

Simultaneous Occurrence of Aneurysmal Subarachnoid Hemorrhage and Hypertensive Intracerebral Hemorrhage

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Intracerebral hemorrhage(ICH) following aneurysmal rupture is found in 34% of the previous literature. However, hypertensive ICH concurrent with subarachnoid hemorrhage(SAH) due to an aneurysm rupture is very unusual with only four cases, to our knowledge, having been previously reported in the literature. We describe a patient who presented with aneurysmal SAH concurrent with hypertensive ICH and review of the literature.

KEY WORDS : Subarachnoid hemorrhage · Hypertensive intracerebral hemorrhage · Aneurysm.

Introduction

The role of systemic hypertension in aneurysm formation and rupture has been controversial. Some reviews of pathology data concluded that no association existed between hypertension and subarachnoid hemorrhage(SAH)^(6,8), but other study has found that hypertension increases the risk of SAH⁽⁷⁾.

A few unruptured aneurysms have been detected with hypertensive Intracerebral hemorrhage(ICH), and ICH following aneurysmal rupture is discovered in 34% of the previous literature⁽⁵⁾. However, a simultaneous occurrence of aneurysmal SAH and hypertensive ICH is very rare^(2,3,9,10).

We report a case of simultaneous occurrence of aneurysmal SAH and hypertensive ICH, and review the literature on previously reported similar cases.

Case Report

A 66-year-old hypertensive female suffered from sudden onset of severe headache and unconsciousness. On admission, the patient was stuporous, and showed right hemiparesis. Other laboratory data were unremarkable.

Computed tomography(CT) revealed a hematoma in the left frontal base and the left basal ganglia (Fig. 1), and moderate

SAH in the basal cistern and both sylvian fissures.

In cerebral angiography, atherosclerotic change was seen in the whole cerebral artery and saccular aneurysm (4.6mm × 3.1mm) was seen at the branching site of anterior temporal artery from the left middle cerebral artery (Fig. 2). The left lenticulostri-

ate artery was bleeding remote from the ruptured aneurysm (Fig. 3). The left A2 segment and right anterior cerebral artery were deviated to the right because of mass effect by the hematoma. CT revealed an increased hematoma in the left basal ganglia after a couple of hours (Fig. 4).

We performed emergency aneurysmal neck clipping successfully along with removing the left basal ganglia hematoma



Fig. 1. Initial brain computed tomograph. Brain computed tomograph revealing an intracerebral hemorrhage in the left frontal base and the left basal ganglia, and moderate subarachnoid hemorrhage in the basal cistern and both sylvian fissures.

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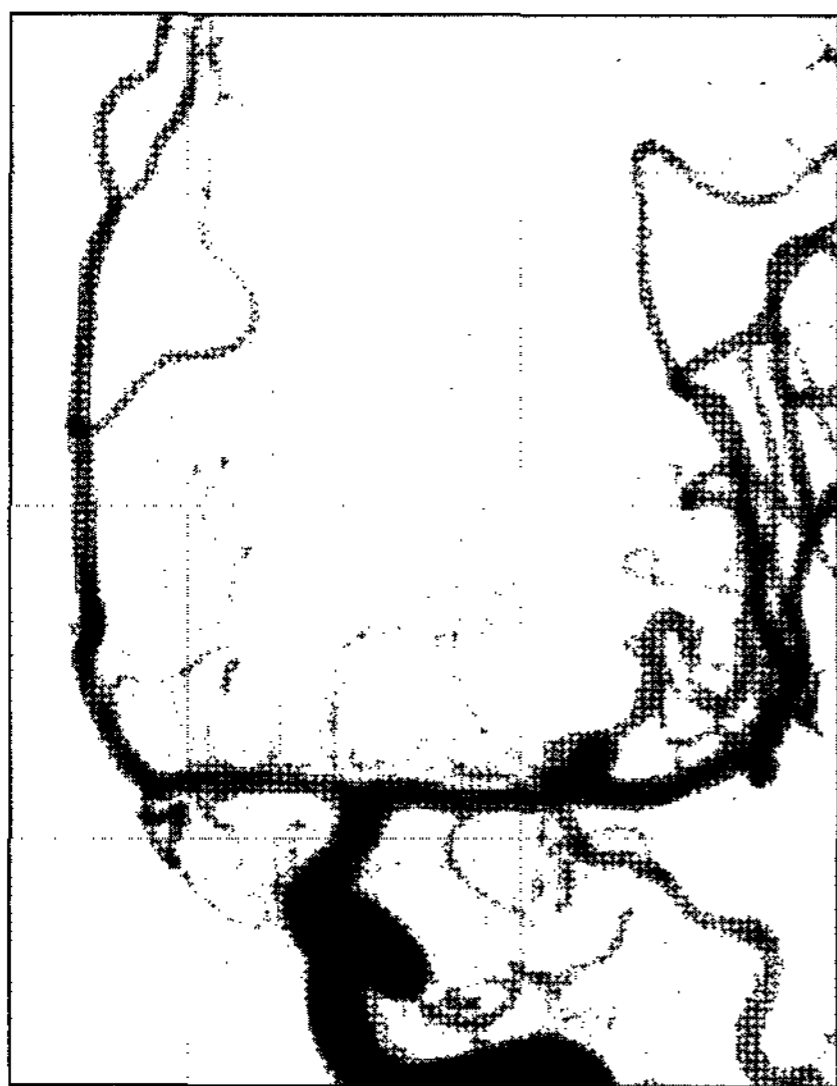


Fig. 2. Cerebral angiography (Early phase). A saccular aneurysm is seen at the proximal anterior temporal artery of the left middle cerebral artery, and the aneurysmal size is 4.6mm × 3.1mm. It has upward direction.



