

**Case Report**

# Lateral Medullary Ischemic Infarct Caused by Posterior Inferior Cerebellar Artery Aneurysm

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**Keywords**

Posterior inferior cerebellar artery aneurysm · Lateral medullary syndrome · Treatment of posterior inferior cerebellar artery aneurysm

**Abstract**

Posterior inferior cerebellar artery (PICA) aneurysms are rare. The most common complication of intracranial aneurysms is rupture causing subarachnoid hemorrhage. Ischemic infarct, although more common in giant thrombosed aneurysms, is a very rare manifestation of small intracranial aneurysms. Here we describe a patient who presented with lateral medullary acute infarction associated with an ipsilateral, small (4 × 3.5 mm), unruptured and non-thrombosed PICA aneurysm.

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**Introduction**

Posterior inferior cerebellar artery (PICA) aneurysms are a rare form of intracranial aneurysms (5.6–6.6%) [1–3]. The most common complication of intracranial aneurysms is rupture causing subarachnoid hemorrhage. Although giant thrombosed aneurysms can cause cerebral ischemia, it is a very rare manifestation of small (<10 mm) intracranial aneurysms [4]. Here we describe a patient who presented with lateral medullary acute infarction associated with a small and unruptured PICA aneurysm.

## Case Presentation

A 59-year-old Caucasian man presented to the emergency department with chief complaints of acute right facial numbness and weakness, vertigo, blurred vision, and nausea. His past medical history was significant for hypertension and aortic dissection (status post mechanical aortic valve on Coumadin with therapeutic INR). He complied with his medications and his home medication regimen included warfarin, atenolol, and atorvastatin. Initial laboratory studies indicated a therapeutic INR of 2.6; otherwise his medical history was unremarkable. His physical examination was significant for right horizontal gaze nystagmus, right facial sensory deficits along with facial weakness, decreased palate elevation on the right, right tongue deviation, right-sided limb ataxia, and decreased sensation on the left side of the body. The patient did not receive intravenous thrombolysis secondary to his elevated INR. Brain MRI revealed a restricted diffusion on the right lateral medulla consistent with an acute lateral medullary infarction. An MR angiogram of the head and neck indicated a right small PICA aneurysm (Fig. 1a), which was otherwise unremarkable. A transthoracic echo was unremarkable for any acute findings. A cerebral angiogram confirmed a small, unruptured, and nonthrombosed right PICA aneurysm (4 × 3.5 mm), which was later treated with coiling (Fig. 2). His 3-month follow-up in our clinic showed only minimal deficits.

## Discussion

There have been limited studies on unruptured intracranial aneurysm causing ischemic stroke. To our knowledge, this is the first case report of a patient with unruptured PICA aneurysm presenting with lateral medullary syndrome. Although we cannot fully confirm that the PICA aneurysm was the etiology of our patient's medullary stroke, we believe that the relative location of the aneurysm to the infarction (Fig. 3) makes that highly probable. The mechanism as for why this stable, unruptured aneurysm caused an ischemic infarct can possibly be explained by the local mass effect, although another explanation can be due to stagnant blood flow from the aneurysm or from the aneurysmal thrombus that may have caused the localized infarct from aberrant blood flow. Although aneurysmal thrombus is much more common in large-sized aneurysms, it has been described in smaller aneurysms as well [4]. Treatment of PICA aneurysm is challenging due to the location with proximity to the medulla, with a risk of lower cranial nerve palsies in about half of the patients [3]. Patients treated with endovascular treatment including coiling have previously been mentioned in the literature with a good outcome although the incidence of procedural rupture of the aneurysm was remarkably high among these patients.

