CASE REPORT

Artery of Percheron Occlusion, a Rare Presentation of Bilateral Thalamic Ischemic Stroke

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ABSTRACT

A 69-year-old man, experienced a sudden loss of consciousness, prompting the need for intubation to safeguard his airway. The clinical suspicion of a stroke led to his prompt referral to a stroke center. Subsequent MRI (magnetic resonance imaging) brain scans solidified the diagnosis, revealing bilateral thalamic infarct. It is worth noting that in many instances, sudden loss of consciousness stands as the sole presentation of bilateral thalamic infarct, often resulting from occlusion of the artery of Percheron. Diagnosis remains challenging due to the limited availability of imaging modalities in many centers and the variability of clinical features associated with thalamic stroke. Utilizing MRI brain as the primary investigative modality for detecting artery of Percheron infarction proves essential. Timely diagnosis plays a critical role in administering appropriate treatment, mitigating the risk of further deficits. Vital components of this diagnostic process include screening for atrial fibrillation, as cardioembolic events rank among the most prevalent causes of stroke. Early and prompt treatment of occlusion of the artery of Percheron has resulted in good clinical outcomes, in which the man was able to function independently upon discharge from the hospital.
Malaysian Journal of Medicine and Health Sciences (2025) 21(2): 274-276. doi:10.47836/mjmhs.21.2.34

Keywords: Loss of consciousness , Bilateral thalamic infarct , Artery of percheron infarction , Cardioembolic, Acute ischaemic stroke

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INTRODUCTION

A gentleman arrived at the hospital after experiencing sudden episode of loss of consciousness, and upon conducting an MRI brain scan, an unexpected finding emerged—bilateral thalamic infarct—a rare stroke presentation associated with the involvement of the artery of Percheron (AOP). Diagnosing such cases continues to be a challenge for clinicians due to the limited availability of imaging modalities in certain centers and the varying clinical features of thalamic stroke.

The artery of Percheron is a rare blood vessel that supplies both sides of a part of the brain called the thalamus. If this artery gets blocked, it can cause serious problems like memory loss, confusion, and difficulty moving the eyes. Quick treatment is important to help the patient recover.

Moreover, it's crucial to acknowledge that atrial fibrillation (AF) substantially increases the risk of stroke, with the risk being multiplied by five. Therefore, conducting a comprehensive cardiac assessment for all stroke patients becomes imperative to identify potential cardioembolic causes.

CASE REPORT

A 69-year-old Malaysian gentleman with a medical history of underlying hypertension, dyslipidemia, and valvular heart disease, which was operated on eleven years prior, was referred to our center from another private hospital. His initial presentation involved sudden loss of consciousness at home, witnessed by his wife. Notably, there were no preceding symptoms such as unilateral limb weakness, numbness, facial asymmetry, slurred speech, headache, nausea, vomiting, difficulty breathing, chest pain, palpitations, dizziness, or giddiness. Additionally, there was no recent history of trauma, fever, abnormal behaviour changes, or abnormal limb movements.

Upon arrival at our centre which is around 6 hours since

the onset of his symptoms, the patient was intubated and sedated to ensure airway protection during transfer. Due to his condition, a complete neurological examination was not immediately feasible. However, initial blood tests, including full blood counts, renal and liver function, electrolytes, and coagulation profiles, showed normal results. Additional blood tests, such as cardiac enzymes and C-reactive protein, also returned normal findings. Furthermore, an Electrocardiogram (ECG) performed at the emergency department displayed a normal sinus rhythm without significant changes, and the chest radiograph was unremarkable.

To accurately diagnose an occlusion of the artery of Percheron, it's crucial to differentiate between a large ischemic stroke and other potential causes such as haemorrhagic stroke and metabolic issues like infections or electrolyte imbalances, based on the presenting symptoms.

An urgent Magnetic Resonance Imaging (MRI) of the brain revealed an acute infarction in the bilateral thalamus region (Figure 1). Subsequent Magnetic Resonance Angiogram (MRA) of the brain in the same setting indicated occlusion of the Artery of Percheron, with no apparent large vessel occlusion.

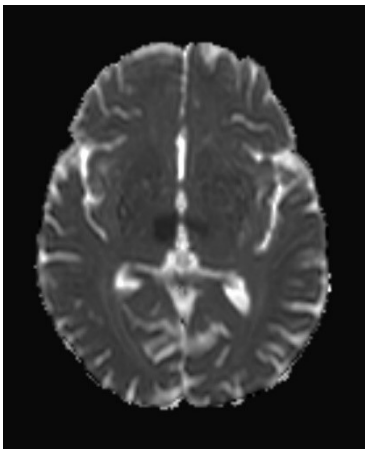

Figure 1: The apparent diffusion coefficient (ADC) imaging revealed clear signs of acute infarction in the bilateral thalamus region. The ADC map displayed areas of restricted diffusion, indicative of cytotoxic edema, which is consistent with recent ischemic damage. This pattern of restricted diffusion on the ADC is a hallmark of acute stroke, confirming the diagnosis of bilateral thalamic infarction.

