

## CASE REPORT

# Rapid thrombosis of middle cerebral artery aneurysm after subarachnoid haemorrhage

Tarun Mathur,<sup>1</sup> Trilochan Srivastava,<sup>1</sup> R S Mittal,<sup>2</sup> Shankar Tejawani,<sup>3</sup>  
B S Raghavendra,<sup>1</sup> Rahul Jain<sup>1</sup>

<sup>1</sup>Department of Neurology, SMS Medical College and Hospital, Jaipur, Rajasthan, India

<sup>2</sup>Department of Neurosurgery, SMS Medical College and Hospital, Jaipur, Rajasthan, India

<sup>3</sup>Department of Radiology, SMS Medical College and Hospital, Jaipur, Rajasthan, India

## Correspondence to

Dr Tarun Mathur,  
tmathur111@gmail.com

## SUMMARY

Spontaneous thrombosis of intracranial aneurysm is a rare event but is frequent after subarachnoid haemorrhage (SAH) and in fusiform or giant saccular aneurysms. We report a case of a 20-year-old man presenting with SAH due to rupture of a giant aneurysm of the middle cerebral artery. Initial CT angiography (CTA) revealed partially thrombosed MCA aneurysm but digital subtraction angiography performed 3 days later revealed complete occlusion of the aneurysm. Rapid thrombosis of aneurysm within 3 days has not been reported in literature so far.

## BACKGROUND

Intracranial arterial aneurysmal thrombosis is rare and following subarachnoid haemorrhage (SAH) is an uncommon entity and occurrence so early adds to the rarity of this rare scenario.

## CASE PRESENTATION

A 20-year-old gentleman was admitted to the hospital with history of severe headache for 3 days. There was no history of nausea, vomiting, photophobia, phonophobia, unconsciousness, seizure or similar headache in the past. On examination patient was conscious, cooperative with normal mentation and BP was 120/80 in right arm supine position. Neck stiffness was present. Apart from it the rest of his neurological and general physical examinations were normal categorising him in Hunt and Hess grade 2 of SAH.

## INVESTIGATIONS

Initial non-contrast CT (NCCT) head carried out on first day revealed diffuse SAH in basal cisterns and bilateral sylvian fissure with well-circumscribed hyperdensity in posterior limb of right sylvian fissure suggestive of thrombosed MCA aneurysm (figure 1). CT angiogram performed on next day confirmed partial thrombosis in the MCA aneurysm (figure 2). Digital subtraction angiography (DSA) was carried out on third day to confirm it but to our surprise DSA did not show any patent lumen of aneurysm (figure 3). Repeat CTA was carried out on fourth day of initial presentation does not show flow in right MCA aneurysm, that is, thrombosis of patent lumen of aneurysm without active intervention (figure 4).

## TREATMENT

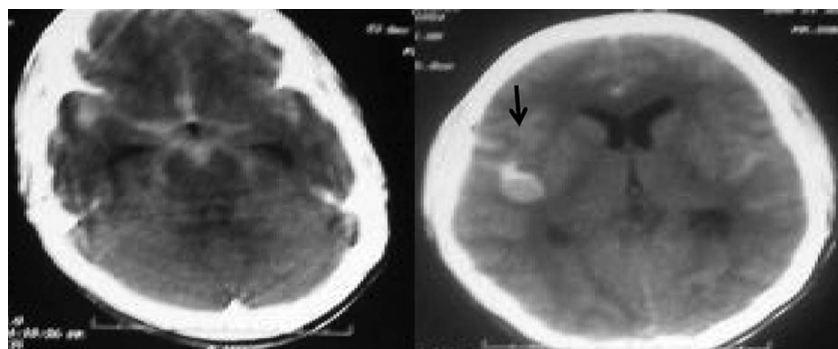
Our patient refused surgery and was treated with conservative management including nimodipine and hydration to prevent vasospasm.

## OUTCOME AND FOLLOW-UP

Patient was later lost for follow-up.

## DISCUSSION

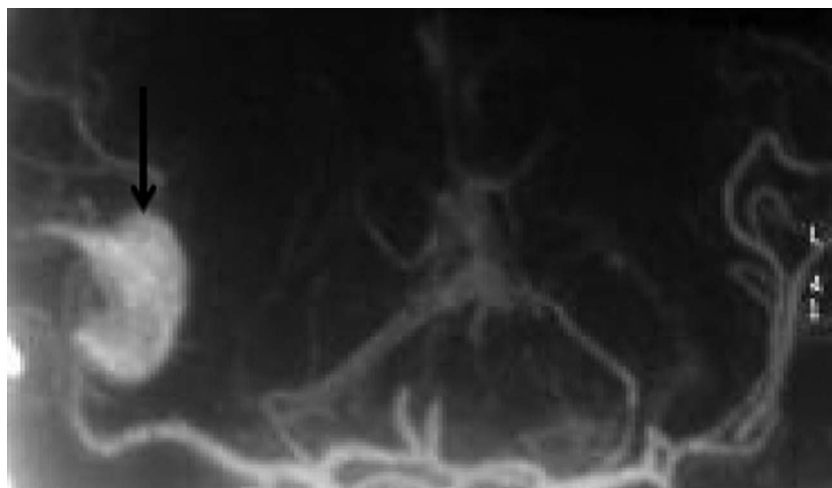
Regardless of age or location, the percentage of reported spontaneous total thrombosis of giant aneurysms ranges from 13% to 20%.<sup>1</sup> Aneurysm thrombosis after SAH has a reported incidence of 1–2%. It may be a delayed event after SAH.<sup>2–4</sup> Factors associated with aneurysm thrombosis after SAH may include hypotension, vasospasm and local damage to the arterial wall.<sup>4 5</sup>



