

CASE REPORT

A RARE CASE OF PERCHERON ARTERY INFARCT

Veena Santoshi Avvas¹, Manjunath R², Rajeev H³, Aravind M. N⁴

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ABSTRACT: INTRODUCTION: Bilateral thalamic infarcts are rare presentations of stroke. They are the result of a complex combination of risk factors and a predisposing vessel distribution. An Artery of Percheron is a rare anatomic variation in the brain vascularization seen in one third of population. It was described by French medical scientist Gerard Percheron in 1973. The artery of Percheron, characterized by a single arterial trunk that irrigates both paramedian thalamic regions, can be occluded as a result of thrombo embolic diseases leading to bilateral paramedian thalamic infarcts. The main symptoms are vertical gaze palsy (65%), memory impairment (58%), confusion (53%), and coma (42%). Clinical and image findings of this uncommon form of posterior circulation infarct are presented along with their anatomic and pathophysiologic correlates. **CASE PRESENTATION:** A 75yrs old right handed female, known diabetic and hypertensive presented with sudden loss of consciousness 6 hrs prior to admission. MRI Brain showed restricted diffusion involving bilateral thalamus and midbrain-Artery of percheron infarct and chronic lacunar infarcts.MR-Angiogram-Subacute infarcts in bilateral thalamic region and periaqueductal region of midbrain. The posterior circulation was patent including the tip of the basilar artery and both posterior cerebral arteries, making the case compatible with occlusion of the artery of Percheron. **CONCLUSION:** Bilateral thalamic infarcts are unusual presentations of posterior circulation stroke. In patients presenting with loss of consciousness, neuropsychiatric involvement bilateral paramedian thalamic infarction, the possibility of artery of percheron infarct should be considered. In addition, periaqueductal grey matter of midbrain can also be involved.

KEYWORDS: Artery of Percheron, Paramedian Thalamus, Periaqueductal grey of Midbrain.

INTRODUCTION: Occlusion of percheron artery giving rise to bilateral thalamic infarct represents a rare presentation of stroke which accounts for 11% of all vertebrobasilar infarcts⁽¹⁾ although infarcts restricted to thalamus were reported for the first time more than 100 years ago by Dejerine and Roussy.⁽²⁾

An Artery of Percheron is a rare anatomic variation in the brain vascularization seen in one third of population. It was described by French neurologist Gerard Percheron in 1973.⁽³⁾

The medial part of the thalamus is usually supplied by the paramedian arteries the thalamo striate perforators, which arises from proximal portions of Posterior cerebral arteries.⁽⁴⁾ There are three anatomic variations. They are:

They are Variations:

- Each side perforators arising separately from corresponding PCAs,
- Perforators directly arising from an arch joining proximal portion of PCA,
- One of the PCA proximal portion giving a common artery which gives perforator branches to bilateral paramedian thalami is called Artery of Percheron (AOP), seen in 1/3rd of humans, which is too small to be visualised by MRI and can only be detected on angiograms.⁽⁵⁾

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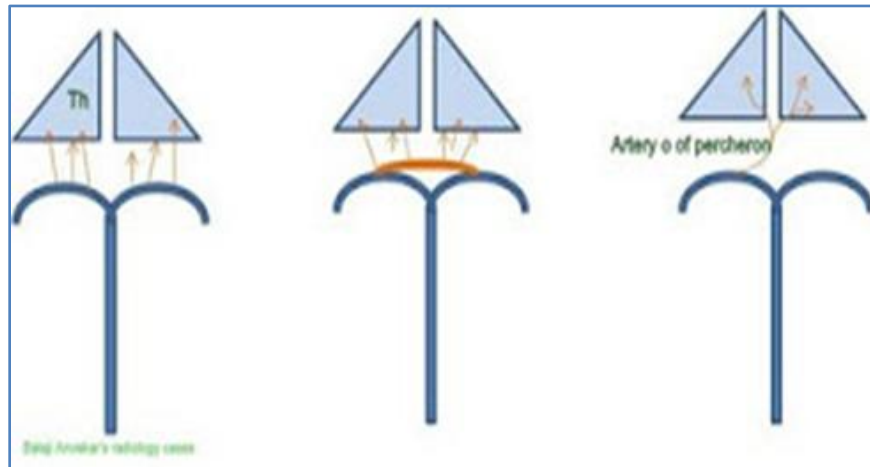


