



Case report

A rare case of ischemic stroke

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Abstract

The artery of Percheron is a rare vascular entity of cerebral circulation. High degree of suspicion is required to diagnose this condition. Artery of Percheron infarction should be considered in all patients presenting with sudden loss of consciousness. Magnetic resonance imaging (MRI) shows a characteristic pattern of bilateral paramedian thalamic infarcts with or without midbrain involvement. We report a case of a 45-year-old man with acute bilateral thalamic infarcts. Occlusion of the vessel was presumably due to hyperhomocysteinemia.

Key words: Artery of Percheron, Hyperhomocysteinemia, Ischemic stroke

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Normal variants of the cerebral circulation are a common occurrence. Infarction resulting due to the occlusion of these variant arteries can be difficult-to-diagnose. The artery of Percheron (AOP) is an anatomical variant of the posterior cerebral circulation. In a patient presenting with altered sensorium with no other obvious cause, AOP infarction should be considered in the differential diagnosis¹. The case presentation is followed by a discussion of bilateral paramedian thalamic infarction. The differential diagnosis of vascular and nonvascular etiologies of bilateral thalamic lesions is also discussed.

Case report

A 45-year-old male presented to the emergency department with complaints of sudden onset loss of consciousness, preceded by giddiness which lasted for five minutes on waking up in the morning the same day. He suffered from primary hypertension, type 2 diabetes mellitus and hypothyroidism. He was on regular medication for the same. On assessment at the time of admission, the Glasgow

Coma Scale (GCS) was 5/15 (E2 M2 V1), pulse was 90 per minute and regular, and the blood pressure was 240/120 mm of Hg in the supine position. Blood sugar was 241 mg/dl. Pupils were 3 mm bilaterally and were not reacting to light. Oculocephalic reflex was absent. All deep tendon reflexes were absent. Babinski sign was found on both feet. Other systemic examination did not reveal any abnormality. A provisional diagnosis of acute posterior circulation stroke was made. A non contrast computed tomography (CT) scan of the brain was normal. He was treated with aspirin, statin, antihypertensives, insulin, thyroxine and other supportive measures. The patient was subjected to a non contrast MRI brain. The diffusion weighted imaging (DWI) revealed hyperintensity in bilateral paramedian thalamic regions and in the medial aspects of both cerebral peduncles with restricted diffusion on apparent diffusion coefficient (ADC) (Fig 1). Magnetic resonance angiogram (MRA) was normal thereby excluding top of basilar artery occlusion. 2D echo was normal. Evaluation for hypercoagulable factors revealed

hyperhomocysteinemia. The patient improved gradually over next 20 days to the extent that he was conscious, alert, oriented to time, place, and person, and was obeying oral commands. At the time of discharge, the residual neurological deficit was right sided hemiplegia with right upper motor neuron (UMN) facial palsy.

Discussion

The artery of Percheron is a rare variant of the posterior cerebral circulation characterized by a solitary arterial trunk that supplies blood to the

paramedian thalami and the rostral midbrain bilaterally². It is named after the French neurologist Gérard Percheron, who described it in 1973³. Percheron described three variations of this entity (Fig 3). Type I is the most common variant, where perforating arteries arise from each P1 segment of posterior cerebral artery². Type II, the artery of Percheron, arises from one P1 segment and splits to supply bilateral thalami and rostral midbrain. Type III was described as a series of perforating arteries arising from an artery bridging bilateral P1 segments².

