

OCCLUSION OF ARTERY OF PERCHERON: A RARE AETIOLOGY OF BILATERAL THALAMIC INFARCT

Mane Makarand¹, Mane Priyanka², Mohite Rajsinh³, Bhattad Prashant⁴, Bangar Kushal⁴, Mahajani Anup⁴

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Authors details: ¹Assistant Professor,

⁴Residents, Dept. of General Medicine, Krishna Institute of Medical Sciences Karad, Maharashtra, India

²Assistant Professor, Dept. of Microbiology, KIMS, Karad, Maharashtra, India

³Assistant Professor, Dept. of Community Medicine, KIMS, Karad, Maharashtra, India

Corresponding author: Mohite Rajsinh, Assistant Professor, Dept. of Community Medicine, KIMS, Karad, Maharashtra, India

Email: rajsinhmohite124@gmail.com

ABSTRACT

The Artery of Percheron, a rare anatomical variant of brain vascularisation, arises from the posterior cerebral artery. Occlusion of this artery leads to bilateral paramedian thalamic infarct leads to dysfunction of central nervous system. Incidence of bilateral thalamic infarct secondary to occlusion of artery of Percheron is unknown because of its rarity. Here we report a case of 35 year old female presented with altered state of consciousness and the underlying cause was occlusion of Artery of Percheron which leads to bilateral thalamic infarct detected on MRI scanning. It showed hyperintensities on T2W1 and FLAIR, and hypointensity on T1W1, restricted to bilateral ventromedial thalami showing corresponding area of high signal intensity on diffusion weighted images and hypointensity on apparent diffusion coefficient images indicating diffusion restriction, suggestive of infarct. On further investigation magnetic resonance arteriogram (MRA) of the brain demonstrated a single common artery arising from the left P1 segment which divided into two branches distally supplying bilateral thalami. Patient became alright after 2 weeks of medical line of treatment.

Keywords: *Artery of Percheron, occlusion, Thalamic infarct*

INTRODUCTION

Thalamus is a part of midbrain located below hypothalamus below the ventricles. Thalamus receives blood supply from both anterior and posterior circulations of brain. The Artery of Percheron (AOP) is a rare anatomical variant of brain circulation in which single central arterial trunk arises from first segment (P1) of the posterior cerebral artery. The AOP give rise to bilateral medial thalamic perforants which supplies blood to thalamus bilaterally [1]. Occlusion of this artery leads to sudden breakdown of perfusion of thalamus which leads to bilateral paramedian thalamic infarct with or without mesencephalic infarct. Prevalence and incidence of this syndrome is unknown,^[2, 3] however few cases were reported from various parts of world as well as India since it was first described by Percheron in year 1976. Here we report a case of 35 year old lady with acute bilateral thalamic infarct with underlying cause of occlusion of Artery of Percheron, as a rare case report from rural area of Western Maharashtra, India.

CASE REPORT

A 35 years old female came with altered state of consciousness i.e. stuporous state in Krishna hospital, Karad, a tertiary health care centre located in rural Western Maharashtra, India. Two hours ago of hospital admission, she felt giddiness which then progressed to stuporous state. She had no history of fever, headache,

involuntary movements, any focal weakness or hemiparesis. On examination, her vitals were within normal range and on systemic examination the abnormal things were state of stupor and bilateral constricted pupils. All the laboratory investigations were within normal limits, including hypercoagulable profile. The past history was of use of oral contraceptives for last few months for dysfunctional uterine bleeding.

The special diagnostics include non-invasive magnetic resonance imaging (MRI) of brain was performed. It showed hyperintensities on T2W1 and FLAIR, and hypointensity on T1W1, restricted to bilateral ventromedial thalami showing corresponding area of high signal intensity on diffusion weighted images and hypointensity on apparent diffusion coefficient images indicating diffusion restriction, suggestive of infarct (fig 1).