Fig. 1: Showing anatomic variations of thalamic blood supply

CASE PRESENTATION: A 75 yrs old, right handed female, known diabetic and hypertensive presented with sudden loss of consciousness 6 hrs prior to admission. Informant-son. No h/o headache, seizures, bladder and bowel involvement. No h/o trauma before the event, no h/o drug intoxication. No h/o smell, visual disturbances. No h/o double vision, drooping of eyelids. No h/o facial asymmetry. No h/o tinnitus, hearing loss, taste disturbances. She could do her routine activities before the event. H/o burning and tingling sensation over bilateral feet and hands. On admission: A 75 yrs old female moderately built, moderately nourished, stuporous responds to deep painful stimuli. GPE-Normal. No neurocutaneous markers. Vitals were PR-60/min, BP-130/80 mmhg and RR-24/min. on neurologic examination-Pt is stuporous, responds to deep painful stimuli, GCS-E1M5V1 (7/15), Unequal pupils -Rt eye-5mm, left eye-3mm Shape-round bilaterally, Pupillary reflexes-Direct - Right eye -ve, Left eye +ve, Indirect- Right eye -ve, Left eye +ve, Occulocephalic reflex-present. Hypotonia in all limbs. Bilateral plantar-mute, other Superficial reflexes intact.

Deep reflexes absent in all limbs. Sensory, Cerebellum couldn't be assessed. No signs of meningeal irritation. Other systems: CVS: S1, S2+, No murmurs, RS: NVBS, no added sounds, P/A-Soft, no organomegaly. We made a provisional diagnosis of CVA probably involving upper brainstem. The following day patient regained consciousness, responds to oral commands. GCS E4M5V5 (14/15), MMSE-15/30. Complete Ptosis of right eye noticed, Eye is abducted and depressed. Left eye-EOM normal. Other cranial nerves-normal. Tone-Normal in all limbs. Power-5/5 in all limbs. Coordination-normal. Bilateral plantar-flexor. Deep Reflexes-1+ in all limbs. Sensory system-Vibration sense impaired in both lower limbs till knee, Romberg's positive. Cerebellum-normal. On investigations, CBC-normal, LFT- normal, RFT-Normal, Sr. electrolytes- normal, RBS-300mg/dl, Urine routine-albumin+, Urine KB- absent. ABG-Normal, FBS-371mg/dl, PPBS-503mg/dl, HBA1C-10.5%, Lipid Profile-cholesterol-327, HDL-39, LDL-207, Triglycerides-386, VLDL-81. ECG-Sinus rhythm, occasional ectopics+, Chest x-ray- normal, 2D-Echo-Concentric LVH, EF-61%, Grade 1 LVDD.

An urgent neuroimaging protocol for stroke including magnetic resonance imaging (MRI) and magnetic resonance image angiography (Angio-MRI) was carried out. MRI BRAIN showed Restricted diffusion involving bilateral thalamus and midbrain-Artery of percheron infarct and chronic lacunar

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infarcts. MR-Angiogram-Normal, subacute infarcts in bilateral thalamic region and periaqueductal region of midbrain. B/L carotid and vertebral artery Doppler showed Left CCA bulb calcified plaque extending into proximal ICA causing around 46-49% stenosis.

The state of consciousness spontaneously resolved during the second day, although fluctuant periods of somnolence continued. She began medical treatment with oral anticoagulation, anti-cholesterol agents and neuroprotectives. The patient was discharged after one and half weeks of hospitalization and was being followed up by our outpatient clinic.

