Response of cavernous sinus hemangioma to radiotherapy: a case report

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Abstract
The author reports a case of a histologically proven cavernous hemangioma of the cavernous sinus and middle fossa, which was treated by radiotherapy. This very rare lesion represents a formidable challenge to the neurosurgeon and its excision has been associated with a considerable mortality rate. The significant reduction in the size of tumor of our patient after radiotherapy and the corresponding improvement in her clinical condition provide further evidence in support of the use of radiotherapy as the first line treatment modality after the histological confirmation of a cavernous sinus hemangioma. Surgery should be reserved for tumors that fail to respond to radiotherapy or recur after an initial good response to radiotherapy.

Keywords: Cavernous sinus, cavernous hemangiomas, middle fossa, radiotherapy.

1 Introduction
Extra-axial cavernous hemangioma is a distinct clinical entity. Although this lesion is a part of a spectrum of vascular malformations, it has characteristics suggestive of a neoplasm, including mass effect, encasement of neurovascular structures, growth often in pregnancy, and radiological features indicative of a tumor [5]. The involvement of the cavernous sinus by this lesion is rare. Only 25 histologically verified cases of cavernous sinus hemangioma have been published in the literature up to 1992 [4]. Even though recent reports indicate that cavernous sinus hemangioma can be excised totally [1, 4, 7, 8, 9], this lesion, because of its excessive vascularity and difficult location, will always present a formidable challenge to the neurosurgeon and a considerable risk to the patient. The use of conventional radiotherapy in the treatment of cavernous sinus hemangioma is recognized, however, to our knowledge, documentation of the reduction of the size of the lesion in response to radiotherapy has been limited to only three papers (reporting a total of 7 patients) in the literature [6, 10, 11]. In this article, the author reports a case of a histologically proven cavernous hemangioma of the cavernous sinus and middle fossa which was treated by conventional radiotherapy. The aim of the paper is to provide further evidence of the reduction of the size of the lesion in response to radiotherapy treatment. It is hoped that the case will serve as a reminder to neurosurgeons that radiotherapy is a safe and effective treatment for cavernous sinus hemangiomas and that it may be considered for first line management.

2 Case report
A 35-year-old Filipino nurse presented with a one year history of proptosis of the left eye with diplopia on looking to the left. Over the last two months the patient also complained of numbness in the left side of her face. She had no history of headache or vomiting. Examination revealed proptosis of the left eye with mild ptosis and downward displacement of the globe. The visual acuity was 20/25 bilaterally. She had limitation of the abduction and elevation of the left eye, with associated diplopia suggestive of partial left oculomotor and abducent nerve palsies. Fundoscopy and visual fields were normal. There was evidence of reduced sensation in the left trigeminal maxillary and mandibular divisions. CT scan (Figure 1) showed a large contrast enhancing intra-
sellar tumor with a huge extension to the left middle fossa, sphenoid, and ethmoid sinuses. The visual evoked potentials and pituitary hormones screen were normal. Carotid angiography (Figure 2) showed bowing of the left carotid syphon due to a large avascular parasellar and middle fossa lesion.

The tumor was approached via a left pterional craniotomy. It was found to be extradural, involving the middle fossa, medial sphenoid ridge, and cavernous sinus. The left internal carotid artery and optic nerve were displaced to the right side. A small opening was made in the dura. The tumor was highly vascular and bled considerably following a small biopsy. Excision was, therefore, not attempted. The biopsy confirmed the lesion to be a cavernous hemangioma (Figure 3).

The post-operative recovery was uneventful with no change in the patient's neurological condition. MRI (Figure 4) demonstrated the extent of the tumor. In the absence of angiographic evidence of vascularity, embolization could not be attempted. The patient received a course of radiotherapy (5000 cGys, in 25 sessions each 200 cGys).

The patient tolerated the radiotherapy treatment. At 13 months follow-up, there was considerable improvement in her eye symptoms and the CT scan (Figure 5) showed a marked reduction in the tumor size.

3 Discussion

The clinical features of our patient are similar to the others reported in the literature [1, 3-10]. Cavernous sinus hemangioma commonly affects women of middle age. The presentation is usually insidious, commonly resulting in ocular palsies, worsened vision and headaches. A definitive pre-operative distinction between this tumor, meningioma, and neurilemmoma is not always possible [4]. The lack of tumor calcification and the marked hyperintensity on