Mucocele of the Sphenoid Sinus Presenting as an Intrasellar Mass

Case Report

Norval M. Simms, M.D., Willis E. Brown, M.D., and Lyle A. French, M.D.

Department of Neurosurgery, University of Minnesota Health Sciences Center, Minneapolis, Minnesota

It is well recognized that diverse pathological processes in the vicinity of the sphenoid bone can produce radiographic evidence of sellar enlargement. The best known lesion is the chromophobe adenoma. Other entities are parasellar meningiomas, carotid artery aneurysms, the "empty sella," cranioopharyngiomas, gliomas of the optic chiasm and nerves, enlargement of the anterior portion of the third ventricle secondary to hydrocephalus, and other uncommon lesions. Less well recognized as a cause of enlargement of the sella turcica is a mucocele of the sphenoid sinus. This is a report of a mucocele which produced a ballooning and erosion of the sella similar to that observed in patients with chromophobe adenoma. The rarity of this lesion prompted this communication.

Case Report

A 25-year-old man was admitted to the hospital on July 1, 1968, with a 2-day history of diplopia. He had experienced intermittent left frontal headaches for 2 years. For 2 weeks prior to admission he was treated with antibiotics for pharyngitis. His general health had otherwise been good; he was the father of two children.

Examination. General physical and neurological examinations, including visual fields, were normal except for a left abducens nerve palsy. Laboratory examinations revealed a hemoglobin of 16.6 gm%. The white cell count was 11,500 per cu mm with 69% polymorphonuclear leucocytes, a finding consistent with the recent pharyngitis. The fasting blood sugar, serum electrolytes, blood urea nitrogen, urinalysis, and a glucose tolerance test were normal. The triiodothyronine (T₃) test was normal with a value of 10.8% (normal range: 10% to 14.6%). Lumbar puncture showed an open-

Received for publication September 3, 1969.
some type of atypical chromophobe adenoma.

Postoperative Course. There was minimal diabetes insipidus which subsided on the fifth postoperative day. On the fifth postoperative day, the patient became febrile, complained of headache, and exhibited minimal neck stiffness. Culture of the spinal fluid was negative for pathogens. The symptoms and signs resolved, and the patient was discharged on July 29, 1968. Examination in December, 1968, revealed the presence of occasional diplopia, especially when fatigued. Metabolic studies were compatible with mild hypopituitarism. When last seen in May, 1969, the diplopia was further improved and the patient was clinically well.

Pathological Study. The gross and microscopic appearance of the lesion conformed to that of a mucocele as described by others. Grossly, the specimen was gelatinous and rubbery. There were areas appearing clear and watery or faintly gray and semipaque. Microscopic examination (Fig. 2) of hematoxylin and eosin sections revealed large areas of pale and dark pink amorphous material in which aggregates of poorly defined cells, often containing very small, dark, and multilobed nuclei, were interspersed. These cells were polymorphonuclear leucocytes in a poor state of preservation. Much of the tissue stained positively with mucicarmine stain indicating the mucinous nature of the lesion.

Discussion

Mucoceles of the frontal sinus have been divided into primary and secondary types. Primary mucoceles are retention cysts that arise from goblet cells of the sinus epithelial lining. Secondary mucoceles are due to obstruction of the sinus ostium in the presence of chronic sinusitis, tumor, or fracture. Our case is believed to represent a primary mucocele since none of the disease processes usually associated with the secondary type was present.

Lundgren and Olin have thoroughly reviewed the subject and reported a collected series of 55 cases of mucoceles; 40 originated in the sphenoid and 15 in the ethmoid sinus. Ocular symptoms due to expansion into the apex of the orbit was a common feature in the series. Visual impairment of varying degree was present in 35 cases, paresis of the extraocular muscles in 20, exophthalmos in 20. Our case had no visual disturbance,
but did have a left abducens palsy from lateral expansion of the mucocele. Far less common was expansion into the region of the sella turcica. In only eight cases reviewed by these authors were the clinical and radiographic features suggestive of a hypophysial neoplasm; in these, the preoperative diagnosis of a chromophobe adenoma was incorrect.

There were no specific radiographic clues in the present case to suggest the correct diagnosis. The sella enlargement and erosion evident in this patient were entirely consistent with that produced by a chromophobe adenoma. Mucoceles arising in the sphenoid sinus are known to displace the carotid siphon upward and laterally; this was an angiographic feature in our case, but it is also seen with parasellar extension of a hypophysial neoplasm. The roentgenographic characteristics of increased sinus density, widening of the superior orbital fissures, and/or optic canals were not apparent in this patient. The correct diagnosis was not made preoperatively, and this report points to the possible existence of a mucocele under these clinical circumstances. It also casts doubt on the use of primary radiation therapy for perichiasmal lesions when the pathological nature of the lesion is not known with certainty.

Summary and Conclusions
A case in which mucocele of the sphenoid sinus expanded into the sella turcica and displaced the hypophysis posterosuperiorly has been reported. This uncommon entity should be considered in the differential diagnosis of lesions producing a ballooned sella turcica even though there is lack of historical or specific radiographic evidence of primary paranasal sinus disease. This case suggests that radiation therapy of a perichiasmal lesion without prior histological verification of the diagnosis could be quite inappropriate.

References