

Angiographically occult recurrent thalamic haemorrhage: a management dilemma

J Tailor, G Samandouras, P Pretorius, R Kerr

Citation

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Abstract

Recurrent parenchymal brain haemorrhages that are angiographically occult, are problematic due to the uncertainty of the underlying diagnosis. We describe a rare case of high-grade glioma in the thalamus that presented with multiple thalamic haemorrhages, before features of the underlying mass lesion evolved, and discuss the challenges faced in the early diagnosis and management of tumour related haemorrhages.

INTRODUCTION

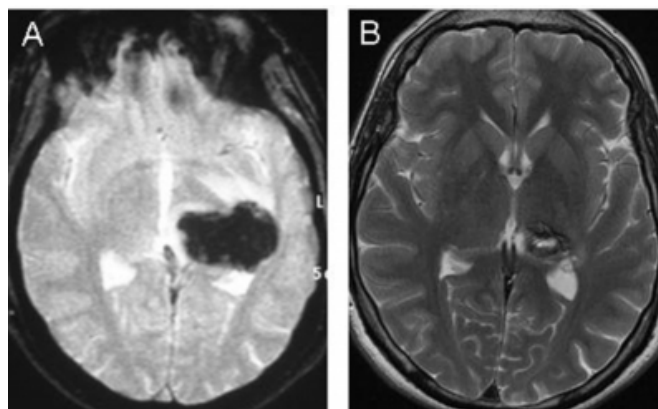
Most non-traumatic parenchymal brain haemorrhages are hypertensive in origin. Brain tumours account for approximately 5 % of parenchymal brain haemorrhage and are usually metastatic or highly malignant primary neoplasms in the cortex. (7) We discuss the challenges faced in the management of a rare case of thalamic glioma in a 46 year old gentleman that masqueraded as angiogram negative haemorrhagic stroke on multiple CT and MRI images on four distinct episodes over six months.

CASE REPORT

A 46 year old man presented with sudden onset left-sided headache. The initial CT and MR images revealed a left thalamic bleed extending to the left temporal lobe (figure 1a). A delayed MRI scan confirmed a resolving haematoma (figure 1b). There was no significant vasogenic oedema or mass effect to suggest an underlying neoplastic lesion.

Figure 1

Figure 1: An axial gradient-echo T2 weighted image (a) performed within one week of first presentation demonstrates a large haematoma in the left thalamic region. An axial spin-echo T2 weighted image (b) performed 14 weeks later demonstrates the resolving haematoma with no surrounding oedema or other features to suggest an underlying tumour.



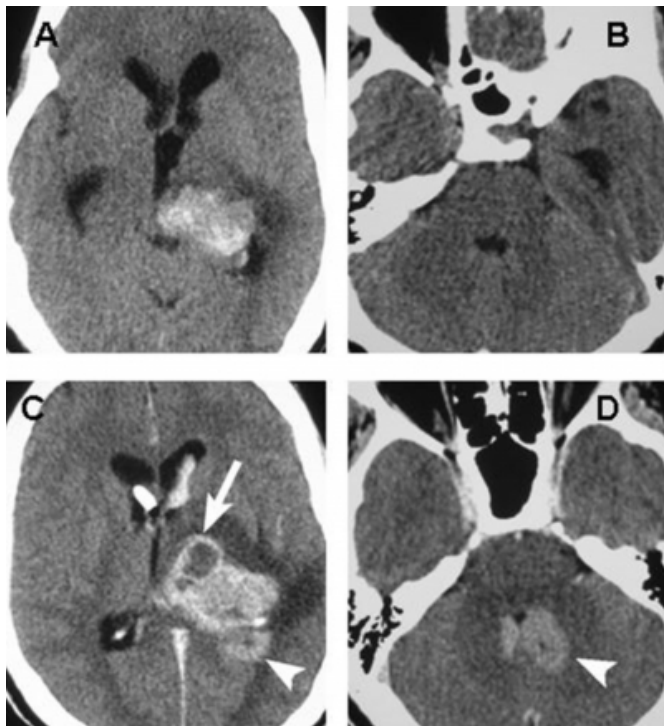
Over the subsequent two months, the patient suffered two further acute haemorrhagic events in the left thalamus (figure 2a and 2b). A cerebral angiogram showed no abnormality. Ten days after the third episode, the patient developed obstructive hydrocephalus secondary to haemorrhage extending into the midbrain. A repeat cerebral angiogram found no intracranial aneurysm or AVM, and no evidence of neovascularity or tumour blush.

