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A SYSTEMATIC REVIEW ON ARTERY OF PERCHERON INFARCTION

Pharmacy

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ABSTRACT

Occlusion of the artery of Percheron (AOP) causes a bilateral paramedian thalamic infarction with or without midbrain infarction. AOP arising as a single unpaired trunk from posterior vertebral artery(P1) supplying the bilateral paramedian thalami and rostral midbrain. The clinical presentation of artery of Percheron usually presents with three main symptoms, which are found in patients with bilateral paramedian thalamic strokes. These are vertical gaze palsy (65%) is a conjugate, bilateral limitation of the eye movements in up gaze and/or down gaze, memory impairment (58%) is a unusual forgetfulness, may not be able to remember new events, recall one or more memories of the past, or both and coma (42%) is a state of unconsciousness where a person is unresponsive and cannot be woken. Bilateral paramedian thalamic lesions are often accompanied by rostal midbrain lesions, producing a "mesencephalothalamic" or "thalamopeduncular" syndrome. In addition to the mentioned triad, the syndrome is characterized by other oculomotor disturbances, hemiplegia, cerebellar ataxia and movement disorders. The etiopathogenesis includes occlusion of the artery of Percheron produces paresis of upward gaze and drowsiness and often abulia. The risk factors includes patient foramen ovale, atherosclerosis, hypercoagulable state, atrial fibrillation, intracardiac clot and severely reduced left ventricular function. Diagnosis of an artery of Percheron infarction is critical for directing the appropriate time sensitive management and they include magnetic resonance imaging (MRI) usually allows visualization of the initial cases of acute cerebrae ischemia and is used in stroke centers as the primary or early secondary imaging modality. Patients with ischemic stroke are thrombolysed intravenous (applied alteplase). Endovascular revascularization applies thrombolytic agents directly into the thrombus or mechanically extracts the cloth. Mechanical trombectomy is considered in patients with a diagnosis of acute stroke, who have an occlusion of a treatable intracranial artery.

KEYWORDS:

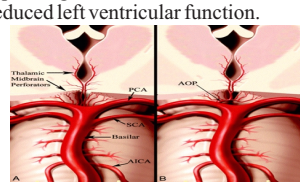
Artery of percheron, MRI, Cerebral ischemia, Thrombolytic agents.

INTRODUCTION:

The thalami and mid brain have a complex blood supply with a large number of feeding arteries (1,2). The arterial supply is provided by perforating branches from the posterior cerebral artery and the posterior communicating artery 3. Although there are significant variations and overlaps, the thalamic vascular supply is classically categorized into 4 territories: anterior, paramedian, inferolateral and posterior(4-6). In addition to the paramedian thalami, the paramedian thalamic arteries supply the medial areas of the upper brainstem: the interpeduncular nucleus, the discussion of the superior cerebellar peduncles, the medial part of the red nucleus, the third and fourth cranial nerve nuclei and the anterior portion of the periaqueductual grey matter (3,7). Consequently, occlusion of the artery of Percheron causes a bilateral paramedian thalamic infarction with or without midbrain infarction (2, 4, 5). Additional involvement of the anterior thalamus is uncommon5 .The prevalence of arteries of percheron is unknown. Since strokes in these territories are infrequently diagnosed, it is not known whether they are really rare or highly underdiagnosed1. In our present review we are briefly discuss the artery of Percheron infarction, incidence and presentations.

ETIOPATHOGENESIS:

AOP arising as a single unpaired trunk from P1 supplying the bilateral paramedian thalami and rostral midbrain. Occlusion of the artery of Percheron produces paresis of upward gaze and drowsiness and often abulia. The risk factors includes patient foramen ovale, atherosclerosis, hypercoagulable state, atrial fibrillation, intracardiac clot and severely reduced left ventricular function.



A. Conventional anatomy demonstrating paired thalamic and midbrain perforating arteries.
B. AOP arising as a single unpaired trunk from P1 supplying the bilateral paramedian thalami and rostral midbrain.

Clinical presentation:

The complex anatomy and function of the human thalamus and its variable vascular supply are responsible for the extremely variable clinical features when this structure is damaged by an ischemic infarction; in addition, the vascular overlap with the underlying midbrain extends the spectrum of these clinical features to include midbrain signs[5,8]. An ischemic stroke in the territory of an artery of Percheron usually presents with three main symptoms, which are found in patients with bilateral paramedian thalamic strokes. These are vertical gaze palsy (65%) is a conjugate, bilateral limitation of the eye movements in up gaze and/or down gaze, memory impairment (58%)is a unusual forgetfulness, may not be able to remember new events, recall one or more memories of the past, or both and coma (42%) is a state of unconsciousness where a person is unresponsive and cannot be woken[4,6] Bilateral paramedian thalamic lesions are often accompanied by rostal midbrain lesions, producing a "mesencephalothalamic" or "thalamopeduncular" syndrome.(6,9) In addition to the mentioned triad, the syndrome is characterized by other oculomotor disturbances, hemiplegia, cerebellar ataxia and movement disorders.[6]

Diagnosis:

Due to large number of blood supply variants of the posterior cerebral circulation, an ischemic infarction in this territory presents variable and unspecific clinical symptoms, which requires a comprehensive radiologic examination. Diagnosing an artery of percheron infarction is critical for directing the appropriate time sensitive management and preventing additional unnecessary procedures.[6,10] Magnetic resonance imaging (MRI) usually allows visualization of the initial infarct in

cases of acute cerebral ischemia and is used in stroke centers as the primary or early secondary imaging modality.[4] Infarction of the artery of percheron presents as an abnormal signal intensity on MRI and/ or hypoattenuation on CT, involving the bilateral paramedian thalami with or without rostral midbrain involvement .[6] Early diagnosis is best made by a diffusion weighted imaging (DWI) sequence using MRI.[10]

Treatment:

The prognosis of artery of Percheron infarction may be ameliorated by treatment of acute stroke. Patients with acute ischemic stroke are thrombolysed intravenously (application of alteplase) unless there are contraindications. Endovascular revascularization applies thrombolytic agents directly into the thrombus or mechanically extracts the cloth.11 Mechanical trombectomy is considered In patients with a diagnosis of acute stroke, Who have an occlusion of a treatable intracranial artery and are within 10.5 hours of onset of posterior circulation symptoms, to allow recanalization within 12 hours.[4,11] The most applicable sites for interventional exploration are carotid T occlusion, M1 and M2 segments of the medial cerebral artery occlusion and vertebra-basilar thrombosis.[11]

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