EMERGENCY CASEBOOK

An unusual case of stroke in a young patient

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The patent foramen ovale (PFO) has been increasingly implicated in the aetiology of stroke, particularly in young patients with no other identifiable cause (cryptogenic stroke). A case of Parinaud's syndrome secondary to thromboembolism from a PFO is reported here.

CASE PRESENTATION

A 29-year-old man with an unremarkable medical history presented to the emergency department with blurring of vision and double vision. These symptoms started after a night of heavy drinking and cocaine use. On examination, visual acuity was found to be 6/9 bilaterally. Convergence retraction nystagmus and bilateral lid retraction worse on upward gaze were elicited. Visual field and fundi were normal. He also had heel shin ataxia on the left side and was unsteady on heel toe walking. Computed tomography scan of the head performed on the same day was normal. Brain magnetic resonance imaging performed the next day showed bilateral thalamic and mid brain infarct (fig 1). This was consistent with the patient's presenting symptoms. Further investigations included a transoesophageal echocardiogram with contrast, which revealed a Patent Foramen Ovale (PFO) with a normal septum. Tests for connective tissue diseases, a thrombophilia screen and HIV status were all negative.

DISCUSSION

The Trial of Org 10172 in Acute Stroke Treatment (TOAST) classification can be used to define the aetiology of stroke. The causes are large artery atherosclerosis, cardioembolism, small-vessel disease, stroke of other determined aetiology and stroke of undetermined aetiology.¹ In younger patients, various studies have reported "other" or "undetermined" as the most common cause, whereas others have reported cardioembolism as the common cause.²

PFO has been increasingly implicated in the aetiology of stroke, particularly in young patients with presumed cryptogenic stroke. PFO is a haemodynamically insignificant interatrial communication present in over 25% of the adult population. PFO results from the incomplete anatomical fusion of the septum primum and secundum, which normally takes place shortly after birth. It thus constitutes a persistent connection between the right and left atrium of the heart, which may lead to a right-to-left shunt. The mechanism of stroke in these patients is by the passage of venous clots through the PFO into the arterial circulation, enabling cerebral embolism. Small observational and case-control studies indicate that patients with cryptogenic stroke have a higher incidence of PFO.³

Parinaud's syndrome is a supranuclear paralysis of vertical gaze resulting from an insult to the mesencephalon.⁴ The critical lesion lies in the efferent paths of the rostral interstitial nuclei of the medial longitudinal fasciculus. The classical symptoms include loss of upward gaze, convergence-retraction nystagmus on attempted upward gaze, downward ocular deviation (setting sun sign), lid retraction (Collier's sign), skew deviation and light-near dissociation of the pupils.

Parinaud's syndrome is commonly caused by tumours in the pineal region or intrinsic lesions of the dorsal midbrain due to an infarction, infection or demyelination.

The case presented here is a rare scenario wherein stroke has occurred in the form of Parinaud's syndrome secondary to thromboembolism through a PFO. This combination has not been reported previously in the medical literature as per our Pubmed and OVID searches.

Clinicians need to be aware of the causes of stroke in young patients and recognise its various presentations, especially in the emergency department.

Abbreviation: PFO, patent foramen ovale

Figure 1 (A,B) Magnetic resonance image of the brain showing bilateral thalamic infarcts.

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