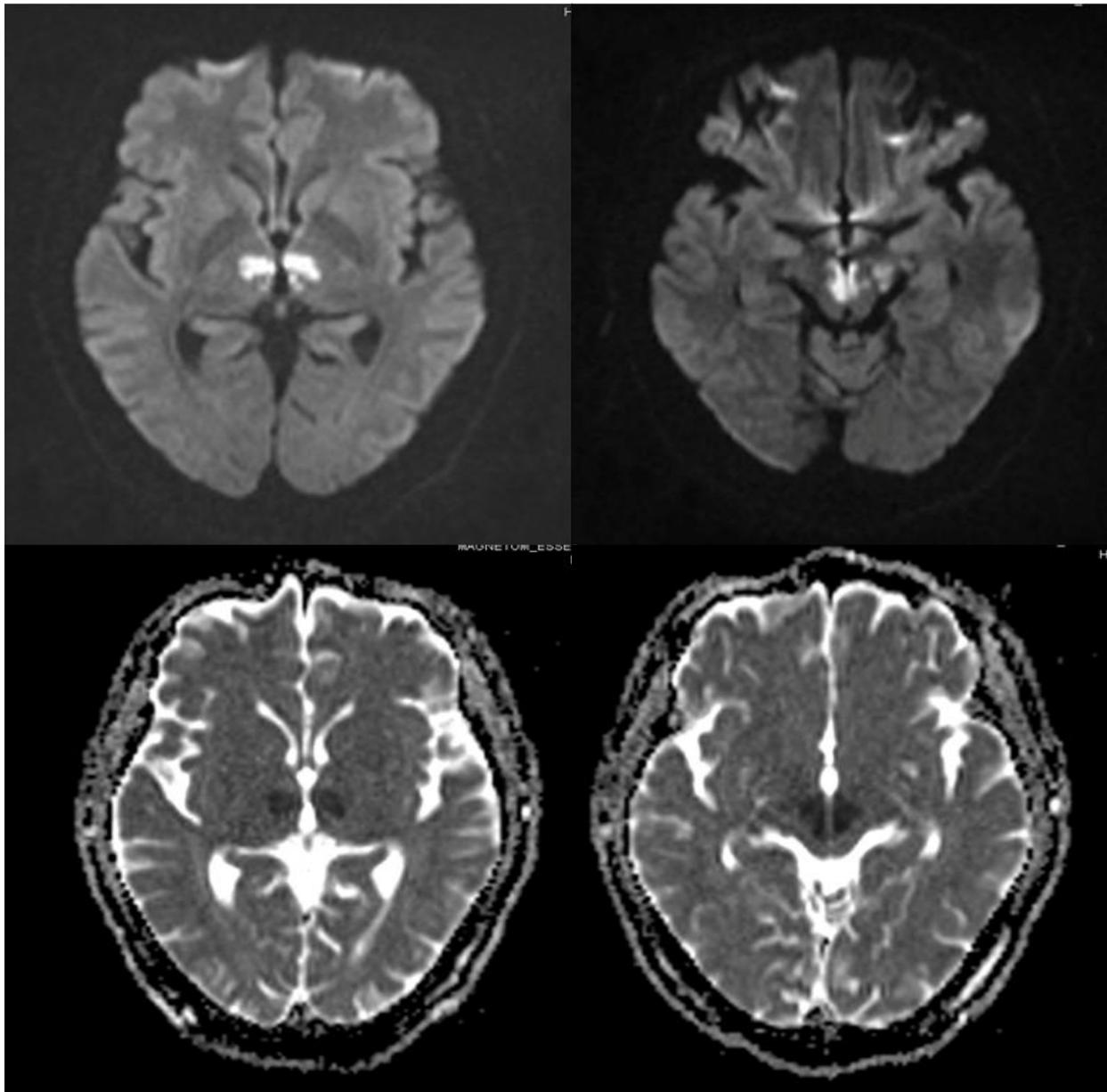


Fig 1. DWI in axial plane in a 46 year male patient reveals hyperintensity in bilateral paramedian thalamic regions (a and c) and in the medial aspects of both cerebral peduncles (positive 'V' sign) (b and d) with restricted diffusion on ADC

