

# Intracerebral Hematoma without Subarachnoid Hemorrhage Presentation of Ruptured Left Middle Cerebral Artery Bifurcating Giant Aneurysm, Case Report

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**Subject:** Intracerebral hematoma without subarachnoid hemorrhage presentation of ruptured left middle cerebral artery bifurcating giant aneurysm, case report

**Abstract:** ***Background:** The subarachnoid hemorrhage is most common presentation of ruptured brain aneurysm. The intracerebral hematoma (ICH) is blood collection within the brain parenchyma mainly caused by brain arterio-venous malformations (AVM), arterio-venous fistula, hypertension or secondary to head trauma. One of rare presentation that ruptured middle cerebral artery aneurysm become with ICH only without subarachnoid hemorrhage. One such case was reported in this paper. Case presentation: We had reported a case of 36 year old male, presented with sudden aphasia with complete right sided weakness, associated with nausea vomiting and severe headache. Computed tomography (CT) and magnetic resonance imaging (MRI) was done immediately to the patient, showed left front parietal intracerebral hematoma without subarachnoid hemorrhage. Then digital subtraction angiography (DSA) was done to the patient showed giant left middle cerebral artery aneurysm at its bifurcation with large pseudoaneurysm arise from its dome which appears to be the cause of the intracerebral hematoma (ICH). Conclusion: This rare pattern of bleeding in such a case, because of pseudo- part of this aneurysm communicated indirectly with the intracerebral hematoma by faint linear density seen in the initial brain computed tomography (CT). That mean this aneurysm at high chance of recurrent bleeding, with higher mortality rate to the patient, so the endovascular coiling was take place immediately.*

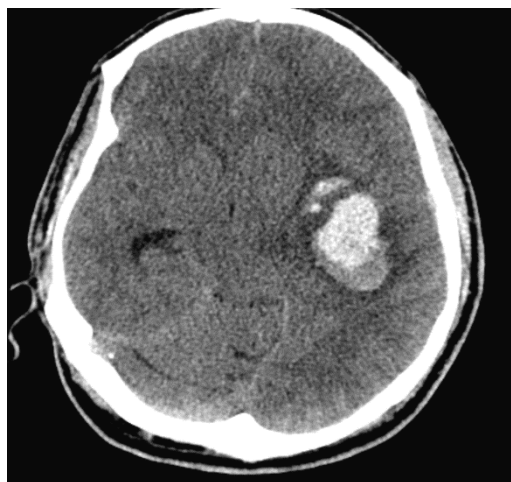
**Keywords:** Subarachnoid hemorrhage (SAH), intracerebral hematoma (ICH), digital subtraction angiography (DSA), endovascular coiling

## 1. Introduction

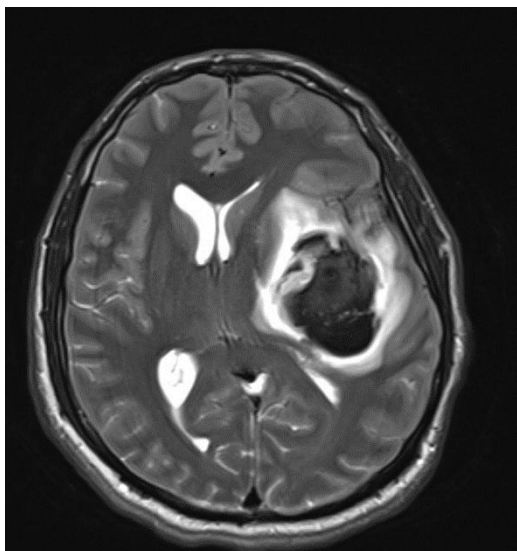
Ruptured intracranial aneurysm usually manifests as subarachnoid hemorrhage (SAH), Aneurysms that only present with intracerebral hematoma are mostly confined to the terminal branches. Intracerebral hematoma (ICH) mainly caused by bleeding within the brain tissue itself, ICH is most commonly caused by trauma, hypertension, or arteriovenous malformations. It is very rare that ruptured middle cerebral artery bifurcation aneurysms presenting with ICH. One such case was reported in this paper.

## 2. Case Presentation

A 35 year old male presented with sudden right sided weakness of the face, arm and leg, severe headache with nausea and vomiting, with sudden aphasia. Computed tomography (CT) and magnetic resonance imaging (MRI) showed intracerebral hematoma seen in the left front parietal lobe with no evidence of subarachnoid hemorrhage. See figure 1, 2.



