

Cavernous Hemangioma Of The Frontal Bone: A Case Report

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Abstract : The case of a 33-year-old man with a hemangioma involving the frontal sinus is reported. The patient presented with a gradually increasing hard lump over the forehead and frontal headaches. Characteristic changes on plain X-ray and computed

tomography supported this diagnosis. The lesion was removed through a bifrontal craniotomy.

Key words: Hemangioma, Skull, Frontal Sinus.

INTRODUCTION

Osseous hemangiomas are benign tumors of vascular origin. The first description of a calvarian hemangioma was by Toynebee as early as 1845 (15). Since then, very few solitary cases have been reported (1-4,6-13,16). Overall, hemangiomas are uncommon skeletal tumors representing 0.7% of all bony neoplasms; skull hemangiomas alone account for 0.2% of all osseous tumors and 10% of the primary benign tumors of the skull (16). All cranial and facial bones can be involved with a special predilection for the parietal bone (3,16). Usually unifocal, hemangiomas may rarely be multifocal (10,14,16).

The present paper reports a hemangioma of the frontal bone. The differential diagnosis and management of this rare lesion are discussed.

CASE REPORT

This 33-year-old male cook was admitted with a 3-year history of a gradually increasing hard lump over the middle of the forehead and frontal headaches alleviated by salicylates. He had a past history of physical torture with head trauma. There were no symptoms suggestive of increased intracranial pressure. Physical examination revealed

a firm painless, non-pulsatile 2.5 x 2.5 cm mass. The overlying skin was normal and freely mobile. No bruit was heard on auscultation of the region. The neurological examination was normal.

Routine blood test were normal. Anteroposterior, lateral and tangential plain X-rays revealed a mid-frontal osseous lesion (Fig. 1a, b, c). Radiating bony spicules arranged in a "sunburst" pattern were present on the tangential view (Fig. 1c). Ct-scan revealed a bony mass inside the frontal sinuses expanding its anterior and the posterior walls. The bony spicules radiated from a central point in the frontal sinus (Fig.2).

At operation, a bifrontal skin incision was performed. After stripping of the periosteum a bluish osseous mass was exposed. By drilling a circular trough in healthy bone, en bloc removal of the lesion was achieved. Macroscopically, the latter presented as a slightly lobulated bony mass without any bleeding from its surface. Most of the right frontal sinus was occupied by this tumor which was partly adherent to the dura. The dura was repaired with a lyodura. The frontal sinuses were covered by a periosteal flap and filled with fibrin glue. The bone defect was repaired with cement.

Histological examination of the tumor specimen revealed numerous pathological vessels essentially

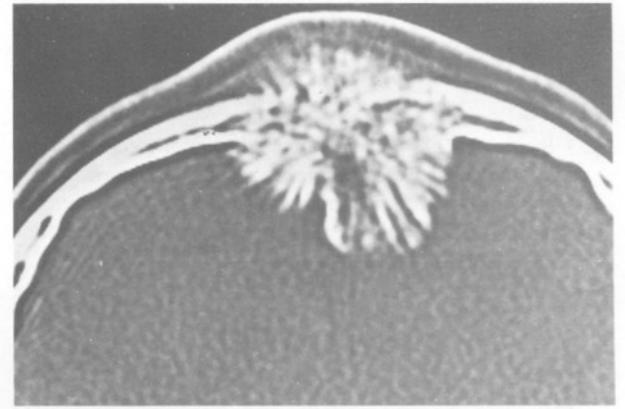


Fig. 1. Plain X-ray of the skull. Anteroposterior view (Fig. 1a) showing a well-circumscribed bony defect in the middle frontal region. Note the "honeycomb" pattern of the inner aspect of the lesion and the absence of sclerotic reaction. (Fig. 1b) Lateral view showing the extension of the lesion and the blowing of both the outer and inner tables. Tangential view (Fig. 1c) showing the characteristic "sunburst" appearance of the lesion

Fig. 2. Bone window CT-scan showing the entire lesion eroding both the outer and inner tables. Note the bony trabeculae radiating from a central point in the frontal sinus.

of the venous type, in some places separated by mesenchymal tissue. No evidence of malignancy was identified (Fig. 3a, b). The histological diagnosis was osseous cavernous hemangioma. The postoperative course was uneventful. At discharge, the neurological examination was normal and the patient did no longer experience headaches.