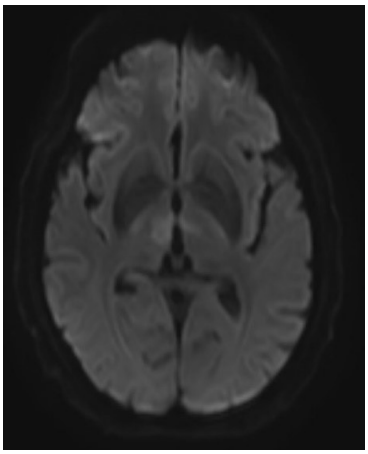

Figure 2: The T2-weighted image (T2WI) revealed a hyperintense signal indicating an area of acute infarction involving the bilateral thalamus region. The increased signal intensity on the T2WI is indicative of tissue edema and ischemia, consistent with an acute stroke. This hyperintensity clearly outlines the affected regions, providing a distinct visualization of the bilateral thalamic involvement.

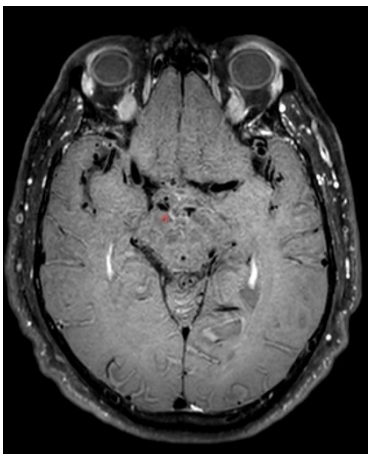

Figure 3: Black blood imaging of the intracranial vessel walls provided detailed visualization, effectively suppressing the blood signal to highlight the vessel walls themselves. This imaging technique allowed for precise assessment of the vessel wall integrity, revealing any potential abnormalities such as thickening, inflammation, or plaque formation.

After admission, the patient's condition improved, and he was successfully extubated on the second day. However, on the third day in our stroke care unit, he experienced an episode of fast atrial fibrillation (AF) as seen in continuous telemetry monitoring. Intravenous Digoxin was administered, and the patient responded positively. An echocardiogram performed the following

day showed moderate mitral stenosis (MS) with a good ejection fraction (EF) of 70% and no regional wall motion abnormalities (RWMA). A new diagnosis of valvular AF with a CHA2DS2-VASc score of 4 was established, leading to the initiation of oral Warfarin at 3mg daily as part of the acute stroke treatment. Additional medications prescribed included oral Bisoprolol at 1.25mg daily and oral Atorvastatin at 40mg daily.

The patient exhibited rapid recovery during his stay in the ward and was eventually discharged with a National Institute Health Stroke Scale (NIHSS) score of 4. This score was attributed to 2 points from the LOC (Level of Consciousness) questions component, 1 point for mild dysarthria, and 1 point for mild facial palsy.

DISCUSSION

Bilateral thalamic infarction represents a rare and unique cerebral vascular event, making it challenging for clinicians to diagnose due to its varying clinical presentations.

When the artery of Percheron (AOP) becomes occluded, it leads to a characteristic pattern of ischemia, affecting the bilateral paramedian thalami with or without midbrain involvement [1].

Patients affected by an AOP infarct present a classic triad of hypersomnolence, ocular disturbances (including supranuclear and vertical gaze palsy), and neuropsychological deficits, often including an amnestic syndrome [2]. Some patients may exhibit subtle cognitive impairments or memory disturbances, while others could present with acute loss of consciousness or severe motor deficits [3].

MRI imaging was reported to be able to identify 100% of AOP cases in comparison to only 50% by CT scan [4].

Patients presented with syncope can have variable causes. Low suspicion of ischemic stroke in this group of patients will delay the diagnosis and treatment resulting in further deficits [5]. In this case, after possible causes of syncope had been ruled out, he was referred for further investigation in Hospital Sultan Abdul Aziz, UPM. Lack of imaging modalities in some centres is one of the factors delaying the diagnosis and management if require thrombolysis.

The patient described in this case study continues to attend regular outpatient follow-up appointments and rehabilitation sessions. His overall condition has significantly improved, though he still experiences mild dysarthria.

CONCLUSION

Loss of consciousness can signal an acute stroke, needing an MRI after ruling out other conditions. Bilateral thalamic infarct might mean artery of Percheron occlusion, best diagnosed with an MRI if initial tests are clear. Early diagnosis allows timely treatment. As cardioembolism often causes strokes, screening for atrial fibrillation and a thorough heart check are essential.

ACKNOWLEDGEMENT

We would like to extend my heartfelt appreciation and gratitude to the hospital staff of Hospital Sultan Abdul Aziz Shah, especially the neurology team, for their prompt, efficient, and kind-hearted treatment of this patient. Your dedication and commitment to providing excellent care are truly commendable. Thank you for your tireless efforts in ensuring the patient's well-being and recovery. Your compassion and professionalism have made a significant difference in their journey to better health.

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