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Case Report

A convexity meningioma presenting with an acute subdural hematoma

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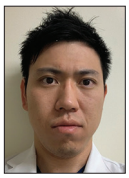

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ABSTRACT

Background: Meningiomas presenting with acute subdural hematomas are extremely rare. To the best of our knowledge, only 45 cases have been reported to date. We report on a case of a meningioma mimicking an acute subdural hematoma as well as a thorough literature review.

Case Description: A 67-year-old man with no history of trauma was referred to our hospital with sudden onset of decreased level of consciousness and left hemiplegia. Computed tomography revealed an acute convexity subdural hematoma. Emergency surgery to remove the hematoma was performed. The hematoma was found to exist in the extra-axial space and the attached dura mater and pia mater remained intact. Pathological examination revealed a transitional meningioma, the World Health Organization Grade 1. Detailed medical history taken postoperatively revealed that a convexity meningioma had been diagnosed incidentally at another facility 1 year earlier.

Conclusion: Acute subdural hematomas due to meningiomas are rare, and establishing the cause is challenging. Prompt and precise diagnosis of such entities may afford patients a better prognosis.

Keywords: Hemorrhagic manifestation, Meningioma, Nontraumatic acute subdural hematoma

INTRODUCTION

Meningiomas are one of the most common benign intracranial tumors and account for 13–27% of all primary intracranial tumors.[3,4] Most patients with meningiomas develop gradually progressive symptoms such as a morning headache, unsteady legs, or motor weakness, and therefore, acute presentations secondary to hemorrhagic events such as an acute subdural hematoma (ASDH) are rare. A detailed PubMed search identified only 45 published cases of meningiomas associated with hemorrhagic manifestations.[1,6,7,9-11,13-15,18] We report on the case of a 67-year-old man with a benign meningioma discovered due to an ASDH, and we follow our case with a thorough literature review.

CASE PRESENTATION

A 67-year-old man was referred to our hospital with sudden onset of a decreased level of consciousness and left hemiplegia with no history of trauma. Computed tomography revealed a 5 cm ASDH located in the right parietal and frontal lobes [Figure 1a and b].

Urgent hematoma evacuation was recommended and performed with the consent of his family. A right parietal craniotomy was performed that revealed a swollen dura mater and a hematoma. The ASDH included parenchyma components and was located extra-axially with intact pia mater and dura mater attached [Figure 2]. The hematoma was completely evacuated.

Pathology findings revealed lobular and fascicular foci with conspicuous tight whorls and psammoma bodies. The tumor was highly vascularized with expanded thin-walled vessels detected in parts [Figure 3].

Postoperatively, the medical history taken from the patient's family revealed the fact that he had an incidental finding of a small right convexity meningioma 1 year previously by another clinician [Figure 4a and b]. The patient had an uncomplicated postoperative recovery and quickly regained a normal level of consciousness, although a dense left hemiplegia remained. He was transferred to a rehabilitation facility 21 days post removal of the hematoma.

DISCUSSION

Here, we have illustrated the case of an ASDH that arose from an extra-axial tumor. Spontaneous intracranial hemorrhage (sICH) associated with a brain tumor occurs in 1.7–9.6% of cases and accounts for 0.9–10.2% of all sICH.[12] Hemorrhagic manifestation is also more frequently associated with gliomas or metastatic tumors than with benign tumors.[5,12] Meningiomas presenting with sICH are particularly rare, and the incidence of hemorrhage associated with meningiomas is between 0.5 and 2.4% with a mortality rate of 28–50%.[2,8,9,12] Furthermore, meningiomas presenting with an ASDH are extremely rare.[7,9,12] A PubMed search using the keywords "meningioma," "subdural," and "hematoma" identified only 45 reported cases [Table 1].[1,6,7,9-11,13-15,18,19] Wakai *et al*. previously reported hemorrhagic manifestations in 1.3% of all meningiomas in their institute.[16] Two case series have shown that ASDH manifestations accounted for 18–25% of all meningiomas with hemorrhagic manifestations.[7,9]

Among the 45 cases reported in the literature, the mean age at diagnosis was 67 years (32–85 years), and there were 27 females (58%). The most common locations of ASDH were the convexity (66%) followed by the falx/parasagittal (26%). Several reports discussed the association between the location of the meningioma and the rate of hemorrhage, but no consensual view has been obtained.[3,17] It seems, however, that when nontraumatic ASDH is seen at the convexity, a differential diagnosis of meningioma needs to be considered.

Pathologically, we found that the most common type is meningothelial meningioma (44%, 20 out of 45 cases) followed by transitional meningioma and angioblastic meningioma (17%, 8 cases).[1,6,7,9-11,13-15,18,19] Based on the above results, a pathological type and a location in our case followed the trend obtained from the 45 reported cases of meningiomas with ASDH manifestations.

The mechanism of hemorrhage remains unclear. Okuno *et al*. and Aloraidi *et al*. suggested that expansion of the

Table 1: Baseline characteristics of meningiomas accompanied with ASDH (*n*=45).

		n
Age, mean (y)		67 (32–85)
Sex, male		18 (40%)
Site	Convexity	30 (66%)
	Falx/parasagittal	12 (26%)
	Sphenoid	3 (6.6%)
	Others	2 (4.4%)
Pathology	Meningothelial meningioma, Grade 1	20 (44.4%)
	Transitional meningioma, Grade 1	8 (17%)
	Angioblastic meningioma, Grade 1	6 (13.3%)
	Angiomatous meningioma, Grade 1	3 (6.6%)
	Atypical meningioma, Grade 2	2 (4.4%)
	Others	7 (15.5%)

ASDH: Acute subdural hematoma, grade, World Health Organization grade.

