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CT of Pituitary Abscess

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An unusual site for intracranial abscess is in the pituitary gland. The preoperative diagnosis of this relatively rare entity has been difficult [1]. The increasing use of high-resolution computed tomographic (CT) scans in the diagnosis of pituitary masses and the sometimes highly suggestive clinical history should allow more accurate diagnosis of this entity in the future.

Case Report

A 25-year-old woman from India, 3 months postpartum, presented with continued lactation (prolactin 108 ng/ml) and a left temporal field defect. The patient had no history of or current evidence for infection, sinusitis, or meningitis.

High-resolution CT was performed with contrast enhancement only. Because of the thin section technique (1.5 mm slices), coronal and sagittal reformations were available for analysis. The sella was moderately and symmetrically enlarged with the dorsum sellae intact. A "sphere" of contrast enhancement was detectable in the sella and suprasellar cistern. This ring was uniformly thin around a large low-density center (fig. 1). Within the sella, the ring of enhancement was difficult to differentiate from adjacent bone and enhancing cavernous sinus. The scan showed no abnormalities in the subarachnoid space indicative of meningitis. The paranasal sinuses were normal. Surgery was performed via a transsphenoidal approach; *Staphylococcus* was cultured from a pituitary abscess. At surgery only dura was encountered at the floor of the sella; no definite separate abscess capsule could be distinguished. Microscopic examination of removed tissue disclosed no tumor cells, only inflammatory cells and normal pituitary.

Discussion

The clinical and radiologic diagnosis of pituitary abscess may be quite difficult, but, given awareness of this disease, it should be increasingly possible to make the preoperative diagnosis [1–6]. Afflicted patients span a wide age range. The clinical history, although usually nonspecific, can be the key to the correct diagnosis. The most important clue is previous or concurrent evidence of meningitis. The history may reveal multiple episodes. Clinical meningitis, seen in less than half of affected patients, may assume an indolent and protracted or a rapid, fulminant course [1, 6]. Concurrent meningitis presages a poor prognosis [1]. Constitutional signs or symptoms of infection are not present unless meningitis or a contiguous infection accompanies the pituitary abscess. Compared with other types of intracranial abscesses, symptoms relating to pituitary abscesses often are of much longer duration, ranging from months to years [1, 2, 5, 6]. Headache is a common presenting symptom and is usually of a bifrontal nature. Some type of visual disturbance occurs frequently, most often bitemporal hemianopia. The history and laboratory findings indicate hypopituitarism as well as some type of hypothalamic dysfunction [1–3, 5, 6], although in our case, unaccountably the serum prolactin level was elevated.

Several associated or predisposing disease states have been identified: generalized sepsis, sinusitis, sphenoid osteomyelitis, cavernous sinus thrombophlebitis, meningitis, and the postoperative state after pituitary tumor removal [1–4, 7]. When meningitis or cavernous sinus thrombophlebitis accompanies a pituitary abscess, it is often not clear whether these are the cause or the result of the abscess [1, 6]. Bacteria cause most pyogenic pituitary abscesses [1, 5]. *Staphylococcus* and *Pneumococcus* are the commonly cultured organisms [1, 5]. Similar to other types of intracranial abscess when caused by adjacent sinusitis, multiple organisms are often cultured. As with parenchymal brain abscess, previously reported "sterile" abscesses are probably of anaerobic origin and reflect inadequate technique in isolating such organisms. In addition to the more usual bacterial etiology, mycotic pituitary abscesses have also been reported, such as those caused by the fungus *Aspergillus* [2, 4].

Treatment consists of surgical drainage and appropriate antibiotic coverage [1, 2, 5–7]. The transsphenoidal approach is preferred to minimize the possibility of subarachnoid spread of the infection. More than one drainage procedure may be required [6, 7]. Even with appropriate surgical treatment, recurrent postoperative meningitis may be a problem [1, 3, 6]. Postoperative meningitis in mycotic pituitary abscess may be fatal [4].

The CT scan of pituitary abscess cannot be distinguished from other intrasellar masses but may exhibit features that, in the appropriate clinical setting, can suggest the correct

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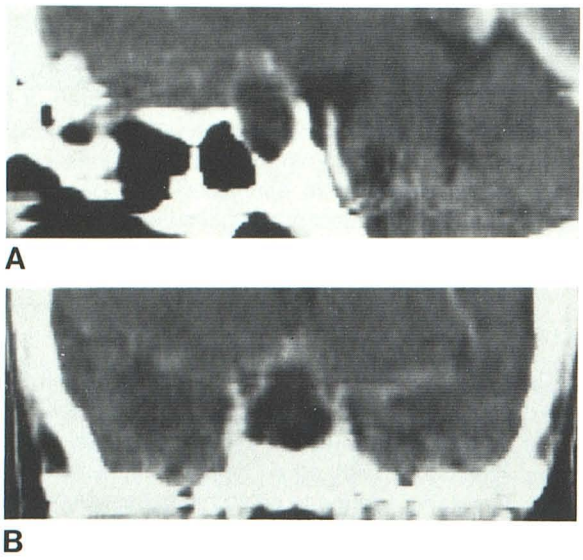

Fig. 1.—Postcontrast reformatted CT scans. **A**, Sagittal cut. Diffusely enlarged sella and suprasellar extension of abscess. Thin rim of enhancement compared with size of lesion suggests abscess. **B**, Coronal scan also shows thin rim of enhancement and large low-density center. "Neckline" of abscess probably related to diaphragm sellae. In both reformatted images intrasellar component of capsule enhancement was impossible to visualize.

diagnosis. Because of the relatively slow pathogenesis of a pituitary abscess, sella remodeling occurs, usually in a symmetrical fashion. A normal sella size is the exception in this disease process [5]. The contrast enhancement pattern is as would be expected for abscesses at other sites in the brain. A relatively thin, uniform ring of enhancement surrounds a central area of low density. This ring may not be easily identified in its entirety because of adjacent bony walls of the sella and enhancing cavernous sinuses. Only the superior part of the thin abscess capsule may be well visualized. Coronal and sagittal reformations aid in characterizing the lesion. Although CT scan experience is limited, previous pneumoencephalographic data suggest that pituitary abscesses do not attain large size, although some suprasellar extension can be expected. In fact, clinical signs and symptoms may seem out of proportion to the size of the lesion [4]. CT evidence of concurrent, acute meningitis would not be expected since acute meningitis has few if any CT manifestations. Evidence for sinusitis or adjacent sphenoid sinus disease may aid in diagnosis. The differential diagnosis of pituitary abscess includes a wide variety of intrasellar cysts and tumors: pituitary adenoma, craniopharyngioma, epidermoid tumor, granular cell tumors, Rathke cleft cyst, and intrasellar arachnoid cysts. Compounding the difficulty in diagnosis is the propensity of pituitary abscess to be superimposed upon other intrasellar masses such as pituitary adenoma, craniopharyngioma, or Rathke cleft cyst [1, 6, 7]. If these lesions coexist, the CT diagnosis becomes extremely difficult since the expected features of abscess would be obscured by the coexisting pathology.

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