Fig. 3. Cerebral angiography (Late phase). The left lenticulostriate artery is bleed (black arrow) remote from the ruptured aneurysm. The left A2 segment and right anterior cerebral artery are deviated to the right because of mass effect by the hematoma.

reported that ICH after aneurysm rupture seldom leads to increasing intracranial hypertension warranting urgent surgery. These ICHs originated from ruptured aneurysms.

In our case, however, ICH and aneurysmal SAH occurred simultaneously and moreover two lesions were different sites. To our knowledge, our case would be the fifth report. Yanaka et al.¹⁰⁾ described a left thalamic ICH and concurrent rupture of the left superior cerebellar artery aneurysm. Sugita et al.⁹⁾ reported hypertensive ICH in the left internal capsule with a rupture of the left posterior communication artery aneurysm. Lee et al.²⁾

and extraventricular drainage.

Postoperative neurological status was uneventful, except slightly improved right side motor function. She was transferred to another hospital 3weeks after the surgery due to economic problems.

Discussion

ICH occurs in 4~35% of ruptured aneurysm⁵⁾, ICH following aneurysmal rupture develops from the mechanical distortion of intracranial structures resulting from the sudden injection of blood from the aneurysmal rupture¹⁾. Pasqualin et al.⁵⁾ reported that ICH constitutes a less frequent manifestation of aneurysmal rupture than SAH. Papo et al.⁴⁾

reported that ICH

described a left putaminal ICH and concurrent rupture of left anterior communication artery aneurysm. Lee et al.³⁾ also described a subcortical ICH and concurrent rupture of left middle cerebral artery aneurysm.

Aneurysmal rupture affects to intracranial pressure, intracerebral flow, hemodynamics and metabolism¹⁾. Aneurysmal SAH accompanied by hypertensive ICH may have another pathophysiology. Three possible theories can be assumed : 1) Both lesions might have randomly occurred simultaneously; 2) The rupture of the aneurysm could have caused a reflex increase in blood pressure. Therefore hypertensive ICH was caused by the rupture of a penetrating artery which had been weakened by chronic arterial hypertension in a relatively short time; 3) Initially, a sudden rapid increase in blood pressure could have caused hypertensive ICH, and then resulted in the rupture of a remote aneurysm. However, there is a slight chance of the independent concurrence of aneurysmal rupture and ICH, making the other two mechanisms more likely²⁾.

Conclusion

It is suggested means that increased intracranial pressure associated with aneurysmal rupture may be a trigger factor to hypertensive ICH and injure the atherosclerotic vessels.

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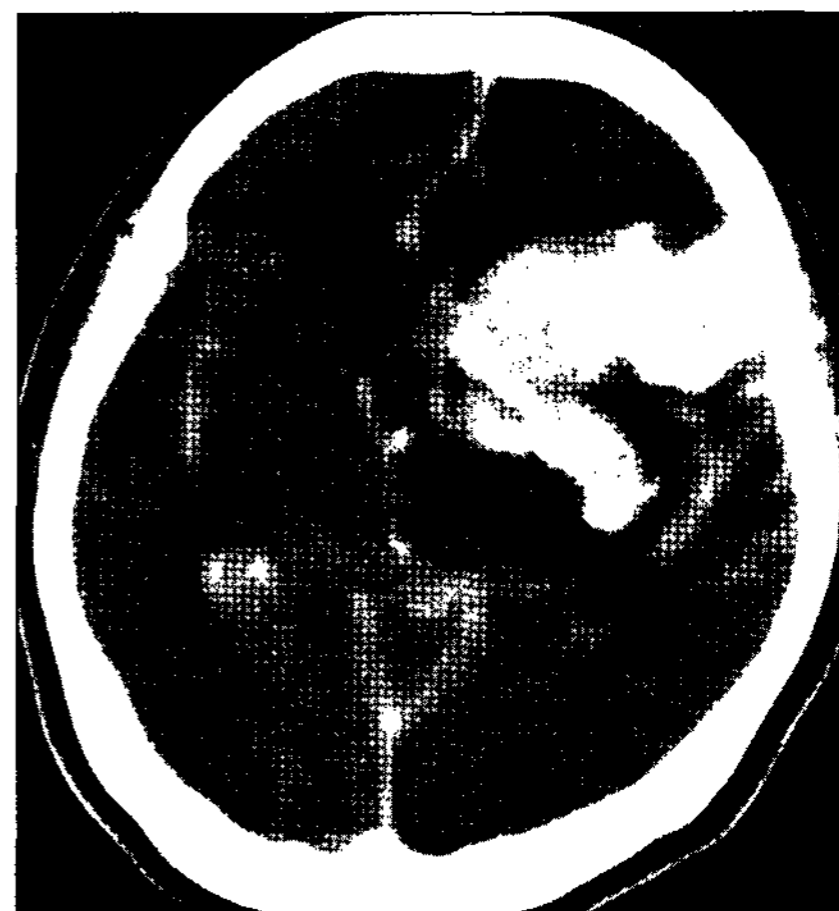


Fig. 4. Postangiography brain computed tomograph. Brain computed tomograph revealing an increased a hematoma in the left basal ganglia and extravasation of contrast media into site of the intracerebral hemorrhage after cerebral angiography.

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