## Statement of Ethics

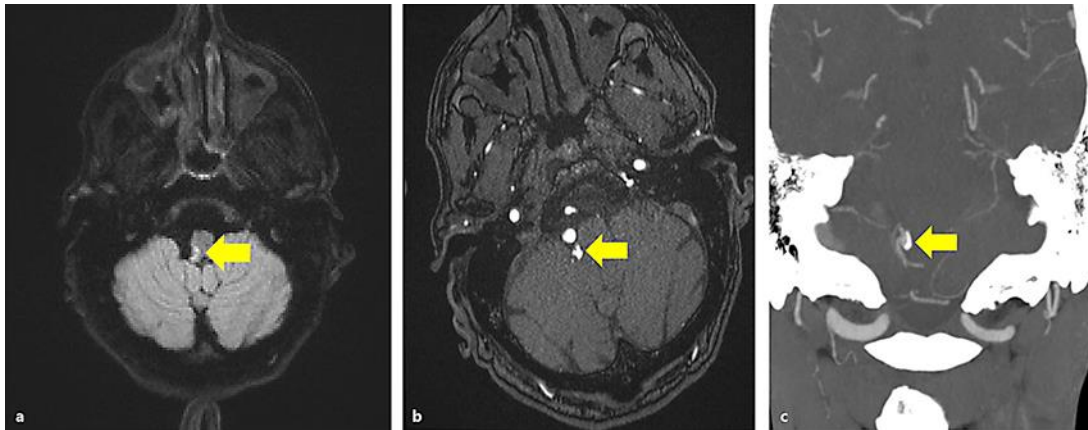
The patient consented to the publication.

## Disclosure Statement

The authors declare that they have no conflicts of interest.

## References

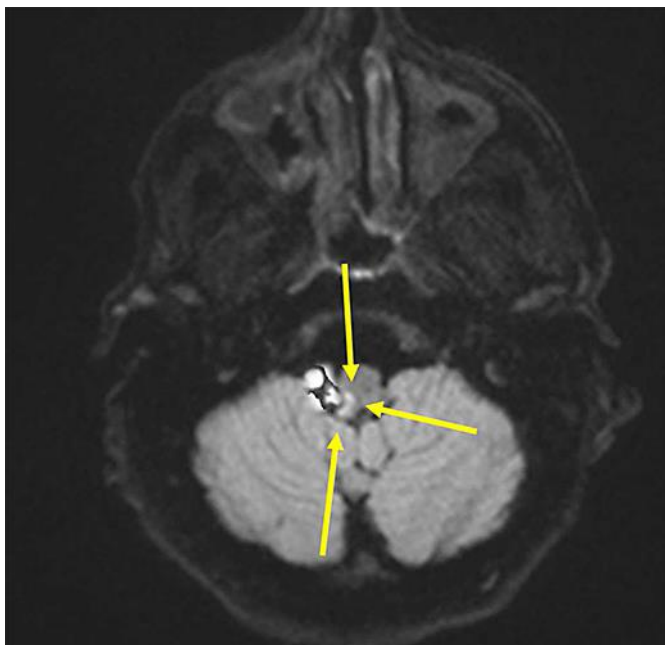
- 1 Crowley RW, Albuquerque FC, Ducruet AF, Williamson RW, McDougall CG: Technical considerations in the endovascular management of aneurysms of the posterior inferior cerebellar artery. *Neurosurgery* 2012;71(2 suppl operative):ons204–217.
- 2 Wiebers DO, Whisnant JP, Huston J, Meissner I, Brown RD, Piegras DG, Torner JC: Unruptured intracranial aneurysms: natural history, clinical outcome, and risks of surgical and endovascular treatment. *Lancet* 2003;362:103–110.
- 3 UCAS Japan Investigators, Morita A, Kirino T, Hashi K, Aoki N, et al: The Natural course of unruptured cerebral aneurysms in a Japanese cohort. *N Engl J Med* 2012;366:2474–2482.
- 4 McLaughlin N, Bojanowski MW: Unruptured cerebral aneurysms presenting with ischemic events. *Can J Neurol Sci* 2008;35:588–592.



**Fig. 1.** a MRI of the brain showing restricted diffusion in the lateral medulla. b, c MR angiogram of the head without contrast showing the PICA aneurysm.



**Fig. 2.** Cerebral angiogram showing successful coiling of the PICA aneurysm.



**Fig. 3.** Superimposed images of both the MR angiogram of the head and MRI of the brain showing proximity of the PICA aneurysm to the lateral medullary infarct.