Case Report
Cavernous Hemangioma of the Base of the Skull
Report of a Case Treated Surgically

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Cavernous hemangioma of the base of the skull is a rare condition, even among the relatively uncommon cranial hemangiomas. The subject has been reviewed by Courville et al., Wyke, Klein-sasser and Albrecht, Kleinsasser and Gerlach and Simon. Intracranial complications are unusual though Politzer described a case in which the tumor led to death without operation. Kessler et al. reported the case of an 8-year-old girl in whom fatal epidural bleeding occurred from a cavernous hemangioma of the petrous bone. Graf reported a case in which there was fatal hemorrhage into the 4th ventricle.

The following case has unique features and the tumor reported is one of the few large hemangiomas successfully treated surgically.

Case Report
A 36-year-old woman was admitted to our hospital June 29, 1962. At birth she had an extensive hemangioma of the right side of the face. This gradually increased in size and 2 years prior to admission a plastic operation was performed with the application of split-thickness skin grafts to the face (Fig. 1). One year before admission she noticed impairment of vision. Six months later diplopia, headache and vertigo developed and, somewhat later, nausea and vomiting. For the month and a half before admission there was proptosis of the right eye.

Examination revealed the plastic revision of the right side of the face with residual hemangioma in the parietal part of the scalp and about the right ear. Blood pressure was 100/75 and pulse rate 64. There was blurring of the margins of both optic discs with papilledema and hemorrhage on the right, and there was a left homonymous hemianopsia. No changes were demonstrated in motor, sensory or reflex functions.

Electroencephalography revealed slow activity on the right, most marked in the temporal area. Count of cells in the spinal fluid was normal and protein was 170 mg per cent. Roentgenograms of the skull showed thickening of the right parietal bone with radiating spicules characteristic of hemangioma (Fig. 4) while tomograms (Fig. 2) disclosed a lobulated mass obliterating the outlines of the sella and sphenoid sinus. Right carotid angiography (Figs. 3 and 4) demonstrated posterior and

Fig. 1. Photographs showing right side of the face before and after plastic operation.
Cavernous Hemangioma of Base of Skull

Lateral displacement of the proximal intracranial portion of the internal carotid artery, elevation and medial displacement of the middle cerebral artery and a shift of the anterior cerebral artery to the left, findings characteristic of a right parasellar tumor with subtemporal extension. There was no tumor stain.

Operation. On July 17, 1962 a right temporal craniotomy was performed. Bone in the parietal region and in the lesser wing of the sphenoid was thick and soft and bled more than normal bone. The dura mater appeared normal. The gyri of the temporal lobe were wide and pale. Resection of a thin layer of temporal lobe exposed an encapsulated bluish tumor completely filling the middle fossa (Fig. 5). The capsule, which was dura mater, elevated from bone by the tumor, was incised and the tumor was dissected free of its bony attachment. During the dissection massive hemorrhage occurred from the internal carotid artery making it necessary to clip this vessel. The tumor, which measured 6X8X8 cm, and involved the petrous bone and the body and greater
tremity and somewhat later in the left upper extremity. A right carotid angiogram, done postoperatively, showed filling only of the external carotid system. A left carotid angiogram showed filling of the anterior and middle cerebral arteries on both sides. The position of the right cerebral vessels was now normal.

Ten months after operation the patient was free of headache, Nausea and vomiting had ceased. She was able to walk unassisted and the left arm, though still weak, was stronger.

Histological Report. The facial skin, bone from the skull and the intracranial tumor all show the picture of cavernous hemangioma (Fig. 6). In the sparsely cellular ground tissue are found thin-walled sinuses of varying diameter, lined by a single layer of endothelial cells and filled with erythrocytes and occasional thrombi.

Discussion

Some authors consider hemangioma of the cranial bones a developmental disorder. In this case we have no evidence that the lesions in the skull were present at birth, but it seems reasonable that they had developed together with the facial hemangioma which was present at birth.

On the basis of histologic patterns hemangiomas of the cranial bones have been divided into 4 groups: (1) cavernous hemangioma, the most common sort, (2) osteoangiomia in which bony trabeculae occur about the hemangiomatous sinuses, (3) pure capillary hemangioma and (4) mixed-type angiomia in which capillary proliferation is visible together with cavernous changes.

According to opinions expressed in the literature, hemangioma of the skull should be classified as a primary tumor only in the absence of hemangiomas elsewhere from which metastases might occur. In this case the hemangiomas are believed to be multiple: one in the skin of the face, one in the parietal bone and one in the bones of the base of the skull. All were in the area supplied by the right external carotid artery. However, there was no evidence of hemangioma elsewhere in the body, either clinically or by roentgen-ray examination, and so this case does not present any of the syndromes of multiple hemangioma (Hippel-Lindau, Sturge-Weber, Kast and Mafucci syndromes).

It is interesting to speculate on the role plastic surgery may have played in the development of neurologic symptoms in this case. Perhaps the ligation of many vessels in the facial hemangioma caused hemodynamic changes that in turn caused an increased rate of growth of the intracranial part of the tumor. However, this may be, carotid angiography should be considered before undertaking plastic operations on extensive hemangiomas of the face. At the same time it must be realized that even with a large intracranial hemangioma its vascular nature may not be demonstrated by angiography.

Cavernous hemangiomas of the bones of the base of the skull which have no intracranial extension need not be removed, but hemangiomas with intracranial extensions causing neurological symptoms and signs can and should be excised.

Summary

The case reported is that of a 36-year-old woman with cavernous hemangiomas of the right side of the face and of the parietal and basilar bones of the right side of the skull. Neurological symptoms developed 1 year after a plastic revision of the facial hemangioma and led to excision of an intracranial extension of the hemangioma of the basilar bones. Cavernous hemangioma of the cranial bones is discussed with regard to its pathology, angiographic findings and surgical treatment.
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References