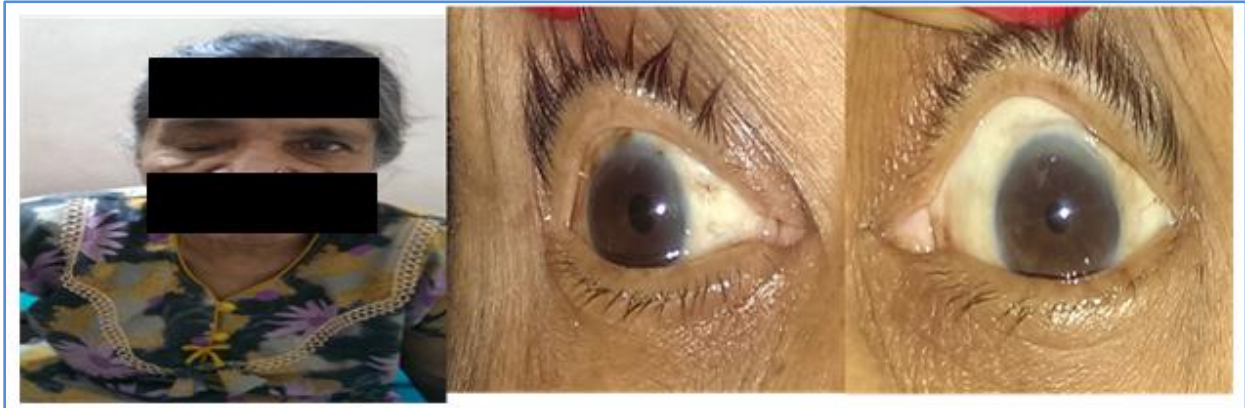


Fig. 2: Showing Ptosis and mydriasis of right eye

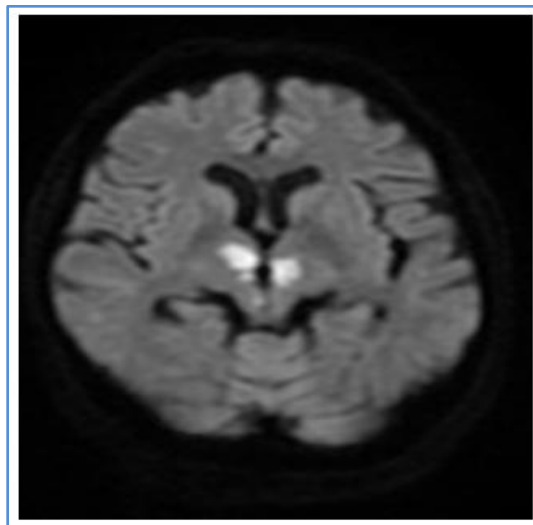


Fig. 3: MRI Brain-T2 Weighted image showing hyper intensities of bilateral Thalamic and Mid Brain

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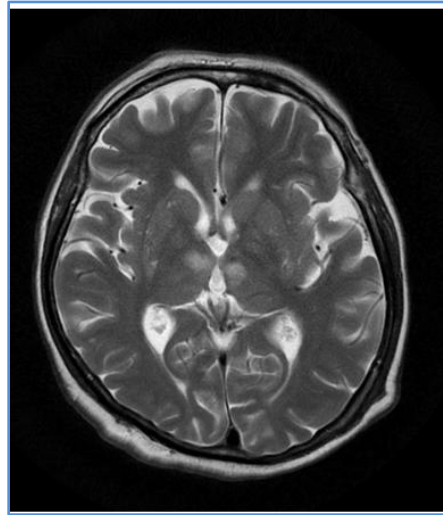


Fig. 4: MRI showing bilateral paramedian and mid-brain infarcts

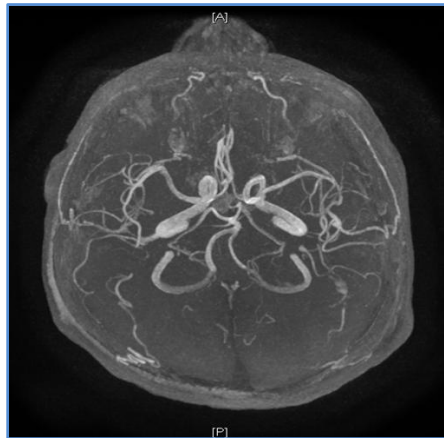


Fig. 5: MR Angiogram showing Percheron artery arising from Posterior Cerebral Artery

DISCUSSION: Strokes affecting both paramedian thalamic territories are unusual and may lead to a suspicion of an occlusion of a single arterial trunk known as the artery of Percheron. Although not visible on angio-MRI, the presence of this anatomic variant must be suspected when bilateral symmetric paramedian thalamic infarcts are revealed on image studies in the context of a patent basilar artery and posterior cerebral arteries.

