GIANT SURPRISE! : A GIANT INTRACRANIAL ANEURYSM MIMICKING A MENINGIOMA ON CT

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ABSTRACT

An adult male presented with symptoms and signs of an intracranial space occupying lesion(SOL). Computed tomography performed revealed an enhancing left parasellar mass which led to the provisional diagnosis of meningioma. However, as a giant aneurysm was considered in the list of differential diagnosis, a 4 vessel cerebral angiogram was done. This revealed a 7cm. giant aneurysm of the left internal carotid artery, and thus illustrates the importance of angiography in the evaluation of enhancing parasellar masses.

Key words : Giant Intracranial Aneurysm, Meningioma, Computed Tomography

INTRODUCTION

In the evaluation of sella and parasellar lesions, computed tomography(CT) scan has long been a recommended imaging modality. It has proved reliable for detecting or ruling out the presence of a mass and in assessing tumour extension (1 & 2). It was also pointed out that angiography is occasionally necessary in some of these cases to rule out an aneurysm before subjecting patients to craniotomy. A few other reports later supported the fact that the differentiation of a giant intracranial aneurysm(GIA) from an intracranial neoplasm can be difficult based on CT findings alone and further evaluation with angiograms should always be considered (3 & 4). We report a patient with GIA of the left internal carotid artery who was diagnosed as a parasellar meningioma on the basis of CT appearences. The diagnosis of a GIA was subsequently confirmed on angiogram.

CASE REPORT

A 42 year old male carpenter presented to the University Hospital with headache and visual abnormality of 4 months' duration. He noted that his headache started in the morning upon awakening and was persistent throughout the day. Over the past 4 months, it had progressively become more severe and was beginning to disturb his daily activities and sleep. At the same time, he also complained of a slowly progressive decrease in visual acuity of his left eye and he could not see things on his far right. He had been well before this and a review of systems revealed no further significant history. On general examination, he was a slightly agitated man who appeared distressed by his headache. Neurological examination showed normal third to twelfth cranial nerves. His muscle power and sensation were also normal. He had visual acuity of 6/6 on the right and

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6/12 on the left. Both pupils were equal in size and reactive to light and examinations of the fundi were normal. Visual field testing by confrontation revealed a right temporal and a left nasal field defect. Routine blood tests and plain skull radiographs were unremarkable. Pre and post contrast CT scan performed in 5mm contiguous slices of the posterior fossa and 10mm for the rest of the brain on the patient revealed a well-defined extra axial mass in the left parasellar region (figure 1 & 2). It was slightly hyperdense compared to normal brain tissue on pre contrast scans and showed intense homogenous enhancement after intravenous administration of contrast. There was no perifocal oedema, mass effect, calcification or surrounding bony hyperostosis seen. Based on these findings, a provisional diagnosis of left parasellar meningioma was made. Four vessel angiography performed a few days later revealed a 7 cm giant aneurysm arising from the suprasellar portion of the left internal carotid artery (figure 3 & 4). At surgery the aneurysm was noted to have a broad neck beginning at the supraclinoid portion of the internal carotid artery and extending to the anterior cerebral-middle cerebral artery bifurcation. The sac was adherent to the third cranial nerve and the majority of it was not thrombosed. clipping of the aneurysm was done.

DISCUSSION

Giant Intracranial Aneurysms(GIAs) are aneurysms greater than 2.5cm in size (5). They constitute 0.2 to 5% of all intracranial aneurysms and most commonly arise from the internal carotid artery (5 & 6). In contrast to smaller intracranial aneurysms which usually present with subarachnoid haemorrhage, GIAs rarely bleed and often present with symptoms of an expanding mass (5). As a result of compression effects, GIAs in the suprasellar portion of the internal carotid artery are known to cause visual field defects due to the close vicinity of the optic pathways (7,8 & 9). In a patient who presents with neuro-ophthalmological abnormalities, radiological evaluation that follows will usually