Symptoms may vary depending on the infarct extension through thalamic and midbrain structures⁴. Bilateral paramedian thalamic involvement is usually characterized by a triad of altered sensorium, vertical gaze palsy and memory disturbance. When also accompanied by rostral midbrain lesions, a mesencephalo-thalamic or thalamo-peduncular syndrome occurs, which includes other oculomotor disturbances, hemiplegia, cerebellar ataxia, and movement disorders, along with the triad mentioned above. The four main symptoms found in the literature are vertical gaze palsy (65%), memory impairment (58%), confusion (53%), and coma (42%)⁵. The most common etiology of bilateral thalamic infarctions is cardioembolism⁶. Some of the risk factors of stroke causing thromboembolism include atherosclerosis, atrial fibrillation, ventricular aneurysms, right-to-left shunts as well as hypercoagulable states⁷. The mean age and sex predilection of artery of Percheron infarctions in the general population is unknown due to its rarity. But it is known that 58% of posterior cerebral artery infarcts affect men at a mean age of 61.5 years⁷. Our patient was much younger to the mean age mentioned in literature and also hyperhomocysteinemia causing artery of Percheron infarction has not been reported before. Bilateral thalamic infarcts usually carry a favorable prognosis, although some patients may have persistent visual field deficits^{7,8}.

In conclusion, occlusion of the artery of Percheron is one of the differential diagnosis to be considered

in a patient presenting with unexplained loss of consciousness. MR angiography is the diagnostic modality of choice. Hypercoagulable states also need to be considered as an important treatable etiological factor along with other conventional factors and should be investigated and treated accordingly.



Fig 2. 3D TOF MR Angiogram reveals normal caliber of vessels of circle of Willis. Basilar artery appears slightly tortuous. Top of the basilar artery including both Posterior cerebral arteries is normal in caliber. Both posterior communicating arteries are well seen.

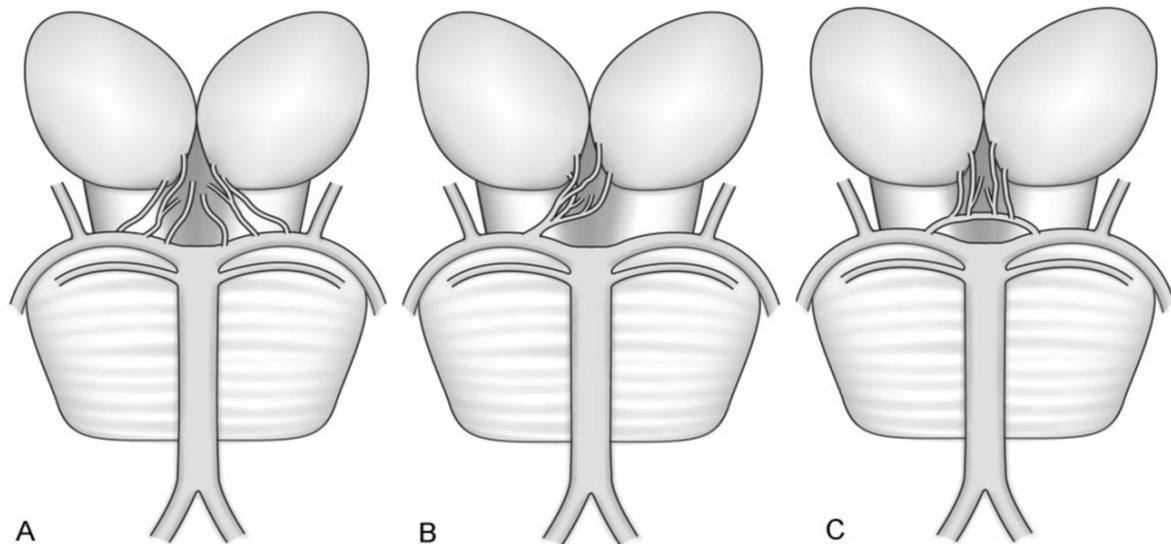


Fig 3. Variations of the paramedian thalamic-mesencephalic arterial supply according to Percheron. (A) In the most common variation, there are many small perforating arteries arising from the P1 segments of the PCA. (B) The artery of Percheron is a single perforating blood vessel arising from one P1 segment. (C) The third type of variation is that of an arcade of perforating branches arising from an artery bridging the P1 segments of both PCAs. (© American Society of Neuroradiology. Reproduced with permission)

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Conflict of interest: None

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