

# Artery of Percheron Infarction: A case report with review of literature

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## Abstract

Sudden onset of altered sensorium is a clinically challenging situation for neurologists/ neurosurgeons and the radiologists should be well of aware of the causes like, encephalitis, organ dysfunction, metabolic, endocrine, intoxication & rare vascular causes.

Amongst the vascular causes, one rare cause being artery of Percheron infarct, a rare anatomic variant of arterial supply to the paramedian thalamus and rostral midbrain, and occlusion of the artery of Percheron (AOP) results in bilateral paramedian thalamic infarcts with or without midbrain involvement.

We report a rare case of artery of Percheron infarction who presented with inability to speak with all CNS functions being normal.

## Introduction

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Amongst the vascular causes, one rare cause being artery of Percheron infarct, a rare anatomic variant of arterial supply to the paramedian thalamus and rostral midbrain, and occlusion of the artery of Percheron (AOP) results in bilateral paramedian thalamic infarcts with or without midbrain involvement.

We report a rare case of artery of Percheron infarction who presented with inability to speak with all CNS functions being normal.

## Case Report

A 17 year old girl was referred to our department with the complaints of unresponsiveness and drowsiness with a history of mitral wall replacement.

## Discussion

Bithalamic paramedian infarcts are rare, and very difficult to suspect because of their complex anatomy, causing a large clinical variation.

The thalamus receives a blood supply from the anterior, posterior, inferolateral and paramedian arteries [1,2].

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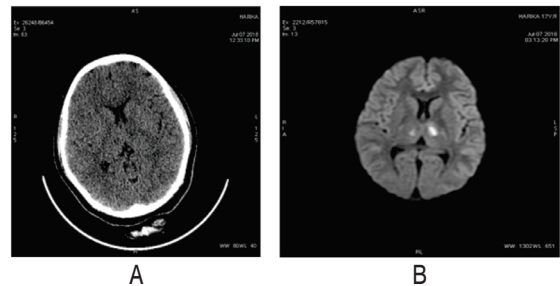


Fig A. NECT brain axial section showing hypodensities in bilateral thalami .

Fig B. DWI showing diffusion restriction in bilateral thalami.

The paramedian thalamic arteries can arise from the P1 segment of the posterior cerebral artery in three different ways [2]. The commonest variation is when it arises from the P1 segment of each PCA. If the perforating arteries arise from a single common trunk which supplies both thalami across the midline, this variation is the artery of Percheron (Figure 1).

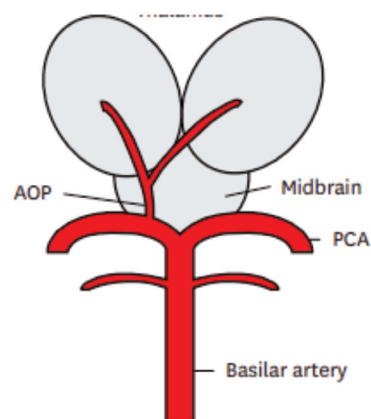


Fig 1 : Schematic diagram representing the AOP arising as a single trunk from the right PCA, supplying both thalami and often the rostral midbrain. AOP, artery of Percheron; PCA, posterior cerebral artery.

Occlusion of this artery produces paresis of upward gaze, drowsiness and often coma [3]. The clinical spectrum may be of following patterns :-

- Mental status disturbance (MSD);
- Behavioral amnesic impairment (BAI);
- Aphasia or dysarthria, which includes any alteration of the language components or slurred speech;
- Ocular movement disorders (OMDs);
- Motor deficit;
- Cerebellar signs [4];

A distinct pattern of V-shaped hyperintensity [5] on axial FLAIR and/or DWI was present along the pial surface of the midbrain adjacent to the interpeduncular fossa in 38% of all patients and 67% of patients with midbrain involvement.

The differential diagnosis [4,5] for bilateral thalamic infarctions are :-

- a.) top of basilar thrombosis where territory confines to posterior cerebral artery and superior cerebellar artery and
- b.) deep cerebral venous thrombosis a rare entity.

Wernicke's encephalopathy [3] can also be a differential diagnosis of bilateral thalamic lesions, in which T2-weighted MRI findings include symmetric hyperintensity in the medial thalami, but also in the tectal plate, periaqueductal gray, mamillary bodies, and dorsal medulla. Classical imaging findings like in our case are diffusion weighted hyperintensity with corresponding low ADC signal and FLAIR hyperintensity in bilateral paramedian thalami. Features consistent with subacute infarct confined to the artery of Percheron territory.

Imaging studies performed within the first week after the stroke, showed 4 different clinic-anatomical patterns

- Bilateral paramedian thalamic with rostral midbrain infarction (BPTRMI),
- Bilateral paramedian thalamic without midbrain infarction (BPTWMI),
- Bilateral paramedian and anterior thalamic with midbrain infarction, and
- Bilateral paramedian and anterior thalamic without midbrain infarction [4]

Differential diagnoses [6] also include neoplasms, infections, Wilson's disease, and osmotic myelinolysis.

## Conclusion

AOP occlusion in a patient with a decreased consciousness, ophthalmologic signs and cardio-embolic

risk factors should alert the the imaging radiologist for the rare cause of AOP Infarct. Early diagnosis is best obtained with brain MRI with DWI. Treatment of AOP infarction really depends on the pathophysiologic mechanism. Prognosis is subject to the extent of infarction but considered relatively good with regard to mortality and permanent deficits [6].

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