

## Persistent trigeminal artery: rare cause of ischemic stroke in young people

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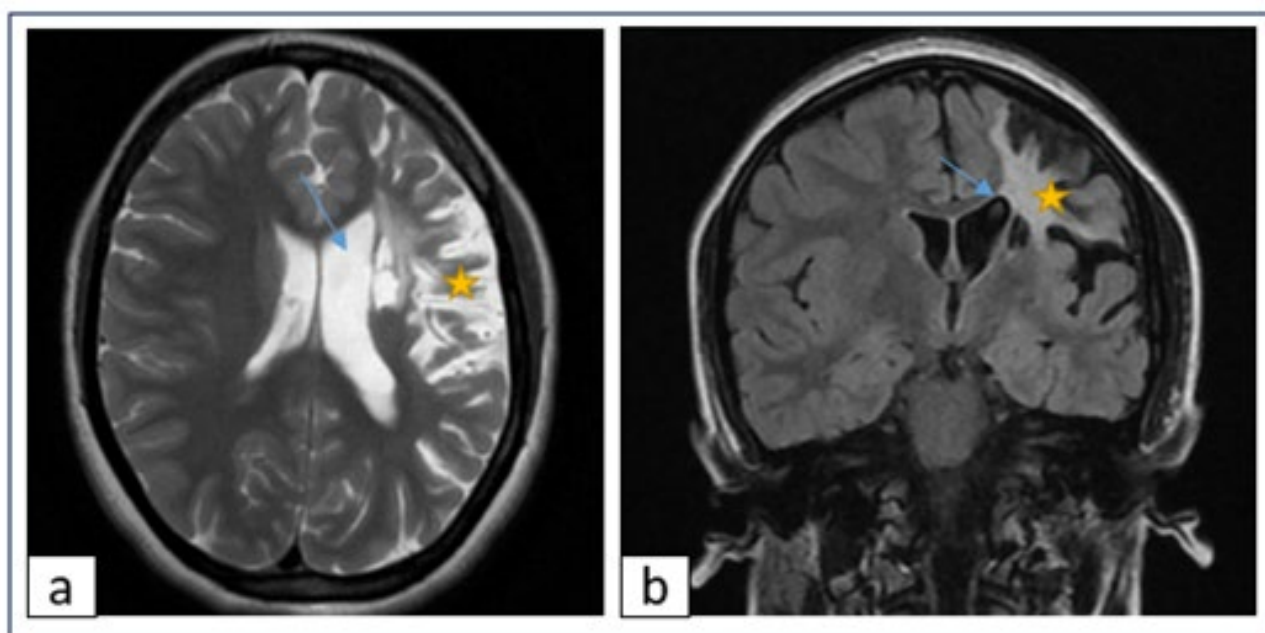
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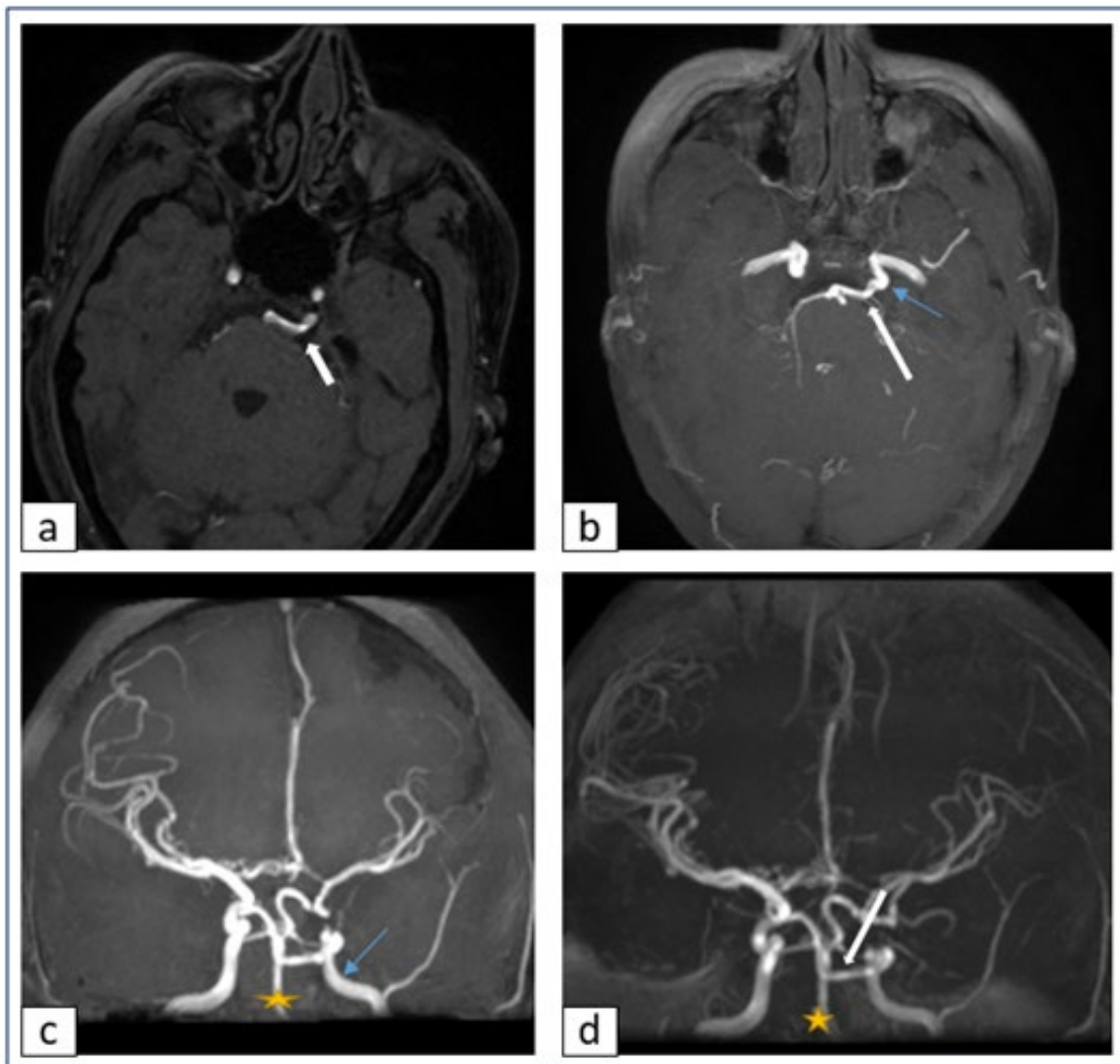
### Observation