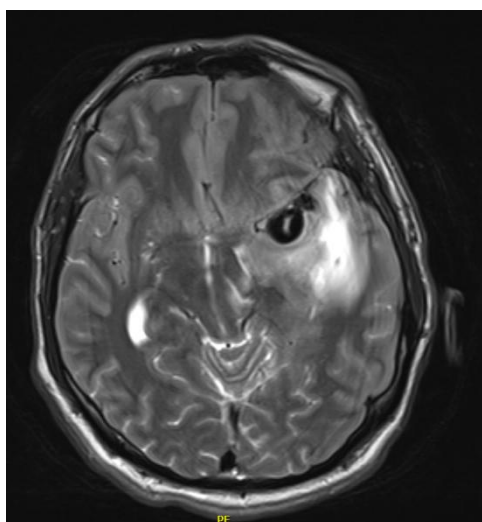
**Figure 1:** Initial brain computed tomography showing Intracerebral hematoma



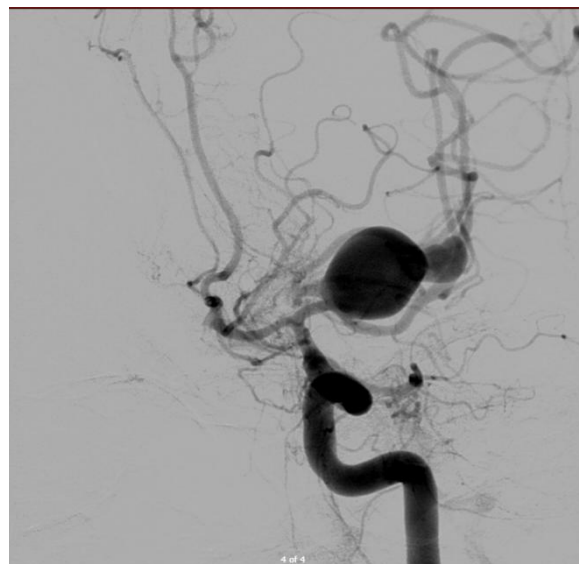
**Figure 2:** Brain MRI showing Intracerebral hematoma

T2WI MRI showed left middle cerebral artery aneurysm with pseudopart see figure 3.

Diagnostic angiogram Left internal carotid artery digital subtraction angiography (DSA) showed giant left middle cerebral artery bifurcation aneurysm with large false part revealed to be the cause of the intracerebral hematoma (ICH) See figure 4.



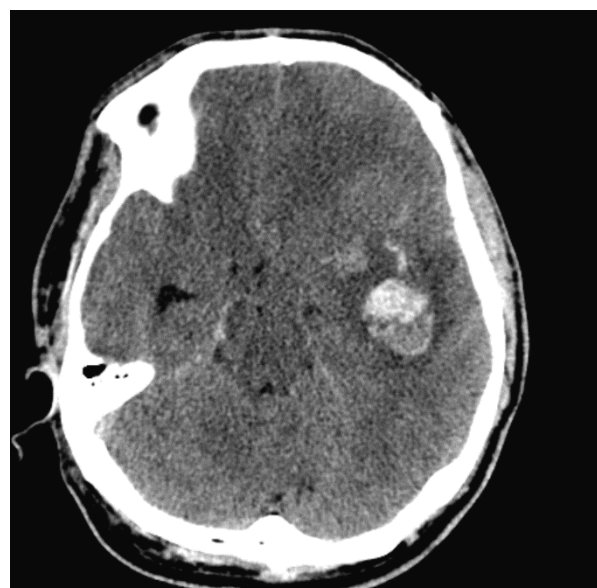
**Figure 3**



**Figure 4**

Figure 4 Left internal carotid artery digital subtraction angiography (DSA) showed giant left middle cerebral artery bifurcation aneurysm with large false part.

unique bleeding pattern was due to the projection of the false part of the aneurysm which showed on brain CT as faint hyperintensity seen in the left cerebral hemisphere that connecting with mentioned above intracerebral hematoma by linear density. See figure 5.



**Figure 5**

### 3. Procedure

This mean that this aneurysm at high risk of rebleeding , so endovascular coiling was done immediately ,see figure 6. Endovascular coiling in such case , is very difficult because at the neck of the aneurysm the MCA branches arise ,and beside the high risk of bleeding from its false part during procedure .see figure 7.