The clinical pattern of this unique presentation of posterior circulation stroke usually consists of varying levels of decreased consciousness, neuropsychologic impairment, and vertical gaze palsy.

Midbrain infarcts may result after occlusion of the artery of Percheron and they are usually limited to periaqueductal gray matter⁽⁶⁾ and affect the oculomotor and reticular nuclei.

Some patients may also have oculomotor nerve palsy and hemiplegia, Such AOP infarcts account for 0.1 to 0.3% of all ischemic strokes, and 22 to 35% of all thalamic infarcts.⁽⁴⁾

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Our patient presented with two out of the three typical features of this stroke syndrome, that is, altered mental status and neuropsychologic impairment and also with oculomotor nerve palsy. The altered mental status is explained by involvement of reticular activating system⁽⁷⁾ and the disrupted connections between the thalamus and the anterior, orbitofrontal and medial prefrontal cortices.⁽⁴⁾

Oculomotor palsy is because of involvement of oculomotor nuclei. Vertical gaze palsy, which is due to disruption of the cortical input that traverses the thalamus to reach the rostral interstitial medial longitudinal fasciculus.^(4,6) Early diagnosis is best made by a diffusion-weighted imaging (DWI) sequence using MRI.⁽⁸⁾ The AOP infarct could also show up as bilateral symmetrical hyper intense signals in both thalami on fluid-attenuated inversion recovery images. Decreased conscious level, lack of focal motor or sensory deficit, and bithalamic hypodensities in CT of the brain are unusual in typical stroke syndromes. Hence the diagnosis may be delayed and the therapeutic window for thrombolytic therapy can be missed, and result in significant neurological impairment.

The prognosis differs from one patient to another, depending on the underlying etiology and associated diseases. In general, the consciousness-related problems resolve favorably within a matter of hours to days, although the hypersomnia can last considerably longer.

CONCLUSION: In patients presenting with loss of consciousness, oculomotor nerve palsy, neuropsychiatric involvement, bilateral paramedian thalamic infarction, the possibility of artery of percheron infarct should be considered. MRI with DWI sequencing should be considered in order to diagnose AOP infarction.

BIBLIOGRAPHY:

1. Bogousslavsky J, Van Melle G, Regli F: The Lausanne Stroke Registry: analysis of 1,000 consecutive patients with first stroke. *Stroke* 1988, 19:1083-1092.PUBMED.
2. Dejerine J, Roussy G: Le syndrome thalamique. *Rev Neurol* 1906, 14: 521-532.
3. Dr. Bruno Di Muzio and Dr Frank Gaillard et al., Artery of Percheron territory infarct.
4. López-Serna R, González-Carmona P, López-Martínez M. Bilateral thalamic stroke due to occlusion of the artery of Percheron in a patient with patent foramen ovale: a case report. *J Med Case Reports* 2009; 3: 7392.
5. Kostanian V, Cramer SC. Artery of Percheron thrombolysis. *AJNR Am J Neuroradiol* 2007; 28: 870-1.
6. Lazzaro NA, Wright B, Castillo M, et al. Artery of Percheron infarction: imaging patterns and clinical spectrum. *AJNR Am J Neuroradiol* 2010; 31: 1283-9.
7. Krampla W, Schmidbauer B, Hruby W. Ischaemic stroke of the artery of Percheron (2007: 10b). *Eur Radiol* 2008; 18: 192-4.
8. Raphaeli G, Liberman A, Gomori JM, Steiner I. Acute bilateral paramedian thalamic infarcts after occlusion of the artery of Percheron. *Neurology* 2006; 66: E7.

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AUTHORS:

1. Veena Santoshi Avvas
2. Manjunath R.
3. Rajeev H.
4. Aravind M. N.

PARTICULARS OF CONTRIBUTORS:

1. Post Graduate, Department of General Medicine, KIMS, Bangalore.
2. Professor, Department of General Medicine, KIMS, Bangalore.
3. Associate Professor, Department of General Medicine, KIMS, Bangalore.

4. Assistant Professor, Department of General Medicine, KIMS, Bangalore.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Veena Santoshi Avvas,
Room No. 417,
KIMS Residents Quarters,
V. V. Puram, K. R. Road,
Bangalore-560004.
E-mail: veenasantoshi89@gmail.com

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