A young girl, 17-years-old, history of drug addiction, followed for thrombophilia with a right hemiplegia due to a left superficial sylvian infarction for 6 months, hospitalized for etiological exploration. Cerebral magnetic resonance imaging showed a se-

quel of left frontal ischemia due to occlusion of the superficial branches of the left middle cerebral artery (**Figure. 1**), with the presence of an artery connecting the basilar trunk and the left internal carotid artery, also called the persistent trigeminal artery (**Figure. 2**).



**Figure 1:** Brain MRI in axial slice (a) T2-weighted and (b) Flair, showing a chronic left frontal ischemic stroke, in T2 and Flair hypersignal with homolateral LV attraction and cortical sulcus widening.



**Figure 2:** ARM 3D Time Of Flight (TOF) of the Willis polygon: (a,b) axial view, (b) front view, and (c) top view: the persistent trigeminal artery of type 2 (white arrow) emerging from the right carotid siphon (blue arrow), persistent trigeminal artery joins the basillary trunk which is of normal caliber (star). There is an asymmetry in the caliber of the two carotid arteries, with a dominant right carotid artery.

### Description

Persistent trigeminal artery (PTA) is the most common embryonic carotid-basilar anastomosis. Its prevalence varies from 0.12% to 1% in studies using magnetic resonance angiography or conventional angiography.

The PTA arises from the precavernous segment of the internal carotid artery and joins the distal third of the basilar trunk, between the origin of the superior cerebellar and anteroinferior cerebellar arteries. Furthermore, the ipsilateral vertebral artery, the posterior communicating artery, and the distal part of the internal carotid artery may be hypoplastic.

Three types of PTA are described by Saltzman; in type I: The persistent trigeminal artery supplies the distal vertebrobasilar arteries. The posterior communicating artery is absent and the caudal basilar is absent or hypoplastic with hypoplastic distal vertebral arteries. In type II: The persistent trigeminal artery supplies the superior cerebellar arteries with the posterior cerebral arteries supplied by the posterior communicating artery. And Type 3 consists of a combination of the first two types.

PTA can be associated with several pathologies, including vascular nerve compression syndromes, such as trigeminal neuralgia or ophthalmoplegia related to oculomotor or abducens palsy. Pituitary stem compression, spontaneous or traumatic intracavernous fistula and cerebral aneurysms due to its bifurcation, it is also related to ischemic cerebrovascular accident, although it is rare.

Patients with PTA and vertebrobasilar hypoplasia tend to have a reduced vascular supply to the posterior fossa. In the case of proximal occlusion of the BA, if it is proximal to the insertion of the APT, it may have a protective effect on the distal territory. In the case of thrombus in the anterior circulation, the APT can cause migration of the thrombus to the BA, with the risk of infection.

### References

1. Ferreira, A., Coelho, P. S., & Cruz, V. T. (2019). Persistent trigeminal artery in a patient with posterior circulation stroke treated with rt-PA: case report. *BMC neurology*, 19(1), 1-6.

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2. Parthasarathy, R., Derksen, C., Saqur, M., & Khan, K. (2016). Isolated intermittent vertigo: A presenting feature of persistent trigeminal artery. *Journal of Neurosciences in Rural Practice*, 7(01), 161-163.
  3. El Aoufir, O., El Bakkari, A., Touarsa, F., El Khamlichi, A., El Kettani, N. E. C., Jiddane, M., & Fikri, M. (2021). Artère trigéminal: une anastomose carotido-vertébro-basilaire. *La Presse Médicale Formation*, 2(5), 542-544.
  4. Meckel, S., Spittau, B., & McAuliffe, W. (2013). The persistent trigeminal artery: development, imaging anatomy, variants, and associated vascular pathologies. *Neuroradiology*, 55(1), 5-16.

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