

# ***Patent foramen ovale, deep venous thrombosis and stroke; a paradoxical embolism in an 80-year-old male***

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## **Case Report Abstract**

### **Background**

A patent foramen ovale (PFO) is a congenital cardiac malformation describing a shunt in between the atrial walls. The overall incidence of a PFO is around 27.3% with a progressive decrease to 25.4% in the 4<sup>th</sup> and 8<sup>th</sup> decades. Once it has been established that a patient with an ischemic stroke/transient ischemic attack (TIA) has a PFO and other sources of the stroke have been ruled out, it is imperative to consider deep vein thrombosis (DVT) as the source of a paradoxical embolus.

### **Case Presentation**

80-year-old gentleman with a history of right internal carotid occlusion of 80-90% status post right internal carotid endarterectomy. Presented to the emergency department (ED) for sudden left-sided weakness, left facial droop, slurred speech, and dizziness. Upon initial evaluation he was asymptomatic; NIH stroke score 1. Magnetic resonance imaging of the brain showed important watershed infarcts. Cerebral angiogram found 50% concentric stenosis of the right middle cerebral artery (MCA) with minimal lineal filling defect in the stenotic segment. The filling defect cleared after injection of intra-arterial integrillin. Post procedure, patient was started on heparin drip. Cardiology was consulted for suspected paroxysmal atrial fibrillation and a transesophageal echocardiogram (TEE). Two days after the post cerebral angiogram, the patient began to complain of severe right leg pain. He was noted to be tachycardic and hypoxemic. The venous doppler of the leg revealed a DVT and subsequent CT chest angiography revealed bilateral pulmonary embolism (PE). TEE results showed a positive agitative saline test with defect in the intra-atrial wall. The patient was on heparin drip and transitioned after 7 days to oral anticoagulation. Loop recorder was installed with possible PFO correction by cardiology in the outpatient. Patients' symptoms improved and he was discharged to inpatient rehab.

### **Conclusion**

Although rare a paradoxical embolus should be considered in patients presenting with a stroke/TIA, PFO, and an unidentified source of embolus. Although this patient did have 50% occlusion of the R MCA, we cannot fully exclude a PFO-related stroke. The discovery of a DVT, and bilateral PEs supports the high suspicion for PFO-related stroke in the form of paradoxical embolus.

Keywords: Patent foramen ovale, cryptogenic stroke, paradoxical embolism