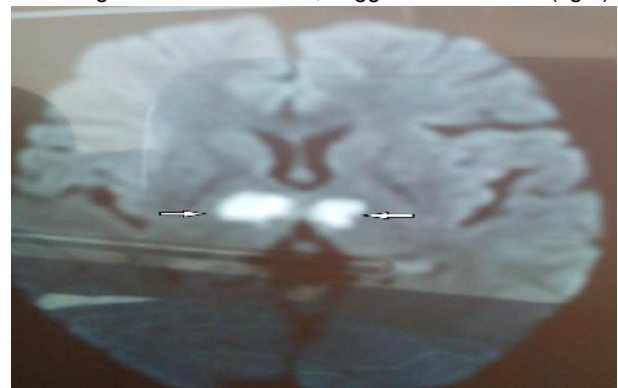


Fig 1: MRI of brain showing hyper intensities on T2W1 & FLAIR in bilateral ventro-medial thalami (arrow heads)

On further investigation magnetic resonance arteriogram (MRA) of the brain demonstrated a single common artery arising from the left P1 segment which divided into two branches distally supplying bilateral thalami.

DISCUSSION

Thalamus is a large collection of neuronal group within the diencephalon. It participates in sensory, motor, and limbic functions. Virtually all information that reaches the cortex is processed by the thalamus, hence also called as "gateway to the cerebral cortex." Thalamus can be divided into various nuclei, that project to wide regions of the neocortex are the midline and intra-laminar nuclei. The nuclei that project to specific areas include the specific sensory relay nuclei and the nuclei concerned with efferent control mechanisms. The specific sensory relay nuclei include the medial and lateral geniculate bodies, which relay auditory and visual impulses to the auditory and visual cortices; and the ventral posterior lateral (VPL) and ventral posteromedial nuclei, which relay somato-sensory information to the post-central gyrus. The ventral anterior and ventral lateral nuclei are concerned with motor function. They receive input from the basal ganglia and the cerebellum and project to the motor cortex. The anterior nuclei receive afferents from the mamillary bodies and project to the limbic cortex, which may be involved in memory and emotion.^[4] Infarction in thalamus may produce symptoms like seizures, impairment in memory, confusion and sometimes coma with vertical gaze palsy.^[5] Thalamus receives blood supply from both anterior and posterior circulations. The anterior thalamus is supplied by thalamotubular arteries arising from posterior communication artery via anterior circulation. The paramedian thalamic and rostral midbrain territories are supplied by thalamoperforators, anterior branches of the P1 segments of the posterior cerebral arteries (Fig 2).^[6] Percheron G has described three variations in the blood supply of the paramedian thalamus.^[1] One of them was Artery of Percheron which arises from P1 and supplies to bilateral thalamus and rostral midbrain. Many case series like Matheus et al^[7], have shown that occlusion of this artery leads to bilateral paramedian thalamic infarct with or without mesencephalic infarct.

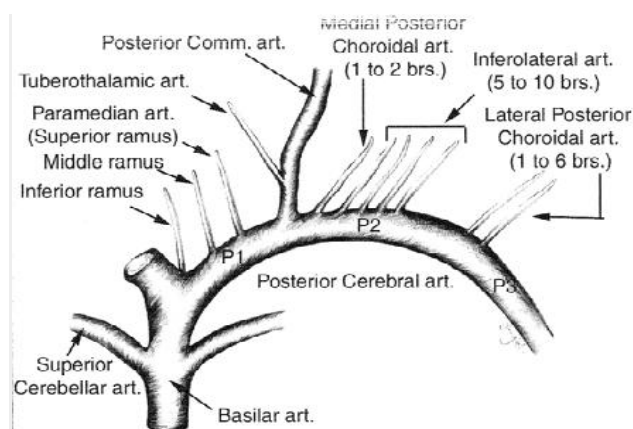


Fig 2: Origin of arteries to thalamus from the vertebrobasilar system.

The medial posterior choroidal artery may arise before (P1 seg) or after (P2 seg) the origin of the posterior communicating artery. The inferolateral arteries may arise individually or from a common pedicle from P2 segment.^[6]

CONCLUSION

The dysfunction of central nervous system in a 35 years old female due to bilateral paramedian thalamic infarct, as a result of occlusion of Artery of Percheron, a rare anatomical variant of brain vascularisation.

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Conflicting of Interest: None declared

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