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# MENINGIOMA PRESENTED AS SUBARACHNOID HAEMORRHAGE: CASE REPORT

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## INDEXING WORDS

Meningioma; subarachnoid haemorrhage; magnetic resonance imaging

## SYNOPSIS

A case of parasagittal meningioma causing subaracnoidal haemorrhage (SAH) is reported. Computed tomography (CT) was found negative in the patient with acute severe headache and haemorrhage was observed on cerebrospinal fluid (CSF) examination. Digital subtraction angiography (DSA) showed an avascular space over the convexity and Magnetic resonance imaging (MRI) revealed the tumour. The importance of MRI for the detection of underlying pathology in SAH with unknown aetiology is emphasised.

## INTRODUCTION

Intratumoral, intraparenchymal and subarachnoid haemorrhage occurs in 1.4% to 10.0% of primary and metastatic brain tumour (10). SAH as a presenting symptom in intracranial meningiomas has been reported in a very limited number of patients (6,11,13,16). We report a case of meningioma in parasagittal location whose only manifestation was SAH. Plain CT scan did not demonstrate either

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tumour or haemorrhage due to its location. The diagnostic difficulties encountered by unusual presentation of this case, association of SAH with meningioma and the role of CT and MRI in such cases were discussed.

## CASE REPORT

A 48-year-old woman with acute severe headache of twelve hours' duration was admitted to our hospital. At initial examination, mild neck rigidity was found. Neurological exam was otherwise unrevealing. A CT scan without contrast material was negative for haemorrhage (Figure 1). The examination of CSF obtained by lumbar puncture yielded a xanthochromic and bloody fluid. Traumatic tap was ruled out. Microscopy showed multiple red blood cells. The patient was hospitalised with a diagnosis of SAH.

The coagulation tests of the patient were within normal limits and DSA was performed two days later. Neither aneurysm nor vascular malformation was seen on early or late phase angiograms. Selective right internal carotid angiograms showed an avascular space in parasagittal area (Figure 2.a-b). Left internal carotid, both external carotid and vertebral artery series revealed no lesion. MRI showed 2x2.5x1.5 cm, extra axial tumour in the right parietal region (Figure 3.a-b). The tumour was enhanced on postgadolinium images.

A right central craniotomy was performed in the supine position. Well vascularized, soft tumour, which invaded the lateral wall of superior sagittal sinus, was totally removed along with the dura. At the exploration, subarachnoid space around the tumour was seen in yellowish colour. At the immediate postoperative course, a slight left hemiparesis was developed but regressed in a few days.

The tumour proved to be a meningoendotheliomatous meningioma including fibrous and vascular components on the histopathological examination (2854/94). The detail examination showed densely packed cells arranged in sheets, but psammoma bodies were not seen. Sixteen months after surgery the patient remained asymptomatic and neurological intact.

## DISCUSSION

It has been reported that approximately 75% of patients who present with a spontaneous SAH would be found to have an underlying intracranial aneurysm, and 5% to have a cerebral arteriovenous malformation (7). Rarely fibromuscular dysplasia or moyamoya disease will act as a source of SAH. SAH is also a well-recognised complication of several diverse medical conditions and it has been

associated with deficiencies in each of the known coagulation factors and with therapeutic anti coagulation (3,6,7,15).

Both primary and metastatic intracranial tumours can be a source of SAH (8,10,11,16,18). Although these tumours are usually detected on a contrast-enhanced brain CT scan, they may be invisible in some characteristic locations like posterior fossa, orbital roof and high in calvarium as in this case. The tumour in this patient could not be observed on plain CT scans because of its location.

Haemorrhage from brain tumours occurs about 1.4% to 10.0% (10). Malignant glioma, metastatic tumour, neurilemma, melanoma, pituitary adenoma and plexus papilloma have been reported as the cause of intratumoral or subarachnoidal haemorrhage (1,2,5,8,10-14,16,18). The possible mechanisms in malignant gliomas are said to be the occlusion of intratumoral vessels and necrosis of distal vessel caused by vascular endothelial proliferation, erosion of the vessels by the tumour and also distension of vessels by tumour growth and displacement (10). In neurilemma and meningioma, intratumoral vessels often show focal sinusoidal dilatation, and these may lead to spontaneous obliteration, necrosis and often to haemorrhage (2,5,8,11,14). This mechanism can explain the cause of SAH in our case. Contusion of the tumour may cause cerebral haemorrhage in some cases. Hypertension has been considered as an another possible cause of intratumoral haemorrhage. Abrupt and marked increase in the arterial and venous pressure may induce rupture of the fragile tumour vessels (10,17).

Haemorrhagic infarction, cerebral venous thrombosis or hypertensive intracranial haemorrhage may manifest primarily as a SAH originating from an undetectable small intraparenchymal source (5,16,18). Rarely SAH may be originated from the spinal canal (4,6). Ependymomas of the filum terminale are the most common spinal tumour to bleed (3,15).