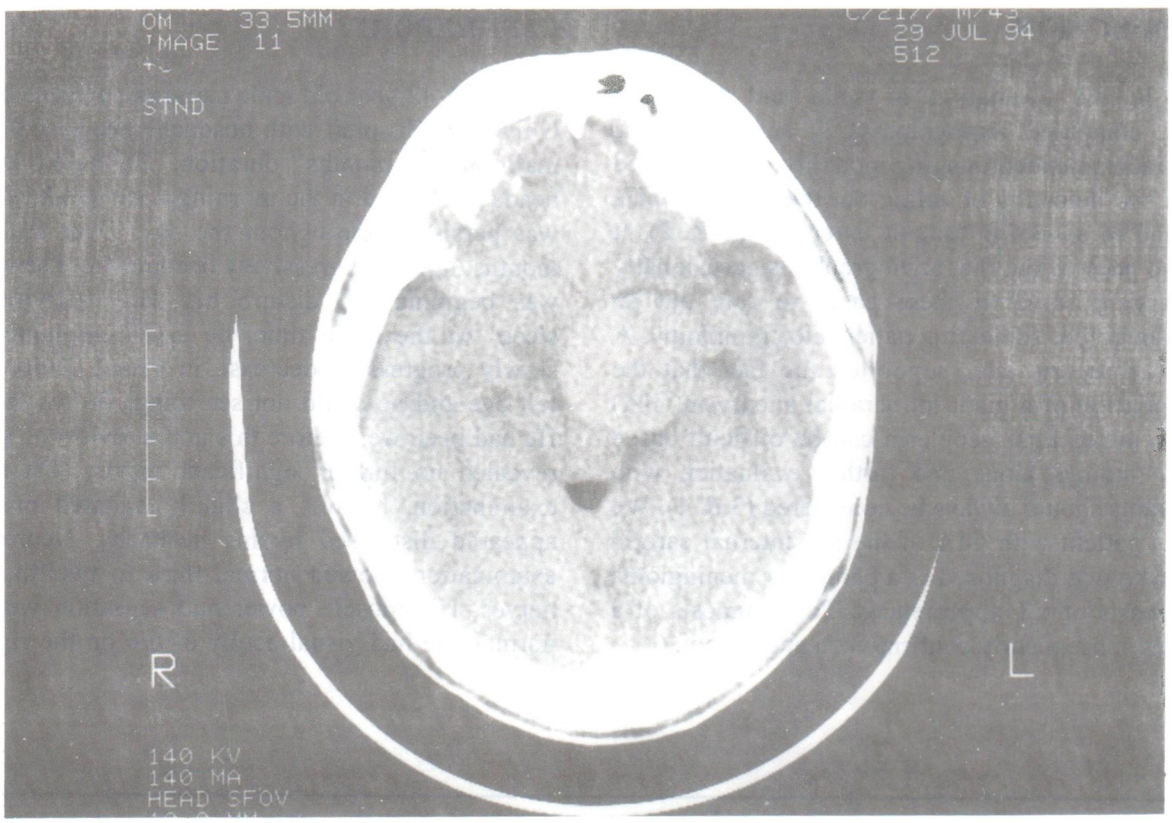

Fig. 1 Pre contrast CT scan of the brain showing a well defined hyperdense mass in the left parasellar region.

include a CT scan of the brain. Owing to its large size, a GIA can be easily seen on CT scan as a space occupying lesion (SOL). In non enhanced scans it appears as a well-circumscribed extra axial mass with density higher than that of the normal brain parenchyma. There should be no surrounding oedema but bony erosion may be present as a result of prolonged pressure. Scan done immediately following intravenous contrast would demonstrate diffuse uniformed enhancement, unless thrombosis is present within the aneurysm (4). In these cases, there may be no enhancement or it may be confined to the periphery,giving rise to the "rim-like" pattern of enhancement.

On CT scanning, non thrombosed GIAs may be confused with intracranial neoplasms such as meningiomas, neurinomas, and gliomas. In the parasellar region, meningiomas are probably the greatest mimic as they exhibit CT features and enhancement characteristics very similar to that of GIAs. They are also not uncommonly found in this location, constituting about 15% of all meningiomas (10). One important feature to look for in differentiating a meningioma from a GIA is the presence of surrounding bony hyperostosis. Some authors have quoted incidence of as hihg as 90% in meningioma, although some are only seen retrospectively (11). Another method of differentiation that has been described is using dynamic sequential scanning following a bolus of intravenous contrast. The density of an aneurysm increases with the circulating contrast medium, then falls, while that of the meningioma rises more gradually as the contrast medium leaks from the capillaries, and it remains dense longer (12).

