

# Stroke due to paradoxical embolism in Ebstein's anomaly

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A 28-year-old woman, without past medical history or cardiovascular risk factors, presented to the emergency department with sudden onset of left-sided hemiplegia and dysarthria during straining on the toilet. Intracranial computed tomography angiography revealed an occlusion of the M1 branch of the right middle cerebral artery (Panel A). She received intravenous thrombolysis with full neurological recovery. The cardiologist was consulted because of this young stroke. The electrocardiogram showed sinus rhythm with a PR interval of 206 ms and a right bundle branch block (Panel B). Ambulatory rhythm monitoring showed no abnormalities. Patient underwent transthoracic echocardiography revealing an Ebstein's anomaly with a large right atrium, due to atrialization of the right ventricle and apical displacement of the septal leaflet insertion of the tricuspid valve. There also was pronounced redundancy of the leaflet with a possible thrombus (Panels C and D, [Supplementary material online, Videos S1 and S2](#)). Subsequent transoesophageal echocardiogram showed a patent foramen ovale (PFO) with right-to-left shunting of agitated saline at rest (Panel E, [Supplementary material online, Video S3](#)). Doppler ultrasonogram of lower extremities revealed no deep venous thrombosis. Anti-coagulation was initiated and the patient was referred and accepted to a congenital heart disease centre for closure of the PFO. The treatment was in line with the European

position paper on the management of patients with PFO. Though, because of a possible right atrial thrombus, the closure of the PFO is postponed for at least 3 months and a control echocardiogram will be performed.

More than 50% of patients with Ebstein's anomaly have associated shunt between right and left atria, either due to atrial septal defect or PFO. A paradoxical embolism is a potential risk whenever a right to left shunt exists. Options for prevention of a paradoxical embolism include medical therapy with antithrombotic agents and closure of atrial septal defect by percutaneous device or a surgical approach.

## Supplementary material

[Supplementary material](#) is available at *European Heart Journal - Case Reports* online.

**Consent:** The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

**Conflict of interest:** none declared.

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