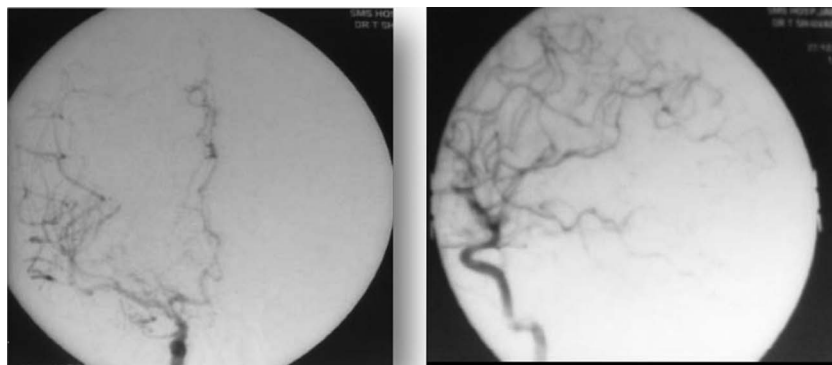
**Figure 1** Diffuse subarachnoid haemorrhage seen in basal cisterns and bilateral sylvian fissure with well-circumscribed hyperdensity in posterior limb of right sylvian fissure (arrow) suggestive of sentinel haematoma or thrombosed aneurysm.

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**Figure 2** Enhancement and pooling of contrast is seen in aforementioned right sylvian hyperdense lesion suggestive of partial thrombosis at its neck or parent artery.



**Figure 3** Cerebral digital subtraction angiography (right ICA injection AP and lateral view) shows normal right MCA. It does not show any patent lumen of the MCA aneurysm as seen on CT angiography carried out 1 day earlier suggestive of complete thrombosis at its neck or parent artery. ICA, internal carotid artery.



Regardless of the underlying pathogenetic mechanism, duration from partial to complete thrombosis has been reported as early as 13 days.<sup>6</sup> Till now to the best of our knowledge there are no case reports of total thrombosis over duration of few days as was in our case.

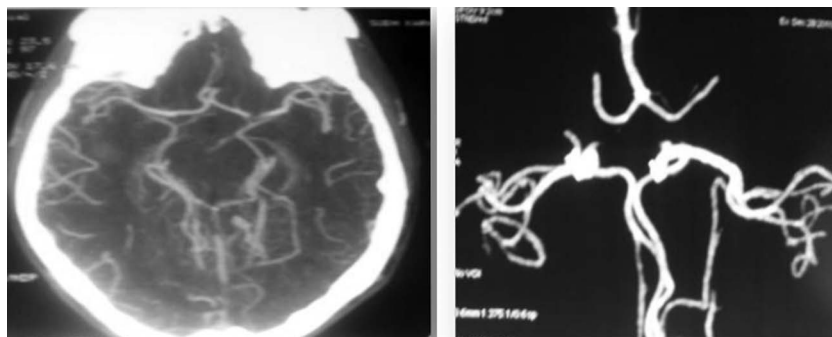
Reversible ischaemic neurological deficits attributable to emboli emanating from partially thrombosed giant intracranial aneurysms have been documented on several occasions. The optimal form of treatment for patients with a thrombosed cerebral aneurysm has not been well defined. Transient ischaemic attacks (TIAs) resulting from these lesions have been treated medically with antiplatelet agents and surgically by aneurysm clipping with no apparent difference in outcome. Therefore, surgical treatment of thrombosed aneurysms may be the preferred

treatment since it has been shown to alleviate TIAs and would reduce the risk of subarachnoid haemorrhage.<sup>7</sup> Apart from it superficial temporal artery-middle cerebral artery (STA-MCA) bypass and endovascular coil embolisation are other treatment options. Our patient refused for surgery and was treated with conservative management. Patient was later lost for follow-up.

To conclude intracranial arterial aneurysmal thrombosis is rare and following SAH is an uncommon entity. Though spontaneous thrombosis been documented as early as 13 days, our case represents very rapid thrombosis within 3 days further adds to a rarity.

In summary, this case represents a rare but important complication of intracranial aneurysms after SAH which developed very early in our case.

**Figure 4** Repeat CT angiography performed on fourth day of initial presentation does not show flow in right MCA aneurysm.



## Learning points

- ▶ Aneurysm thrombosis after subarachnoid haemorrhage (SAH) is documented but rare (reported incidence of 1–2%) and can develop rapidly within a period of few days as in our case.
- ▶ Factors associated with aneurysm thrombosis after SAH may include hypotension, vasospasm and local damage to the arterial wall.
- ▶ Initial angiogram may fail to show the aneurysm because of vasospasm and serial angiograms are needed to confirm aneurysmal thrombosis.

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**Competing interests** None.

**Patient consent** Obtained.

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