Magnetic Resonance Imaging (MRI) where available show a complex but characteristic appearence because of the presence of blood in the aneurysm. A flow void is usually present in the centre of the aneurysm on both T1 and T2 weighted sequences. Low signal intensity on all pulse sequences is characteristic for fast or turbulent blood

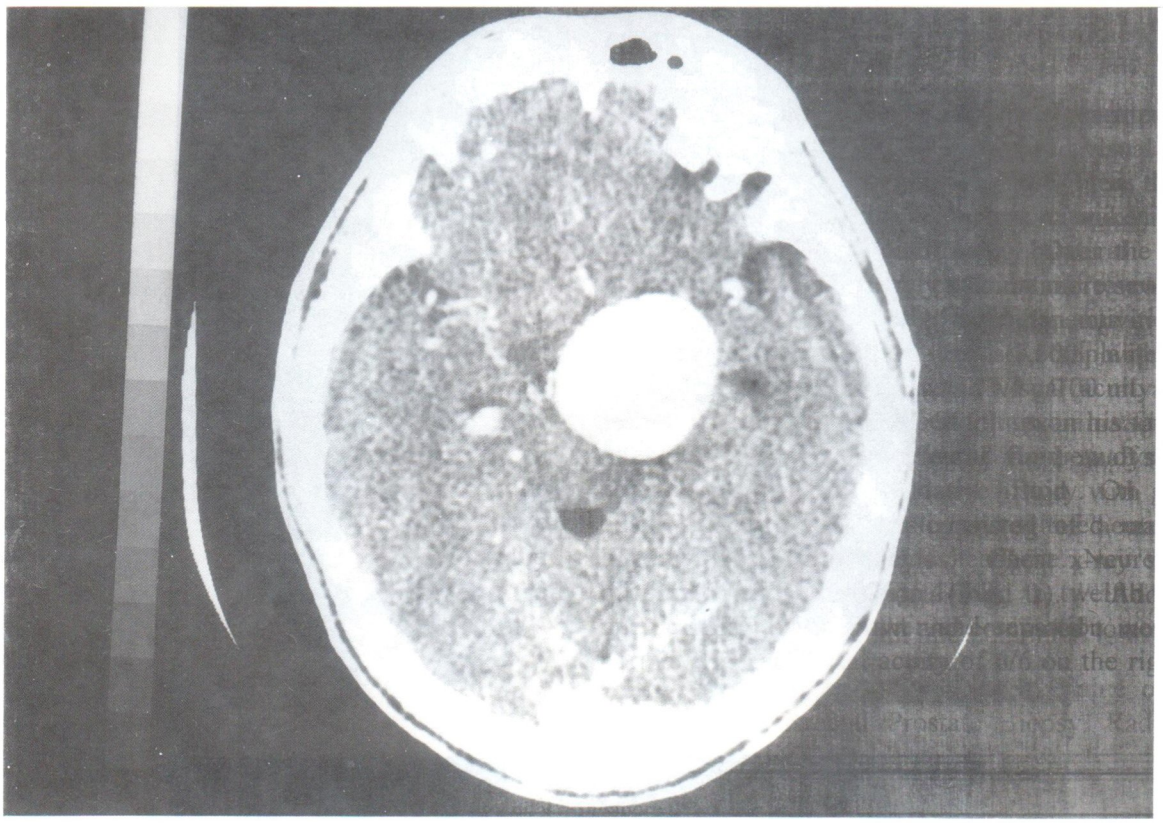

Fig. 2 Following intravenous contrast media, there was intense homogenous enhancement of the mass.

flow and thus allowing for differentiation of an aneurysm and a solid tumour. 2D Time Of Flight (TOF) Magnetic Resonance Angiography and Phase Contrast (PC) techniques are however better for demonstrating the slow flow in the lumen of large aneurysms (13).

However, in the absence of MRI and definite differentiating features previously described, a GIA can easily be mistakenly diagnosed as a meningioma on standard pre and post contrast CT scanning. This case illustrates that angiography continue to have a place in the evaluation of an enhancing parasellar mass and should always be considered so as to avoid an unpleasant giant surprise on the operating table.

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Fig. 3 Towne's view of the left internal carotid angiogram showing a giant aneurysm in the suprasellar portion.

Fig. 4 Oblique view of the giant left internal carotid aneurysm.

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