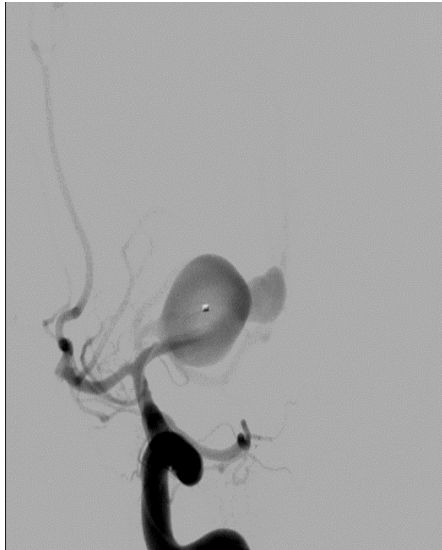


Figure 6 (a)

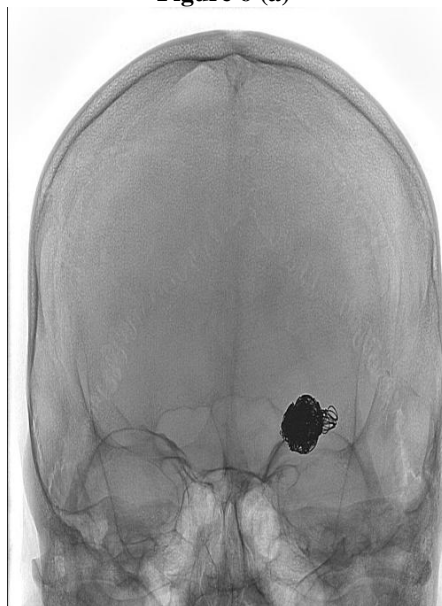


Figure 6 (b):

Figure 6 (a), (b): Endovascular management by coiling take place because it carry high risk of rebleeding.

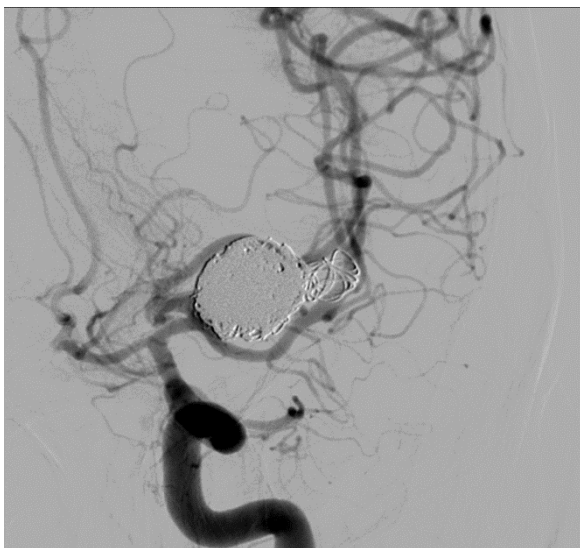


Figure 7: Angiogram post coiling

#### 4. Discussion

The intracranial blood supply can be divided into anterior and posterior circulation based on the brain anatomy. The anterior circulation mainly refers to the intracranial carotid artery system, while the posterior circulation mainly refers to the vertebrobasilar system. These intracranial arteries are distributed on the bottom surface of the brain and are also located in the subarachnoid space. Most aneurysms originate from the site of the intracranial main artery, which gives rise to branches such as the top of the basilar artery, the anterior communicating artery complex, the originating part of the posterior communicating artery and the middle cerebral artery bifurcation. These sites are located in the subarachnoid space; ruptured aneurysms in these sites manifest as subarachnoid hemorrhages (SAHs). Therefore, the presentation of SAH is a typical imaging finding of ruptured intracranial aneurysms. The major reason for the formation of intracerebral hematoma is that some arteries run through the deep fissures after branching from the main artery, such as the M1-M3 segment of the middle cerebral artery in the lateral fissure and the A2-A5 segment of the anterior cerebral artery in the inter-hemispheric fissure. If aneurysms form in these sites, bleeding is difficult to diffuse in the subarachnoid space in a short period of time due to the deep location of the aneurysm. In addition to the occurrence of SAH, a hematoma will form at the site of the aneurysm.

#### 5. Case Highlights

- Intracerebral hematoma (ICH) mainly caused by bleeding within the brain tissue itself, ICH is most commonly caused by hypertension, arteriovenous malformations, or head trauma.
- SAH is the typical manifestation of a ruptured aneurysm.
- Therefore, regardless of whether SAH is accompanied by intracerebral hemorrhage, CTA or DSA is required to rule out aneurysm.
- Ruptured aneurysms can cause SAH or SAH with intracerebral hematoma. However, signs of SAH may be absent in ruptured aneurysms that originate from certain unique sites.
- Immediate coiling in aneurysm manifested with ICH without SAH because the high risk of rebleeding, because the unique bleeding pattern was due to the projection of the false part of the aneurysm in the brain parenchyma.

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