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Case Report

Meningioma Presenting as Acute Subdural Hematoma

Abrar A Wani*, Arif Sarmast, Nayil K Malik, Altaf U Ramzan and Zulfiqar Ali
Department of Neurosurgery, Sher-i-Kashmir Institute of Medical Sciences, India

***Corresponding author:** Abrar Ahad Wani, Department of Neurosurgery, Sher-i-Kashmir Institute of Medical Sciences (SKIMS), Soura, Srinagar, J&K, India

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Abstract

Meningioma is one of the commonest benign intracranial tumours which usually presents with gradual onset of symptoms. However in rare instances it can present with rapid neurological deterioration and spontaneous subdural hematoma is one of the possibilities. Multiple reasons for hemorrhage in meningioma have been proposed and the most common mechanism, involves rupture of the abnormal vasculature networks of the tumor. The other mechanism implicates intratumoral necrosis caused by rapid growth of the tumor or venous thrombosis. The third mechanism involves enlarged feeding arteries which become tortuous, less resistant to blood pressure changes and finally susceptible to rupture under stress. The fourth mechanism is stretching of subdural bridging veins caused by expansion of meningioma resulting in rupture. Whatever the etiology rapid evacuation of hematoma and tumour is needed to improve outcome of the patient. In this article, we present a rare case of intracranial meningioma presenting with acute subdural hematoma treated with surgery.

Keywords: Meningioma; Intracranial; Subdural hematoma; Surgery; Etiology

Introduction

Meningioma usually manifests as a gradual onset of symptoms. The term "meningioma apoplecticum" issued to describe a rapid onset resulting from pathological conditions including tumoral hemorrhage [1]. Acute subdural hematoma resulting from the meningioma is exceedingly rare with the mechanism of hemorrhage from benign brain tumors being largely unknown [2].

Case Report

A middle aged female presented with sudden onset of headache with loss of consciousness. On examination she was decerebrating. There was no history of trauma or intake of anticoagulant or antiplatelet drugs. She was evaluated with CT scan and found to have right frontal convexity meningioma with acute subdural hematoma and midline shift (Figure 1). She underwent decompressive craniotomy and evacuation of SDH and excision of meningioma was done. The tumour was moderately vascular with lot of calcifications. There was no discrete source of bleeding intraoperatively. After one week she was completely normal and check CT scan showed only postoperative changes (Figure 2). Histopathology confirmed the tumour as meningioma.

Discussion

Macroscopic hemorrhage has been found in 2.4% to 5.4% of brain tumors at operation or autopsy [3]. Conversely, tumoral hemorrhage makes up 1.3% to 10.2% of the total number of symptomatic intracranial hemorrhages [4]. Spontaneous hemorrhage may be associated with malignant brain tumors, such as glioblastoma and metastatic brain tumor, but rarely with meningioma [3]. The most common symptoms of meningioma are severe headache, a change in the level of consciousness and, to varying degrees, of neurological deficits. The symptoms are the same whether or not there is hemorrhage, although they may be exacerbated by hemorrhage, ischemia, or edema [2].

In a large series of meningiomas reported in 1955, Hoessly and Olivecrona [5] found none to have been associated with hemorrhage. However, there have been a number of reports of meningioma associated with Subarachnoid Hemorrhage (SAH) and intracerebral and subdural hematoma [6]. Subarachnoid hemorrhage is the most common type of hemorrhage from meningioma, followed by intracerebral and subdural hemorrhage. Combinations have been frequently observed. Hemorrhagic foci of tumor tissue were not verified in the majority of patients with subarachnoid and intracerebral hemorrhage, so mechanisms other than abnormal tumor vessels might be responsible [2].

There is insufficient evidence to show that hypertension and antiplatelet therapy are the factors responsible for bleeding, although hypertension and anticoagulation have been documented as precipitating factors of the hemorrhage in meningiomas [7]. However, the mechanism leading to hemorrhage associated with meningioma is apparently not the same and not fully understood [8]. Multiple reasons for hemorrhage in meningioma have been proposed. The first and the most common mechanism, involves rupture of the abnormal vasculature networks of the tumor and is based on biological findings ,such as weak thin walled vessels and direct peritumoral vascular erosion by the tumor. The second mechanism implicates intratumoral necrosis caused by rapid growth of the tumor or venous thrombosis [9]. The third mechanism involves enlarged feeding arteries which become tortuous, less resistant to blood pressure changes and finally susceptible to rupture under stress [6]. The fourth mechanism is stretching of subdural bridging veins caused by expansion of meningioma resulting in rupture [7]. The fifth mechanism involves increased intratumoral pressure as tumour infarction progresses, with eventual rupture of the peritumoral vessels [10]. Since we could

