

### Background

The artery of Percheron is a rare anatomical variant where a single thalamic perforating artery arises from the proximal posterior cerebral artery (P1 segment) between the basilar artery and the posterior communicating artery and supplies the rostral mesencephalon and both para-median thalami. Proximal embolism is thought to be the most common etiology of stroke in this territory with this variant. Almost one-third of human brains present this variant. Asymmetric thalamic involvement is seen in two-thirds of cases and midbrain infarction is present in over half.

### Data analysis and case presentation

Occlusion of the artery of Percheron often results in bilateral medial thalamic infarction, which usually manifest with altered consciousness (including coma), vertical gaze paresis and cognitive disturbance. The presentation is similar to the 'top of the basilar syndrome' and early recognition should be prompt. Conventional vascular imaging does not routinely demonstrate these tiny perforating vessels. Hypoplastic or absent P1 segments are more likely to be seen with this variant.

We describe the case of a 52-years old well fit Caucasian female that was admitted to our Stroke Unit for a sudden onset of altered mental status and vertical gaze palsy, Glasgow Coma Scale of 8 was detected. Brain CT scan examination was immediately obtain, no acute lesions could be seen, and radiologist couldn't only identified the posterior communicating left artery. Anyway, intravenous thrombolysis was performed with slowly improvement of clinical condition in the next days, even if confusion state, disorientation, memory impairment, slurred speech and oculomotor disorder persisted. The day after thrombolysis brain CT scan and MRI showed bilateral thalamic lesions and a filling defect of the P1 segment of the left posterior cerebral artery. Occlusion of the vessel was presumably due to embolism from a patent foramen ovale. Thrombolysis allowed only an incomplete symptoms remission, cognitive impairment and speech disorders persisted.



Figure 1: A: Schematic representation of the thalamic nuclei and Schematic representation of the artery of Percheron.

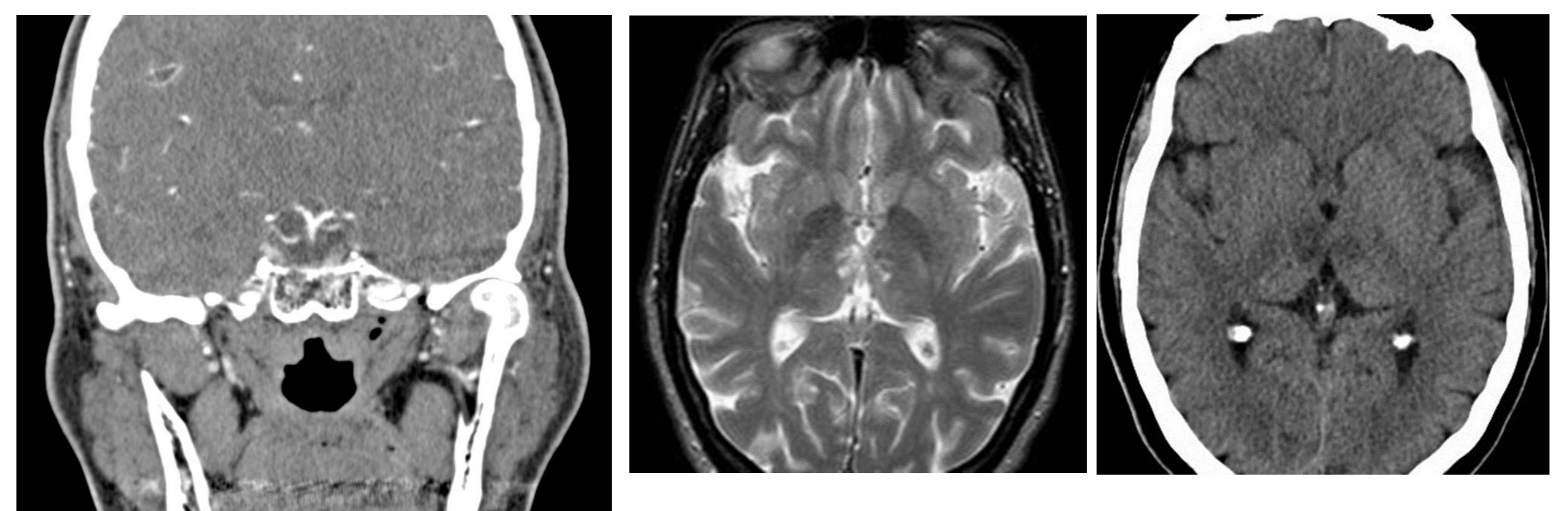


Figure 2: Angio TC imaging showing hypoplasia of P1 segment of left PCA. RM and CT Scan axial view of bi-thalamic stroke

### Conclusion and future perspective

The large number of variants of the blood supply in the posterior cranial fossa (especially regarding the presence and size of P1 segments, which give rise to the para-median arteries), might show that the artery of Percheron is not such an infrequent variant and is most underdiagnosed. Early recognition and treatment of posterior circulation strokes is mandatory and further investigation for underlying stroke aetiologies are needed.

### References

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