

## Aspergillosis Involving the Sphenoid Sinus

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**Summary.** The radiological features of isolated involvement of the sphenoid sinus by aspergillosis are described.

**Key words:** Aspergillosis, Sphenoid sinus.

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The increasing use of immunosuppressive and antimetabolic drugs has greatly increased the patient population susceptible to fungus infections. Aspergillosis has been reported in patients receiving therapy for malignant disease, collagen vascular disease, sarcoidosis, and renal transplantation [7]. The following is the first reported case of isolated involvement of the sphenoid sinus by aspergillosis diagnosed antemortem.

### Case Report

A 60 year old white woman had eosinophilic gastroenteritis with malabsorption, diagnosed in 1963 by laparotomy which revealed thickened bowel walls. Prednisone therapy was instituted at that time and maintained at 40 mg/day. In December 1972 she began to have headaches once or twice a week, beginning in the morning. The headaches were in the left periorbital region; they were nonthrobbing and lasted 4 to 8 hours. These headaches were associated with tearing and redness of the left eye and were accompanied by nasal congestion and pain in the region of the left eyebrow. Paranasal sinus radiographs showed

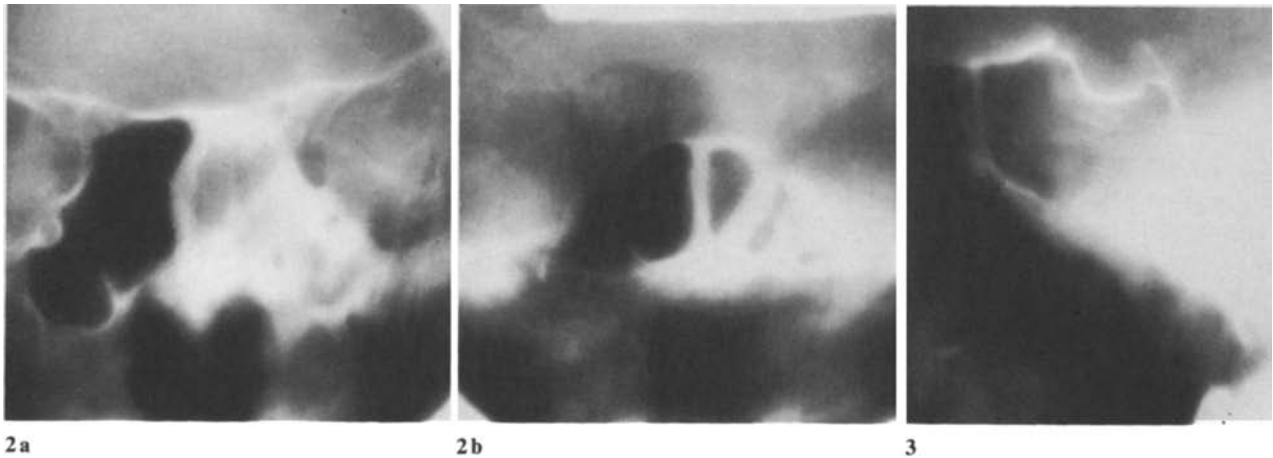
increased radiopacity of the left sphenoid sinus (Fig. 1). The margins of this sinus were smooth. The remainder of the paranasal sinuses appeared normal. Polytomograms of the paranasal sinuses showed pronounced, uniform thickening and sclerosis of the walls of the left sphenoid sinus (Figs. 2 and 3). No bony destruction was present. Carotid angiography showed minimal posterior displacement of the anterior cavernous portion of the left internal carotid artery. Right inferior petrosal sinography showed slight lateral displacement of the medial aspect of the right cavernous sinus (Fig. 4). The coronary sinuses did not fill and the left cavernous sinus was not opacified. Left



**Fig. 1.** Radiograph of paranasal sinuses, basal projection, shows marked increase in radiopacity of the left sphenoid sinus (arrows)

