Giant Cell Tumors of the Sphenoid Bone*

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Although giant cell tumors have been reported in different areas of the skull and paranasal sinuses, their occurrence in the sphenoid bone is rare. Since it may closely simulate other lesions about the dorsum sellae and parasellar region, the recognition of such lesions should be of special interest to the neurological surgeon.

Case Report

A 20-year-old housewife in the 34th week of pregnancy entered the hospital on February 19, 1969, with complaints of double vision and headache. She had been asymptomatic until early February, 1969, when she began to have mild frontal headaches. Two days later she became aware of double vision which was at first intermittent, but later became persistent. Several days thereafter she developed a drooping left eyelid. During the week prior to admission the pains became localized about the left eye and along the left side of the nose; she also complained of loss of appetite, restless sleep, and generalized weakness.

The remaining review of neurological, endocrine, and general medical systems was normal.

Examination. The patient was found to be alert, cooperative, and in no acute distress. The general physical examination was unremarkable except for the abdomen. The uterine fundus was palpable 3 cm above the umbilicus. A few weak, intermittent uterine contractions were discerned.

Neurological examination revealed moderate weakness of the left lateral rectus muscle. There was also a partial paresis of the left third cranial nerve characterized by partial ptosis and pupillary inequality, the left pupil being larger than the right. Both pupils reacted promptly to light, however. The visual acuity were 20/13 bilaterally corrected. The fundi and visual fields were normal. The remaining cranial nerves, tests of strength, reflexes, sensation, and cerebellar function were all normal. The plantar responses were flexor bilaterally.

Hospital Course. A few hours after hospitalization, the paralysis of the left lateral rectus muscle progressed and became complete. On the day preceding her admission this patient had been examined not only by an ophthalmologist but also by a neurologist. Neither physician was able to detect any weakness of the ocular muscles. Initially this rapid deterioration in the function of the left sixth cranial nerve was felt most likely to be secondary to a rapidly expanding lesion.

Examination of the blood revealed a hemoglobin of 11.1 gm%. The routine laboratory work was otherwise within normal limits. The fasting blood sugar was 90 mg%, and the blood urea nitrogen 9 mg%. Radiological examination of the chest was normal. Skull films revealed that although the anterior portion of the floor of the sella was normal, the posterior portion showed marked bony destruction. Only the upper portion of the dorsum sellae was visible (Fig. 1 left). These changes were better defined on lateral laminograms of the sella (Fig. 1 right). A left carotid arteriogram was interpreted as normal. A retrograde right brachial cerebral arteriogram showed questionable straightening and backward displacement of the terminal portion of the basilar artery. A technetium-99 brain scan was considered normal.

The clinical impression rested between a clivus chordoma and a sarcoma originating within the sphenoid sinus. In view of her being close to term, careful consideration was given as to the advisability of active therapy prior to the delivery. The clinical history suggested a rapidly progressing lesion in view of the abrupt onset of the 6th cranial

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nerve paralysis. It was felt that the risk of letting her strain during delivery plus effects of the analgesics required to allay her pain were greater than the prompt diagnosis and institution of therapy. The obstetrical service concurred with our opinion, and a biopsy of the lesion was planned.

Operation. On February 26, 1969, an attempt at biopsy through a transseptal sphenoïdotomy was made under local anesthesia, but satisfactory entry into the sphenoid sinus was not possible.

On March 3, under general anesthesia and with the use of the image intensifier, a translabial, transsphenoidal approach to the dorsum sellae was attained. There was no gross tumor visible within the sphenoid sinus. However, fragments of soft tissue were curetted from the region of the clivus and dorsum sellae for histological examination (Fig. 2). The patient tolerated the procedure well.

The biopsy specimen consisted of small irregular tan-gray to dark red-brown fragments of tissue. Microscopic examination (Fig. 3) revealed the presence of many multinucleated cells generally containing numerous nuclei. The nuclei were frequently centrally located, round to ovoid, moderately vesicular, and usually contained a single small nucleolus. The cytoplasm varied in amount and was finely granular. Amongst these giant cells, spindle as well as ovoid-shaped stromal cells were present. Many of the stromal cell nuclei were moderately vesicular, and resembled the nuclei noted within the giant cells. Other nuclei were noted which were spindle-shaped and hyperchromatic. Normal mitotic figures were rare. Masson trichrome stain revealed only isolated traces of collagen fibers. Increased vascularity was not present. The impression was that of a grade I benign giant cell tumor of bone.

Postoperative Course. The patient's postoperative course was uncomplicated. Irradiation therapy was begun on March 7, 1969, and a projected plan of 4500 rads to the tumor through two lateral ports over 5 weeks was instituted. On March 8, 1969, she went on to an uncomplicated delivery of a normal 2268 gm baby boy. By the time of discharge from the hospital on March 14, 1969, she had an almost complete paralysis of the right sixth cranial nerve, but was otherwise doing well.

Subsequently she completed her course of