Cavernous hemangioma of Meckel's cave

Case report

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A case of a cavernous hemangioma located within Meckel's cave and involving the gasserian ganglion is described in a patient presenting with facial pain and a trigeminal nerve deficit. Although these lesions have been reported to occur in the middle fossa, this is believed to be the first case of such a vascular malformation arising solely from within Meckel's cave.

KEY WORDS • cavernous hemangioma • Meckel's cave • trigeminal nerve • facial pain

Intracranial cavernous hemangiomas are relatively rare lesions which represent 5% to 13% of central nervous system vascular malformations. These lesions most commonly involve the cerebral hemispheres, particularly the parietal lobe and basal ganglia. Intracranial extracerebral cavernous hemangiomas are particularly unusual. These malformations arise most often from the middle fossa and tend to involve extensively structures within the cavernous sinus. A case of an extra-axial cavernous hemangioma located within Meckel's cave which involved the gasserian ganglion is presented. To our knowledge, this is the first report describing a cavernous hemangioma in such a location.

Case Report

This 33-year-old right-handed man was admitted on June 12, 1985, to St. Michael's Hospital with an 8-week history of facial paresthesiae and numbness and a 6-week history of progressively severe left facial pain. He had previously been in good health. The numbness was first noted in the left side of the lower lip, and by the time of admission involved the entire left half of the face. The left-sided facial pain was constant, without tactile precipitation, and had not been alleviated by carbamazepine or root canal work. There were no other neurological symptoms. The patient was otherwise well, and the family history was unremarkable.

Examination. Physical examination revealed an alert, fully oriented man. Visual acuity, pupils, optic discs, and extraocular movements were normal. There was hypesthesia in the distribution of the first, second, and third divisions of the left trigeminal nerve, including the cornea of the left eye. The left temporalis and masseter muscles were wasted and the jaw deviated to the left on opening. The remainder of the neurological and general physical examination was normal.

Operation. On June 13, 1985, the patient underwent a left temporal craniotomy. A lumbar subarachnoid catheter was inserted for drainage of cerebrospinal fluid (CSF) to facilitate the operative exposure. The CSF was pale yellow. The dura over the temporal lobe was opened and the temporal lobe was retracted until the floor of the middle fossa could be identified. Under the operating microscope, the dura overlying Meckel's cave, which appeared blue-green in color, was incised. Within Meckel's cave, there was clotted blood under pressure and ganglionic tissue mixed with abnormal bluish-black vascular tissue. The lesion was completely excised, including the infiltrated ganglionic tissue, and was sent for pathological diagnosis.

Pathological Examination. The histopathological features of the lesion are illustrated in Fig. 2. The specimen consisted of numerous closely attached, dilated...
FIG. 1. Preoperative contrast-enhanced computerized tomography scan demonstrating a hyperdense mass in the left middle fossa near the apex of the petrous pyramid in the region of Meckel's cave.

FIG. 2. Photomicrograph showing the histopathological features of the lesion. The specimen consisted of numerous closely attached, dilated vascular channels with hyalinized, irregular walls. Apart from trigeminal ganglion cells, no neural tissue was present between the vessel walls of the malformation. Hematoxylin-orcein-phloxine-saffron, × 50.

vascular channels. The vessel walls were hyalinized and irregular, and contained no internal elastic lamina. No neural tissue apart from trigeminal ganglion cells was present in the parenchyma between the vessel walls. There was evidence of previous hemorrhage in the form of organized thrombus, hemosiderin-laden macrophages, and cholesterol clefts. A diagnosis of a cavernous hemangioma involving the left gasserian ganglion was made.

Postoperative Course. Apart from a transient foot drop, the postoperative course was uneventful. The patient was discharged 1 week after surgery and returned to work within a month. He has since enjoyed complete pain relief. Although there has been a modest return of sensation in the distribution of the second and third divisions of the trigeminal nerve, he has no sensation in the ophthalmic division. The temporalis, masseter, and pterygoid muscles continue to be weak. A follow-up CT scan performed 16 months after surgery revealed no evidence of a residual or recurrent lesion.

Discussion

Russell and Rubinstein have classified cerebrovascular malformations into several groups based on their histological features: 1) capillary telangiectasis; 2) cavernous hemangioma; 3) arteriovenous malformation; and 4) venous malformation. Cavernous hemangiomas are well-circumscribed lesions composed of thin-walled sinusoidal spaces lined with endothelium; they have no elastic membrane, no muscle layer, and no intervening neural tissue. These malformations are accompanied by a spectrum of histopathological changes including hyaline degeneration, thrombosis, cholesterol clefts, calcification, and hemorrhage. The pathological features of the lesion described in this paper are therefore typical of cavernous hemangiomas.

Simard, et al., have recently reviewed the radiological and clinical features in a series of 138 cases of intracranial cavernous hemangioma. The most accurate neuroradiological investigation was the CT scan, which was positive in 74 of 76 cases, a finding consistent with previous reports. Cerebral angiography was normal in 30% of the cases, and the most common angiographic abnormality was an avascular mass lesion. Therefore, it is unlikely that an angiogram would have been helpful in the present case. Approximately one-third of the patients reviewed by Simard, et al., presented with seizures, one-third with a hemorrhage, and one-third with a mass lesion. The patient described in the present report developed a subacute trigeminal neuropathy as a result of direct tissue destruction from intraneural hemorrhage and extrinsic compression due to the presence of a clot within the confined space of Meckel's cave.

Although the clinical, radiological, and histopathological features of the cavernous hemangioma described in the present report are consistent with the general pattern for such lesions, a number of features of this case are quite unusual. We believe that a cavernous hemangioma involving the gasserian ganglion has not previously been described. Indeed, intraneural hemangiomas are exceedingly rare lesions which have been reported only infrequently. Mass lesions involving the trigeminal ganglion are very uncommon: tumors of the fifth cranial nerve constitute only 0.2% of all intracranial neoplasms. Furthermore, the commonest such tumor, the trigeminal schwannoma, accounts for only 1.5% of all intracranial schwannomas.

Nambu stated in a 1983 review that none of the 23 patients with extra-axial middle fossa cavernous hemangiomas reported previously had presented with a focal lesion involving a single cranial nerve. These
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patients typically presented with extensive involvement of structures within the cavernous sinus. Furthermore, the tendency of these lesions to bleed often proved to be a significant surgical challenge. Complete resection was claimed in fewer than half of the cases, and the operative mortality was significant. In contrast, in our case of a cavernous hemangioma involving the gasserian ganglion and confined to Meckel’s cave, total surgical removal was easily achieved with minimal bleeding and a good clinical result.

References


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