in the left; visual acuity 20/60 and J2 in the right eye and light perception only in the left. Fundi were normal and visual fields were full bilaterally.

All blood studies and urinalysis were within normal limits. Roentgenograms of the skull on Dec. 7, 1962 revealed a mass of soft tissue involving the left nasopharynx and sphenoid sinus with destruction of the floor of the pituitary fossa (Figs. 1 and 2). A large surgical defect was present in the right frontal region. Views of the optic foramina showed bony destruction of the left optic foramen with only the inferior margin remaining intact. Tomograms of the sella turcica and adjacent sphenoid bone showed destruction of the air cells of the ethmoid, sphenoid sinus, and medial portion of the lesser wing of the sphenoid bone on the left. This opaque area of erosion extended into the nasopharynx through the sphenoid bone adjacent to the pterygoid process (Fig. 3).
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The pneumoencephalogram and carotid angiograms done in October 1962 were reviewed and our interpretation excluded any intracranial extension of the lesion. Diagnosis at this stage was "a nasopharyngeal destructive mass involving the sphenoid sinus and extending into the floor of the pituitary fossa; probably a nasopharyngeal carcinoma."

Operations. On Dec. 13, 1962 the patient underwent nasopharyngoscopy with biopsy under topical analgesia. Fullness in the upper anterolateral aspect of the nasopharynx on the left side was the only abnormality found. Multiple biopsies in this area were negative for tumor.

On Jan. 9, 1963, under local analgesia, the middle turbinate of the left nostril was removed surgically and entrance into the left sphenoid sinus was then obtained with the use of a punch. Polaroid roentgenograms were taken during the procedure to locate the exact position of the biopsy instrument (Fig. 4). As the left sphenoid sinus was entered, about 30 cc. of yellow-green pus escaped. A considerable amount of remaining pus was removed with a suction catheter and saline irrigations of the cavity. The patient tolerated the procedure well.

Histological examination of tissue taken from the wall of the cavity showed only necrotic epithelium of the sphenoid sinus, and cultures of the pus and this tissue grew only nasal commensals without any pathogens.

Course. The patient had complete relief of his headaches for the first 5 days after operation and then began experiencing headaches again. Repeated roentgenograms showed a level of fluid in the left sphenoid sinus and further irrigations were carried out (Fig. 5). The headaches were relieved with these irrigations which were performed twice a week for a few weeks and then for a few occasions, as indicated by repeated roentgenograms of the sinus. The last irrigation was done in March 1968. The patient has remained symptom-free since that time. The bone flap was replaced in August 1963.

Repeated films of the skull with views of the optic foramen and laminagraphy were done on Jan. 17, 1964. These showed reconstitution of bony margins adjacent to the sphenoid sinus without evidence of recurrent sphenoidal disease or other lesions in the nasopharynx (Figs. 6 and 7). The patient is now well and has had no recurrence of headache, or other symptoms.

The visual disturbance caused by the corneal dystrophy is under control and has shown no progression.

Discussion

Mucocele of the sphenoid sinus was first described by Berg in 1889. In earlier reviews of pyocele-mucoceles of the paranasal sinuses, it was made clear that either mucocele or pyocele could produce an identical clinical picture; even the radiological appearance may be similar. Mucoceles of the frontal sinuses, which are the commonest, are caused by obstruction resulting...