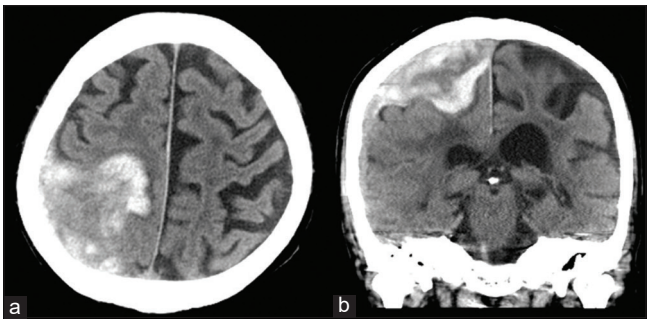

Figure 1: Preoperative axial (a) and coronal (b) computed tomography revealed a right parietal convexity acute subdural hematoma. Retrospective detailed history revealed a meningioma diagnosed 1 year earlier. A tumor was noted at the site of hemorrhage (c-d).

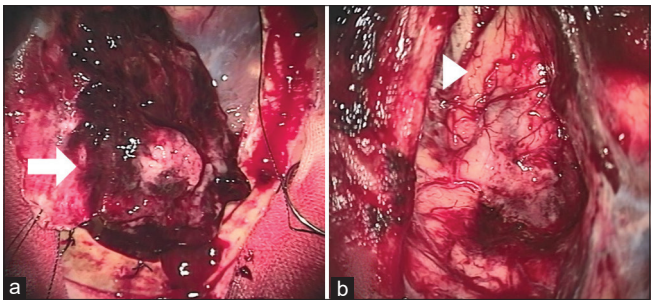

Figure 2: Intraoperative findings show a hematoma attached to the dura mater (white arrow, a) and pia mater (white arrowhead, b), both of which remained intact.

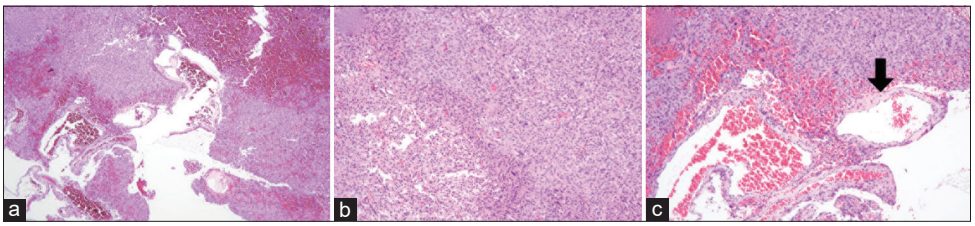

Figure 3: Hematoxylin and eosin (H and E) staining revealed a transitional meningioma (a-c). Lobular and fascicular foci appeared with conspicuous tight whorls and psammoma bodies (a, b). Expanded vessels with thin walls were visible within the tumor itself (c). Original magnification ×40 (a) and ×100 (b, c).

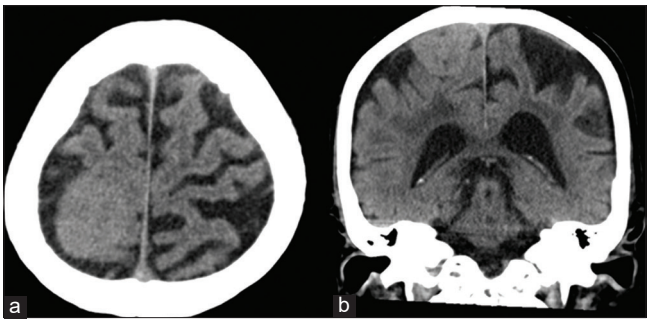

Figure 4: Retrospective detailed history revealed a meningioma diagnosed 1 year earlier. A tumor was noted at the site of hemorrhage (a-b).

meningioma stretches the bridging vein and subdural vein, consequently making these vessels fragile and vulnerable to minor trauma.[1,13] Kim *et al*. showed that intratumoral necrosis and infarction due to rapid growth of the meningioma might cause them to become vulnerable to blood pressure fluctuations.[10] Bosjak *et al*. reported predisposing factors for meningioma hemorrhage, such as severe coughing, physical exertion, sexual activity, and seizure.[2] Masoudi *et al*. reported an unusual case of a convexity meningioma presenting with an ASDH in the postpartum period.[10] Pathological examination, in our case, revealed expanded thin-walled small vessels within the tumor, without infarction or necrosis [Figure 3]. The intraoperative view suggested that the rupture of thin intratumoral vessels may have caused intratumoral hemorrhage and an ASDH. As a result, we concluded that the vessels in the tumor had become fragile due to the rapid expansion of the tumor.

CONCLUSION

We have highlighted the case of a meningioma presenting with an ASDH. This suggests that careful history taking, and the possibility of underlying tumors such as meningioma, should be considered when assessing a nontraumatic ASDH.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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