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Case Report

Vertical one-and-a-half syndrome in a patient with pecheron artery ischemia: A case report ☆,☆☆

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ABSTRACT

Vertical one-and-a-half syndrome (VOHS) is an uncommon presentation resulting from a unilateral thalamomesencephalic stroke with involvement of the rostral interstitial nucleus of the medial longitudinal fasciculus and posterior commissure. The artery of Percheron (aPe) is a branch of the posterior cerebral artery (PCA) and it is a variant that arises as a solitary trunk supplying both medial thalami and upper midbrain. A 78-year-old female patient, presented at the hospital emergency with approximately 12 hours of sudden onset of diplopia, associated with dizziness. Neurological exam revealed torsional nystagmus associated with bilateral upgaze palsy with limitation of infraduction on the left. We describe a rare case of VOHS associated with ischemic alterations at the MRI suggesting an aPe impairment. The conjugate gaze control lies anatomically at the midbrain at the central nervous system (CNS). This report describes a rare type of VOHS and brings a new insight on a possible aPe topography possibly causing this clinical presentation.

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Introduction

Vertical one-and-a-half syndrome (VOHS) is an uncommon presentation resulting from a unilateral thalamomesencephalic stroke with involvement of the rostral interstitial nucleus of the medial longitudinal fasciculus and posterior commissure.[1,2] The artery of Percheron (aPe) is a branch of the posterior cerebral artery (PCA) and it is a variant that arises as a solitary trunk supplying both medial thalami and upper midbrain. This case report aims to show a possible association between the aPe ischemic stroke and the Vertical one-and-a half syndrome.

Case Report

A 78-year-old female patient, presented at the hospital emergency with approximately 12 hours of sudden onset of diplopia, associated with dizziness. Neuro-ophthalmological examination showed no blinking alterations or ptosis. It also revealed torsional nystagmus associated with bilateral upgaze palsy with limitation of infraduction on the left. Pupillary reflexes were hypoactive bilaterally. No facial nerve paresis was observed. Previous pathological history consisted of type 2 diabetes mellitus and systemic arterial hypertension (SAH). Laboratory exams had no apparent abnormalities. The cardiac examination also had no evident alterations. Brain Computerized Tomography and Magnetic Resonance (MR) angiography were normal. Later magnetic resonance imaging (MRI) showed a restriction of the diffusion of water molecules in the thalamic regions and the mesencephalic tegment more evident in the right rostral region. (Fig. 1). The diagnosis was made with combination of an ophthalmoparetic syndrome suggesting a midbrain impairment associated with the MRI results (Fig. 2). Treatment protocol included dual platelet antiaggregation with acetylsalicylic acid and clopidogrel. Followed by clopidogrel for 21 days with statin association. At follow-up, partial recovery was achieved after 3 months in physical therapy.

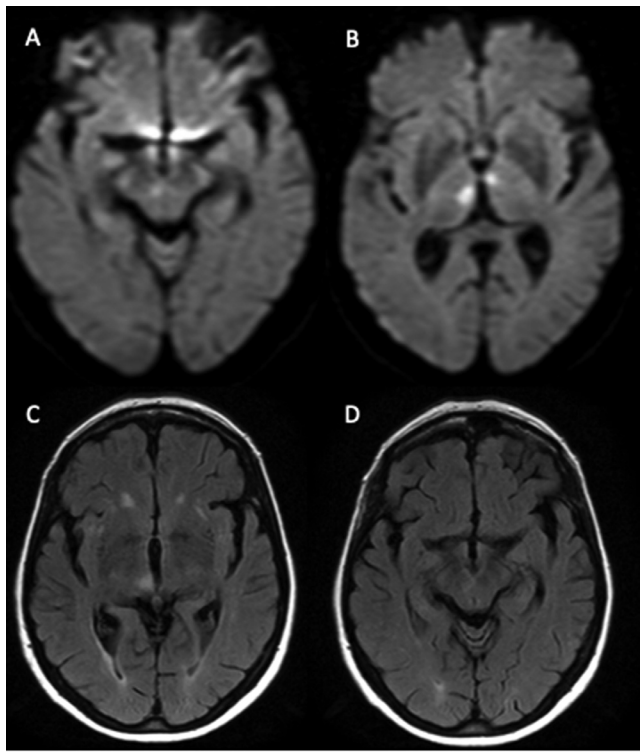

Fig. 1 – MRI showing a restriction of the diffusion of water molecules in the thalamic regions and the mesencephalic tegment. (A/B) Diffusion MRI. (C/D) T1-FLAIR MRI sequence

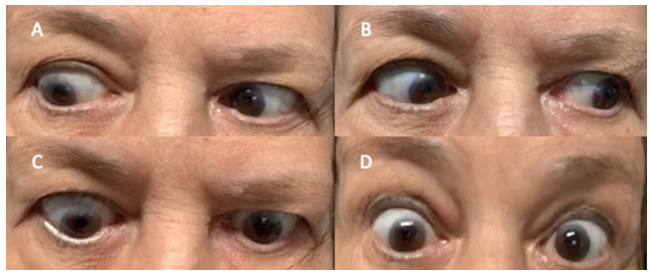

Fig. 2 – Extraocular movements examination. (A) Right horizontal look; (B) Left horizontal look; (C) Down vertical look; (D) Upper vertical look

Discussion

We describe a rare case of VOHS associated with ischemic alterations at the MRI suggesting an aPe impairment. The conjugate gaze control lies anatomically at the midbrain at the central nervous system (CNS).

Artery of Percheron possible association with VOHS

An ischemic stroke of the aPe can cause stupor, agitation, change in behavior, aphasia (dominant side), hemineglect (non-dominant side), and diplopia due to the involvement of the midbrain and interstitial nucleus of Cajal (INC), the largest nucleus of the medial longitudinal fasciculus (MLF).[3-5] The INC is the neural integrator for vertical eye movement and is involved in vertical gaze, both with saccadic generation and the vestibulo-ocular reflex (VOR).[6]

Vertical one-and-a-half syndrome

Two different types of VOHS have been described in the literature. The first: Consists of bilateral paralysis of the gaze upwards and monocular paresis of the gaze downwards with injury ipsilateral or contralateral. Paretic look down to the left and injury to the right.[1,7] This variant has been described in thalamomesencephalic lesions, exactly like our patient (Fig. 3). The second one: consists of difficulty to look down in association with monocular elevation paralysis, described in bilateral mesodiencephalic infarctions.[1,7]

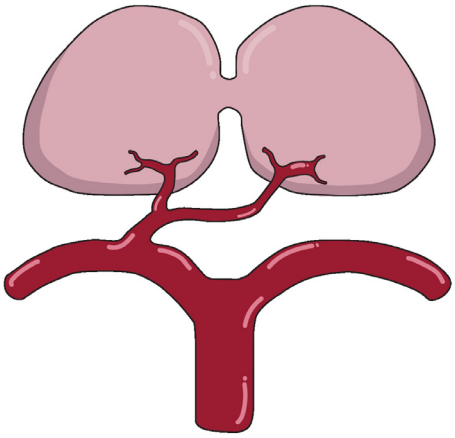

Fig. 3 – Schematic illustration of the Pecheron Artery and the thalamic irrigation

Conclusion

This report describes a rare type of VOHS and bring a new insight on a possible aPe topography possibly causing this clinical presentation.

Patient Consent

Patient written and informed consent was obtained. in order to write this article.

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