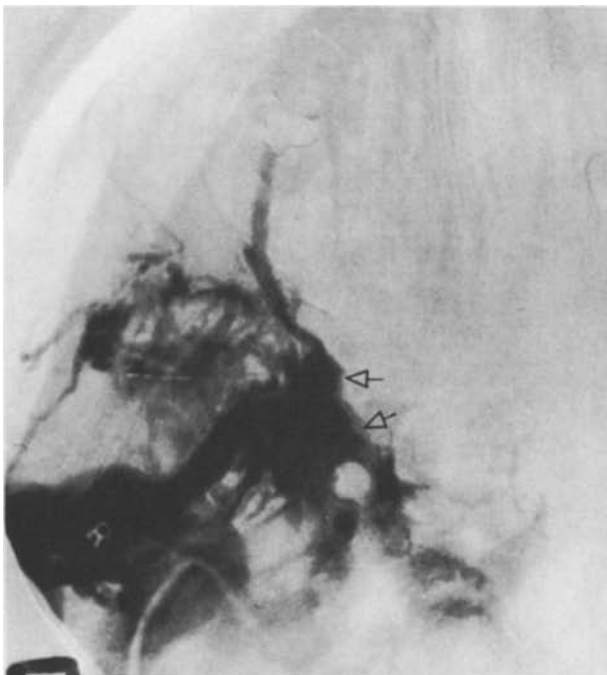
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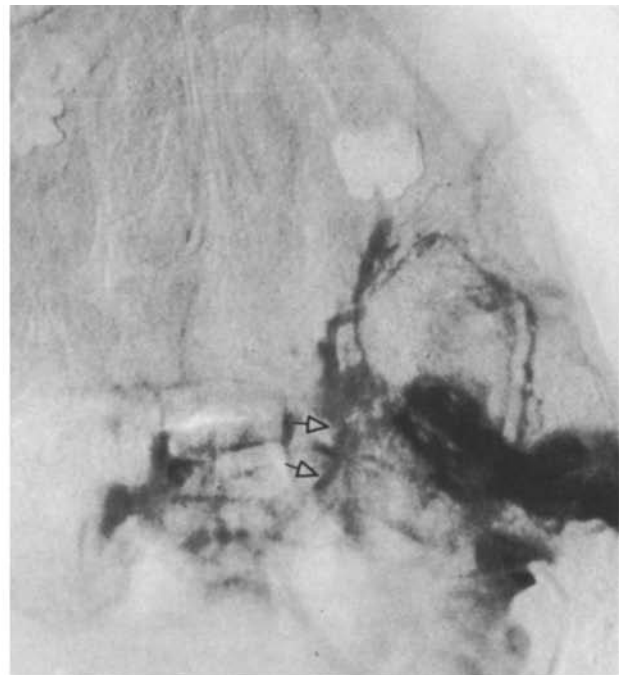


**Fig. 2.** a) Frontal tomogram of the paranasal sinuses shows marked thickening and increased density of the walls of the left sphenoid sinus. b) Tomogram of a more posterior section of sphenoid sinus shows similar changes

**Fig. 3.** Lateral tomogram of the sphenoid sinus demonstrates thickening of the mucoperiosteal membrane, aeration of the sinus, and intact bone surrounding the sinus



**Fig. 4.** Medial aspect of the right cavernous sinus is minimally indented (arrows). There is non-filling of the left cavernous sinus



**Fig. 5.** Filling defect in the medial wall of the left cavernous sinus (arrows). The coronary sinuses are compressed and irregular

inferior petrosal sinography showed a filling defect in the medial wall of the left cavernous sinus (Fig. 5).

Surgical exploration of the left sphenoid sinus showed the bone of the anterior aspect of the left sphenoid sinus to be friable. The sinus was filled with firm, tan tissue. A frozen section showed mycelia. The sinus was evacuated and packed with bacitracin gauze. The pathological examination of the specimen showed hyphae with branching, characteristic of aspergillosis.

The mucoperiosteal membrane showed findings of chronic sinusitis. The bone was sclerotic and demonstrated marked fibrosis without aspergilli. The headaches ceased 48 hours after the surgical drainage of the sphenoid sinus. Treatment with amphotericin B was instituted because of the involvement of the cavernous sinus, as demonstrated by phlebography. Forty milligrams amphotericin B was administered for a period of three months. The patient has remained asymptomatic.

## Discussion

Aspergillosis frequently occurs as a saprophyte in pulmonary cavities and may affect patients with debilitating disease or those receiving immunosuppressive or antimetabolic therapy [7]. Aspergillosis can involve the nasal mucosa, the paranasal sinuses, or the orbit. Mycotic infections of the paranasal sinuses may either be local or part of a generalized mycotic invasion. Aspergillosis is the most common fungus that involves the paranasal sinuses without predisposing factors [2]. Many cases of aspergillosis involving the paranasal sinuses and the orbit have been reported [1, 3–6, 8]. In these cases the ethmoid and the maxillary sinuses were affected by aspergillosis. Ours is the first reported case of isolated involvement of the sphenoid sinus by aspergillosis that has been diagnosed antemortem. Young et al. [7] reported a case of isolated involvement of the sphenoid sinus found on postmortem examination in a patient with Hodgkin's disease. Prednisone therapy is believed to have predisposed our patient to aspergillosis. Headache, nasal congestion, and periorbital pain are compatible with paranasal mycotic infection [2]. The radiographic changes due to fungus diseases of the paranasal sinuses are not specific. As in cases of chronic sinusitis, the mucoperiosteal membrane is thickened. Bone destruction may simulate a malignant tumor.

Our patient presented a diagnostic problem because of the isolated involvement of the sphenoid sinus. Thickening of the mucoperiosteal membrane with aeration of the sphenoid sinus and without bone destruction is suggestive of a low-grade inflammatory disease such as aspergillosis. The filling defects that

were present in the cavernous sinus are believed to be due to partial thrombosis within the sinus secondary to infection or to a localized soft tissue inflammatory reaction.

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