

Cerebral Paradoxical Embolization in a Cystic fibrosis patient

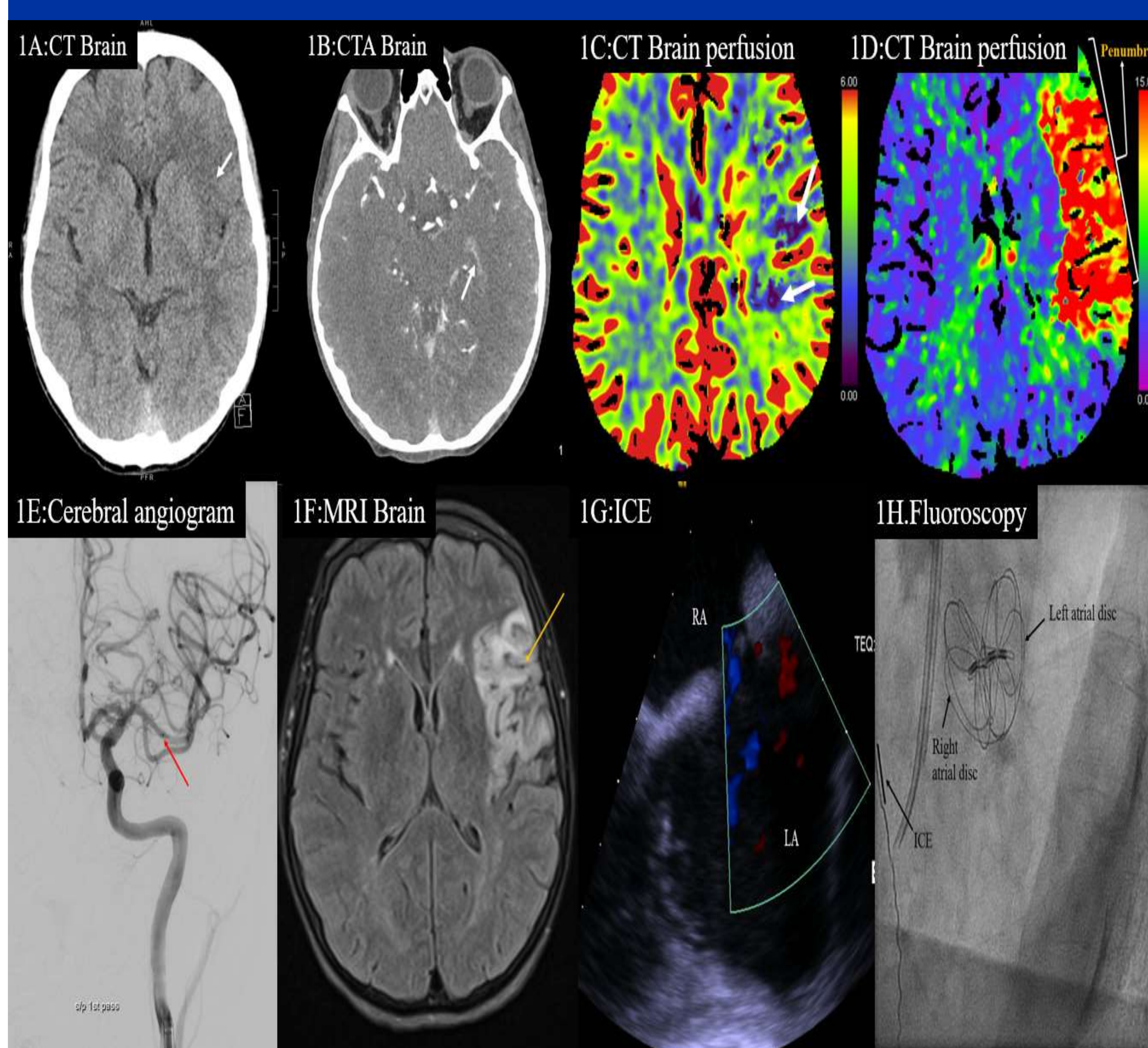
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BACKGROUND

- To increase awareness of paradoxical embolism via intracardiac shunts in cystic fibrosis patients.

Case Presentation

- 52-year-old female with cystic fibrosis presented to the emergency department with right-sided hemiparesis and expressive aphasia.
- CT scans of the brain revealed a left middle cerebral artery territory infarct. (Fig 1A-D)
- A diagnosis of paradoxical cerebral embolism associated with a patent foramen ovale (PFO) and a history of deep venous thrombosis was made.
- The patient underwent endovascular thrombectomy and percutaneous closure of the PFO. (Fig 1E-H)



1(A) CT brain showing asymmetric hypoattenuation and loss of gray-white matter differentiation of left insula (white arrow);
 (B) CT angiogram of head showing an occlusion of the sylvian fissure M2 branch of left MCA (white arrow);
 (C) CT Brain perfusion cerebral blood flow image showing core infarct (white arrows) in left sylvian region and left fronto-parietal region;
 (D) CT brain perfusion time to drain images showing area of prolonged transit time occupying left MCA distribution;
 (E) Cerebral angiogram showing occlusion of M2 branch of MCA (red arrow);
 (F) MRI brain showing restricted diffusion in portions of left frontal and temporal lobes and along left insula (yellow arrow);
 (G) Intracardiac echocardiogram (ICE) showing high-risk PFO with right-to-left shunting observed with colour Doppler imaging during inspiratory phase of normal breathing;
 (H) Fluoroscopic image of a Gore Cardioform occluder demonstrating a stable position in the atrial septum after release; ICE is seen in the right atrium

DISCUSSION

- Cystic fibrosis (CF) patients with advanced lung disease are prone to develop pulmonary hypertension, with a potential for right-to-left shunt and paradoxical embolization.
- The concomitant presence of implanted vascular access devices and intracardiac shunts might be additive risk.
- Acute and fluctuating neurologic symptoms and signs suggestive of cerebrovascular disease in CF patients may be due to paradoxical embolization via PFO.
- To date, six cases of paradoxical cerebral embolization in CF patients have been reported.
- The result of this case report, in context to previously reported literature, suggest that clinicians should be aware of paradoxical embolization in CF patients.
- Whether prophylactic closure of incidental PFOs in CF patients should be considered remains a daunting question.