

Commentary

Spontaneous acute subdural hematoma (aSDH) occurring as a result of intracranial aneurysmal rupture is rare.^[1-3] According to the published clinical and autopsy series, the incidence of aSDH due to aneurysmal rupture varies from 0.5% to 8% and from 2% to 22%, respectively.^[1] In a review of such cases, it was noted that the offending aneurysms are most commonly located on the internal cerebral artery (mostly communicating segment), followed by anterior communicating artery and middle cerebral artery (MCA).^[2,4] Distal MCA aneurysms presenting with pure SDH are indeed rare.^[5,6] In this issue of *Journal of Neurosciences in Rural Practice*, Ding and Bok report a case of aSDH due to rupture of distal MCA aneurysm.^[7] The authors should be commended for accurately diagnosing the cause of aSDH and successfully managing the case to achieve a good outcome in their patient. The presumed etiology in this case was infectious based on location and operative findings; however, the authors could not prove it. As the aneurysm was trapped, it would have been nice to excise it and subject to histopathological examination to know the etiology of the aneurysm.

The proposed mechanisms of aSDH due to ruptured cerebral aneurysm have been elucidated clearly in literature.^[8] First, sentinel hemorrhages from the aneurysm may cause adhesion between the aneurysm and the arachnoid, creating a path for the final rupture to occur into the subdural space. Second, high-pressured stream of blood from the leaking aneurysm may burst through the arachnoid at some distant weak point and spill into the subdural space. Third, massive intracranial hemorrhage may rupture through the cortex and overlying arachnoid membrane into the subdural space. Furthermore, rupture of a cortical artery aneurysm (like a distal MCA aneurysm) protruding through the arachnoid may cause bleeding directly into the subdural space.^[1]

From a neurosurgical perspective, aneurysmal SDH is a diagnostic dilemma, especially in the emergency setting.^[3,6] In situations where patients are brought to the emergency room in a comatose state, with an “unknown history,” the differentiation between SDH due to head injury and SDH due to aneurysmal rupture may not be possible. Albeit being rare, the possibility of aneurysmal SDH should never be discounted. A case of aneurysmal SDH may present as a cause of “injury” after an accident because of the disturbance of consciousness resulting from aneurysmal rupture.^[3] It is imperative for the emergency physicians to keep a low threshold, in ordering a computed

tomography angiography (CTA) to exclude aneurysmal origin when in doubt.^[1] As a rule, in an emergency setting, CTA should be recommended in patients with (1) aSDH and no history of head trauma, (2) aSDH and subarachnoid hemorrhage (SAH), with immediate or previous history unavailable on admission, (3) aSDH and a history of probable sentinel bleeding, (4) rapidly progressing symptoms and signs that suggest bleeding of arterial origin, or (5) mild head trauma whose CT findings show disproportionately massive SDH (with or without SAH).^[1,8,9]

The authors point out that certain pathologies such as dural arteriovenous fistulas and small pial arteriovenous malformations can be missed on CTA, particularly in the setting of acute hemorrhage, and advocate a standard digital subtraction cerebral angiogram (DSA) in cases of spontaneous aSDH. However, it has to be noted that many of these patients present in poor clinical condition (comatose) and require surgical intervention on an urgent basis.^[2] Hence, CTA should usually suffice and DSA should be considered only for exceptional cases.^[6] The reason being, aneurysmal rupture leading to aSDH is the only pathology that definitely needs to be tackled during the craniotomy. In addition, in cases of aneurysmal aSDH, not being aware of the location and morphology of the aneurysm, it may turn into an intraoperative catastrophe. The other pathologies noted by the authors can be tackled in time after the patient recovers from the insult of the aSDH.

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Access this article online	
Quick Response Code:	Website: www.ruralneuropractice.com
	DOI: 10.4103/0976-3147.193565

How to cite this article: Savardekar AR, Shukla D. Commentary. *J Neurosci Rural Pract* 2017;8:155-6.