Two weeks later the patient remained stable with no further bleeds. On follow-up CT, a large uniform lesion in the left thalamus became apparent with smaller nodules of similar

density in the wall of the left lateral ventricle and around the fourth ventricle. A contrast-enhanced CT confirmed a heterogeneously enhancing tumour mass based in the left thalamus extending into the left lateral and fourth ventricles (figure 2c and 2d). There was marked increase in vasogenic oedema surrounding the thalamus.

Figure 2

Figure 2: Axial un-enhanced CT images at the level of the third ventricle (a) and fourth ventricle (b) performed 22 weeks after the first presentation and following a number of episodes of re-haemorrhage demonstrate high density material in the left thalamus interpreted as haematoma. Comparable images (c and d) from a contrast enhanced CT scan performed three weeks later demonstrates an enlarging mass containing an area of necrosis with surrounding rim enhancement (arrow in c). There is also enhancing tumour filling the trigone of the left lateral ventricle (arrowhead in c) as well as similar sub-ependymal enhancing tumour distorting the lumen of the fourth ventricle (arrowhead in d). Note the increase in vasogenic oedema around the thalamic tumour between the two scans.



A stereotactic biopsy performed one week later confirmed the diagnosis of high grade glioma. A decision was made with the family not to intervene in the event of clinical deterioration. The patient died six days later.

DISCUSSION

The risk of a patient with spontaneous parenchymal haemorrhage and a negative angiogram, harbouring an underlying brain tumour is unclear. In a group of 29

angiogram negative patients with lobar intracerebral haemorrhage of unknown aetiology (9 with clinical hypertension and 6 with previous bleeding), Wakai and colleague found the underlying cause of the haemorrhage to be brain tumour in 2 patients (6.8 %) after surgical evacuation. (6)

Recurrent haemorrhage from a brain tumour is uncommon, unpredictable and usually associated with a grave prognosis. (2, 3) Inamasu and colleagues reported two patients that acutely deteriorated due to rebleeding shortly after the initial bleed and subsequently died before surgical evacuation was possible. (2) We report a patient who died within six months of initial presentation of thalamic haemorrhage due to recurrent tumour-related haemorrhage and progression of an underlying high-grade glioma. Recurrent parenchymal brain haemorrhages should therefore be investigated promptly, and an underlying brain tumour should always be considered in the differential diagnosis.

Schrader et al. demonstrated that tumours that are identified early after a bleed and subsequently evacuated completely have an acceptable outcome. (5) Fifty cases of tumour-related haemorrhages were identified from a prospective series of 2041 patients with brain tumours, of which 29 were diagnosed with imaging on the first occasion. Surgical evacuation of haematoma and tumour removal was performed on 45 out of 50 cases with an overall in-hospital mortality of 22 %. Over half of the patients achieved a Karnofsky score of above 60 (i.e. self-caring), which included 13 patients (26 %) who reached a score above 90 (i.e. can perform normal activity). (5) Sadly, such surgery would not have been appropriate in this case.

Current imaging modalities do not reliably detect underlying mass lesions in parenchymal brain haemorrhage at first presentation. (1) The diagnostic yield of MRI in detecting haemorrhagic brain tumours is low, especially in the basal ganglia and thalamus (1) and there is currently no evidence that the newer MRI techniques such as MR perfusion imaging and MR spectroscopy have a useful role to play. Cerebral angiography can be helpful to exclude an underlying arteriovenous malformation (AVM) or aneurysm. In some cases of tumour, it may demonstrate a vascular or tumour blush but this is unreliable. Positron Emission Tomography (PET) is not used routinely in clinical practice. However, in a small prospective study of 4 patients with neoplastic haematoma and 4 patients with non-neoplastic lesions, 8 Ogawa found that the neoplastic lesions

showed increased ¹¹C-methionine accumulation that extended beyond the contrast enhanced areas on CT and MR images. (4) Further studies are required to determine the practicality, safety and usefulness of PET in differentiating neoplastic and non-neoplastic haematomas.

CONCLUSION

The early diagnosis of tumour-related bleeds requires a high degree of clinical suspicion, especially in angiogram-negative young patients, who have no risk factors for parenchymal brain haemorrhage. Such patients and their relatives should be advised of the possibility of an underlying tumour. Interval and/or sequential imaging should be arranged to confirm resolution of the abnormality or to detect progression early.

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