MRI has significantly modified the diagnosis of diseases of the central nervous system. Posterior fossa lesions and intraspinal tumours are much better visualised with MRI than on CT. Extraaxial tumours are usually very well demonstrated in the cervical area and at the craniocervical junction and at the above-mentioned region (9). In the present case, MRI made the diagnosis; the midline sagittal cut was most useful in demonstrating the exact location of this tumour. The location of this meningioma as well as its unusual presentation could present a true diagnostic challenge. Axial CT scan of the head is usually insufficient in this area.

In conclusion, we think that in any case of SAH in which first neuroradiological work up has failed to show a vascular pathology, MRI should be performed because of its capability to disclose unexpected lesions.

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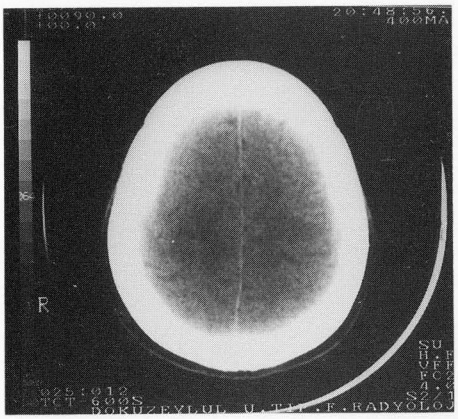
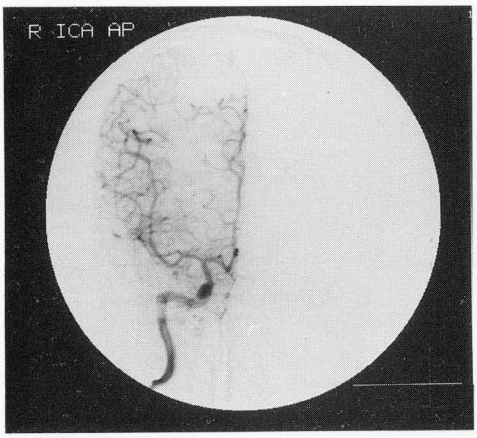


**Figure 1:** CT scan taken on admission.

a




b

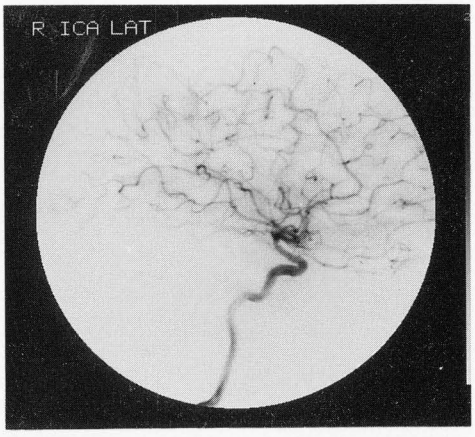



**Figure 2:** Frontal (a) and lateral (b) view of right internal carotid angiogram. Note the avascular space over the parasagittal area.

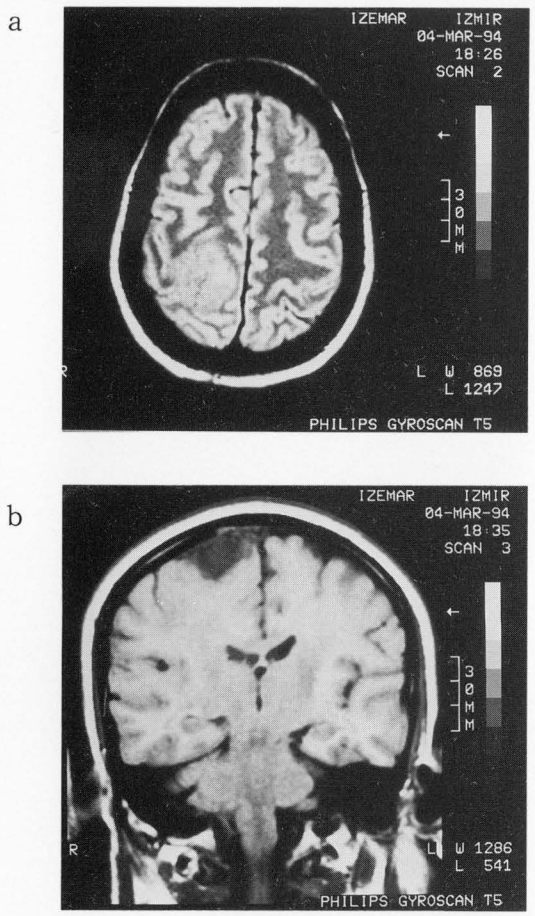



**Figure 3:** Proton density (a) and T2-weighted (b) MRI showing the tumour.