A cavernous sinus cavernous hemangioma

Case report

BRUCE ROSENBLUM, M.D., ALLEN S. ROTHMAN, M.D., CHARLES LANZIERI, M.D., AND SUN SONG, M.D.

Departments of Neurosurgery, Neuroradiology, and Neuropathology, The Mount Sinai Hospital, New York, New York

The case of a Turner’s syndrome patient with an intracavernous cavernous hemangioma is presented. The rarity of this lesion is stressed, as is surgical removal without postoperative deficit, the role of estrogens in the pathogenesis, and the clinical and radiological findings.

KEY WORDS • cavernous sinus • cavernous hemangioma • Turner’s syndrome

Cavernous hemangiomas are uncommon vascular malformations that may involve any part of the central nervous system but are rare in the cavernous sinus region. Many cases are clinically occult and are found only at autopsy, whereas others may present in the third to sixth decades of life with seizures, headaches, hemorrhage, or neurological deficits. When completely resected they are surgically curable; however, because the surgical approaches to the cavernous sinus are complicated by the complex neurovascular relationships, cavernous hemangiomas in this region present difficult management problems.

Case Report

This 14-year-old girl with known Turner’s syndrome was admitted with a 6-month history of right frontal headaches accompanied by nausea, vomiting, right eyelid ptosis, and diplopia. Exogenous estrogen had been administered for the past year to induce menses.

Examination. Physical examination was significant for the stigmata of Turner’s syndrome. Her head circumference, height, and weight were all below the third percentile. Routine laboratory tests were within normal limits. A computerized tomography scan demonstrated a 2 × 2-cm enhancing mass in the right cavernous sinus (Fig. 1). On angiography a blush was noted in the cavernous sinus.

Operation. The patient underwent a right pterional craniotomy. With the aid of microsurgical technique, the internal carotid artery was identified and traced to its entry into the cavernous sinus. The dura of the cavernous sinus was opened within Parkinson’s triangle, and a red, vascular, encapsulated mass was identified. The neurovascular structures were splayed apart and compressed by the lesion. The mass was shrunk with a blunt bipolar coagulator, and the arterial feeders were delineated. Piecemeal removal was then performed, as described by Malis. The bone of the sphenoid sinus was removed and the mucosa stripped. The sphenoid sinus was packed with temporalis muscle and fascia. The cavernous sinus was packed with Surgicel and its dural wall was sutured closed. Intraoperative hypotension was used; however, circulatory arrest, hypothermia, and vascular occlusion were not employed.
Intracavernous cavernous hemangioma

Postoperative Course. The patient had a complete right ophthalmoplegia with diminished sensation in the distribution of the right ophthalmic nerve. By 18 months postoperatively all neurological deficits had completely resolved. Pathologically, the mass was diagnosed as a cavernous hemangioma (Fig. 2).

Discussion

Masses in the cavernous sinus region may be derived from the constituents of the sinus itself (intracavernous) or from the surrounding tissues (extracavernous). Other rare masses that may affect the cavernous sinus include metastasis, 1,3,22,28,38 lymphoma, 9,15 epidermoid tumor, 14 cavernous sinus thrombosis, 36 chemodectoma, 8 sarcoid granuloma, 13 aspergilloma, 35 cavernous angioma, 29 Wegener's granulomatosis, 6 and neurinoma. 34 Review of the English literature fails to demonstrate another case of an intracavernous cavernous hemangioma. Traditionally even the most benign lesions of the cavernous sinus were considered inaccessible because of the relationship of the sinus to vital neurovascular structures. 2,11,21,27,29,30 With the advent of microsurgical techniques, direct approaches with preservation of normal anatomy as described by Malis 19 have become feasible. Parkinson 25,26 has demonstrated the nature of the bare area of the intracavernous carotid artery through which exposure can be gained without injury to the neural structures. Direct approaches without opening the dura of the sinus have been disappointing because of persistent postoperative deficits and subtotal resections. 3,4,16,33,39

Histologically, cavernous hemangiomas are collections of vascular channels lined only by endothelium and connective tissue. There is no neural tissue involved within these lesions. Although cavernous hemangiomas are non-neoplastic, they may grow by progressive enlargement of the thin-walled vascular channels causing clinical symptoms secondary to pressure on neural structures. When they occur in the region of the cavernous sinus, these lesions tend to be isodense on the pre-contrast CT scan and exhibit intense enhancement following the injection of contrast material. 2 Calcification is unusual. Angiography frequently shows an avascular mass due to slow circulation or previous hemorrhage, 24,40 although prominent staining with pooling of the contrast material has been reported. 23

The present case demonstrates a rare presentation of a cavernous hemangioma in the region of the cavernous sinus ("cavernous cavernoma") which presented in a patient with Turner's syndrome who had recently been receiving exogenous estrogens. Namba 24 stressed the exacerbation of ophthalmoplegic and trigeminal symptomatology of cavernomas during pregnancy, presumably related to elevated estrogen levels. Cavernomas in this location can also be completely resected despite the extremely hazardous location, resulting in resolution of the presenting complaints.
References


Manuscript received February 24, 1986.

Address reprint requests to: Allen S. Rothman, M.D., 1160 Fifth Avenue, New York, New York 10029.