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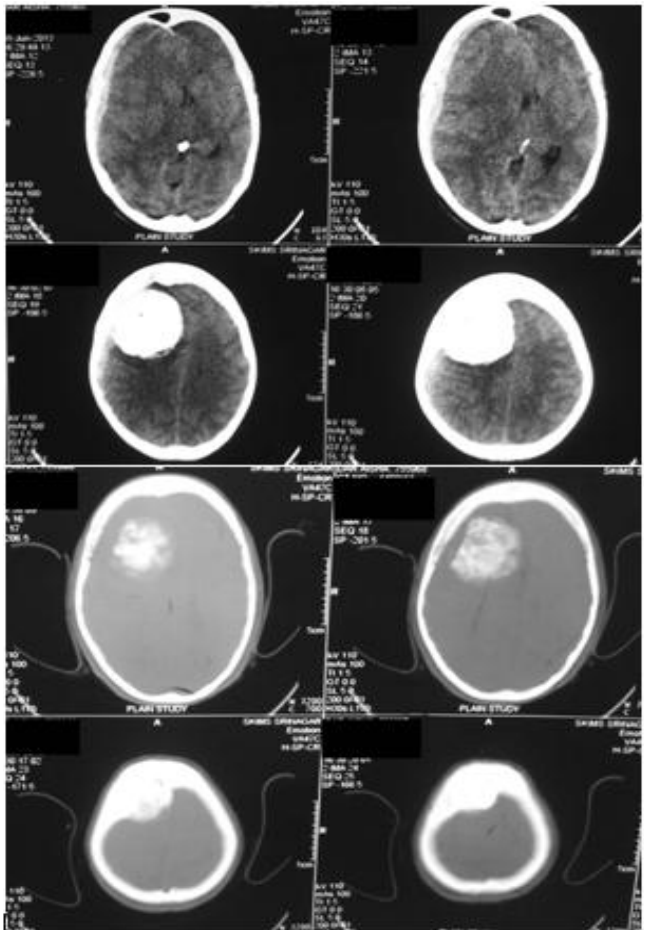

Figure 1: CT scan head showing right frontal convexity meningioma with acute subdural hematoma and midline shift.

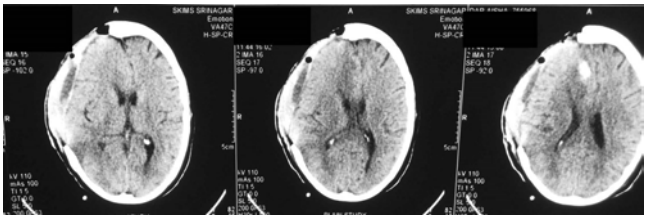

Figure 2: CT scan head showing only postoperative changes.

not find any clear source of bleeding into subdural space so possible explanation can be rupture of some small vessel in peri tumoral area or tear in a subdural vein which could not be identified on surgery.

Kohli and Crouch [2] found that 50% of meningiomas associated with intracranial hemorrhage were the meningotheliomatous type, indicated by the presence of abnormal thin-walled, dilated capillary or angiomatous vessels. Angioblastic meningioma should be prone to bleed because of its high vascularity, but surprisingly few cases have been reported [11]. In syncytial meningiomas, the bleeding is probably related to the presence of intratumoral vasoactive substances released, such as histamine, which could induce vasodilatation and tumoral hemorrhage [12].

Some authors do not believe there is a relationship between histological subtype and high risk of hemorrhage, but everyone seems to agree that age and sex of the patient do not show significant relationship with the hemorrhagic event [13]. The role of the location of the meningioma is controversial. According to Worm et al., the localization of the tumor in the cerebral convexity increases the risk of hemorrhage [14]. On the contrary, Chaskis et al. believe that the site of the meningioma does not seem to influence the occurrence of hemorrhage [15], although most of the cases reported in the literature are located in the convexity.

Conclusion

Spontaneous acute subdural hematoma may be associated with underlying tumour like meningioma. Surgery should be undertaken as soon as possible to reduce the morbidity and mortality.

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