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Introduction

Paradoxical embolism is a known mechanism of cryptogenic stroke in young patients, particularly in the presence of a patent foramen ovale (PFO). While deep vein thrombosis (DVT) is often suspected as the embolic source, transient prothrombotic conditions—such as trauma, hormonal therapy, and immunoglobulin exposure—may also play a crucial role. This case highlights how multiple transient risk factors can converge to provoke embolic stroke in a patient with a large PFO and no underlying thrombophilia

Case Description

A 25-year-old woman, without chronic comorbidities, on combined estrogen-progestin contraceptive therapy, presented to the ER with sudden left hemiparesis. Ten days earlier, she had suffered a dog bite to the leg, receiving subcutaneous tetanus immunoglobulin and oral amoxicillin-clavulanate. Initial neurological evaluation showed an NIHSS score of 11. Brain CT was negative for ischemic lesions, although right MCA hyperintensity was noted (**Fig. 1,2**). CT angiography revealed occlusion of the right M1 segment of the middle cerebral artery. Intravenous thrombolysis was administered with residual NIHSS of 1. Meanwhile the patient was transferred to the closest Comprehensive Stroke Center for potential endovascular therapy, which was not performed due to full neurological recovery. She was admitted to the Stroke Unit for further investigations. Follow-up CT confirmed a right capsulo-lenticular ischemic lesion (**Fig.3**).



Fig. 1: CT Angiography

Fig. 2: NCCT with right middle artery hyperintensity

Fig. 3) Brain CT after 24 hours

A full thrombophilia and autoimmune work-up, including screening for inherited and acquired prothrombotic conditions, was negative. Lower limbs Doppler ultrasound showed no evidence of DVT. Transcranial Doppler with bubble study revealed a significant right-to-left shunt. (**Fig.4**) Transesophageal echocardiography confirmed the presence of a large PFO. The patient was subsequently referred to cardiology and successfully underwent percutaneous PFO closure.

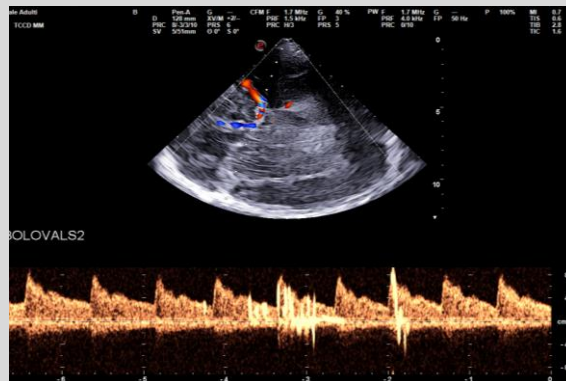


Fig. 4 Transcranial Doppler bubble study

Discussion and Conclusions

This case suggests paradoxical embolism as the most likely mechanism of stroke, in the context of multiple transient thrombotic risk factors: local trauma, subcutaneous immunoglobulin administration, and hormonal contraceptive use. Although no DVT was documented, it is plausible that microthrombi formed at the site of tissue injury or injection. The negative thrombophilia panel ruled out a constitutional hypercoagulable state, reinforcing the role of transient factors. The embolic mechanism is supported by imaging findings and the clinical course. Paradoxical embolism should be considered in young patients with ischemic stroke even in the absence of documented DVT, especially when a PFO and temporary prothrombotic triggers are present. Negative thrombophilia screening does not exclude embolic risk when transient conditions coexist. A comprehensive diagnostic approach, including shunt detection and echocardiography, is crucial. Early PFO closure may represent an effective preventive strategy in selected cases.

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