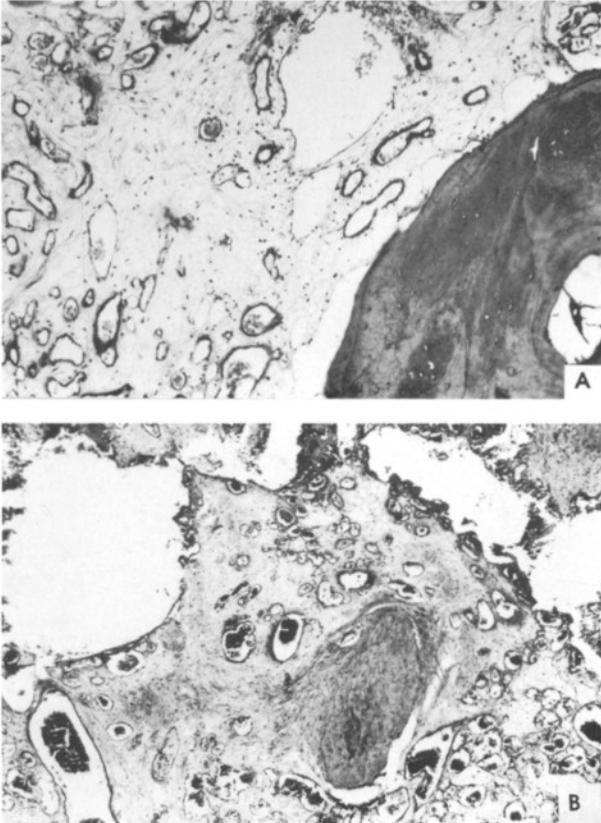


Fig. 3. High-power photomicrograph of the tumor specimen showing numerous dilated venous vessels, sometimes with cavernous lumen. Intervascular mesenchymal tissue contains dense lamellar bone (Fig. 3a) or small foci of calcification (Fig. 3b). Hematoxylin-eosin x60.

DISCUSSION

Osseous hemangiomas are benign tumors of vascular origin. They have been reported to have their highest incidence in the fourth decade of life and to be three times as frequent in females as in males (3,16).

The pathogenesis of these tumors is obscure, an history of trauma has been incriminated by some author and refuted by others (4,6,8,10,16). The clinical picture is variable and not specific. The history usually reveals a hard lump which has been present for

months or years. Local pressure may sometimes cause pain. Later on the patient may complain of headaches possibly due to pressure on the dura. Otherwise, symptoms are largely dependant on location of the tumor. Hence, periorbital hemangioma may cause exophthalmos, diplopia or visual disturbances. When the temporal bone is involved, deafness, tinnitus or facial paresis may be the first signs (3,6,16).

Radiologically, hemangiomas are characterized by a single well-delimited area of porous rarefaction of bone, which is usually round or ovale in shape. Usually, there is no sclerotic rim at the periphery of the lesion. The center of the lesion often exhibit a peculiar "honeycomb" appearance. In tangential views another characteristic feature is the so-called "sunburst" appearance produced by radiating bony trabeculae (2,3,13,15,16). Erosion of the outer table only is the commonest finding. The periosteum is always intact. As the tumor grows, the inner table may become eroded (10,15,16). The radiological differential diagnosis includes other well-delimited osteolytic lesions such as dermoid cyst, giant-cell tumor of bone, multiple myeloma and metastasis. In rare instances calvarial meningiomas may be part of the differential diagnosis, but, in contrast to the typical radial disposition of the bony trabeculae of hemangiomas, the striations of meningiomas tend to be oriented parallel to one another. Moreover, meningiomas commonly produce marked hyperostotic changes which are usually absent in the case of hemangioma. In general, osteomas are uniformly dense and should not be confused with hemangiomas. Differentiation between hemangioma and osteosarcoma may sometimes be difficult. Osteosarcomas may produce divergent bony spicules but they are usually more destructive et less sharply delineated (2,3,15,16).

Our case exhibited many common features of hemangioma but it was atypical by the fact that the inner table was extensively eroded and that the dura was adherent to the tumor even if this pattern has already be described (2,4). At operation, hemangiomas of the skull appear, as in our case, as a hard, bluish lump, distinct from the normal white surrounding bone (16). The histological picture of hemangiomas is quite variable, ranging from richly vascular lesions to poorly vascular cyst-like tumors with large spaces filled with blood clots (5).

They have generally been classified as either cavernous or capillary. The cavernous type, which is definitely predominant in the skull, is characterized by blood-filled spaces arising from diploic veins. Destructive and regenerative processes going along in the lesion produce the radiary spicules responsible for the typical "sunburst" pattern, nicely illustrated in our case (6,10,16). The capillary type is made up of fine capillary loops spreading outward (3,10).

Total en bloc surgical resection is the treatment of choice of hemangiomas of the skull. This removal must include a rim of surrounding normal bone in order to prevent a potential recurrence and to obviate excessive operative bleeding (10). Radiotherapy may be considered for cases, which, due to their extension or location, are not safely removable. As a matter of fact, radiation therapy has been reported to decrease the size of the tumor and to reduce its vascularity (10,12).

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