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Letter to the Editor: New Observation

Cerebral Air Embolism Following Catheter Ablation for Atrial Fibrillation

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A 58-year-old woman with a history of catheter ablation for atrial fibrillation (AF) 3 weeks prior presented with right middle cerebral artery syndrome and a temperature of 38°C. Her National Institutes of Health Stroke Scale (NIHSS) was 23. A head computed tomography (CT) scan revealed subacute right thalamic and striatal infarcts and acute right frontoparietal infarct with air emboli (Figure 1b). An emergent thoracic CT angiogram showed an image compatible with an atrio-esophageal fistula (Figure 1a). The patient underwent emergency surgery to repair the fistula (Figure 2). Patient developed sepsis and positive blood cultures for *Streptococcus mitis/oralis*, for which she was treated with IV antibiotics for 14 days. She managed to survive, however, with important sequelae such as dense left hemiplegia. At 6-week follow-up, the patient is continuing inpatient neurorehabilitation.

Atrio-esophageal fistula is a rare complication of catheter ablation for AF,[1] with an incidence of 0.04% post-procedure. It is associated with a high mortality rate of 67%–100%.[2] Common neurological symptoms include seizures, septic embolic stroke, and air embolism.[3,4] A high index of suspicion is warranted in patients presenting with cerebral air emboli following catheter ablation, and prompt surgical intervention can lead to favorable outcomes.[5]

The head CT scan played a crucial role in identifying the presence of air emboli in the cerebral vasculature. The subacute right thalamic and striatal infarcts, as well as the acute right frontoparietal infarct, indicated air embolic stroke caused by the atrio-esophageal fistula (AEF). The emergent thoracic CT angiogram further confirmed the presence of AEF, allowing for prompt surgical intervention.

This case highlights the importance of neuroimaging in the early detection of rare complications such as AEF following catheter ablation for AF. In patients presenting with neurological symptoms and a history of recent catheter ablation, neuroimaging should be

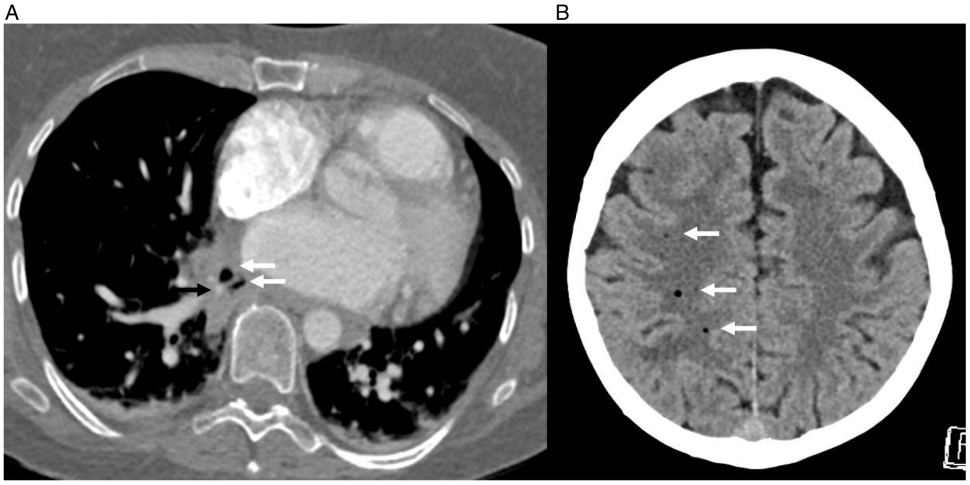

Figure 1: ***a***. selected axial image of the admission contrast-enhanced chest CT angiogram. Abnormal extra-digestive air foci (right arrows) were present around the right inferior pulmonary vein (black arrow). In addition, there were local inflammatory changes revealed by the presence of soft tissue infiltration centered on the latter structures. Note that no air was identified within the cardiac chambers. ***b***. selected axial image from the initial noncontrast head CT showing air emboli in the right MCA territory (white arrows).

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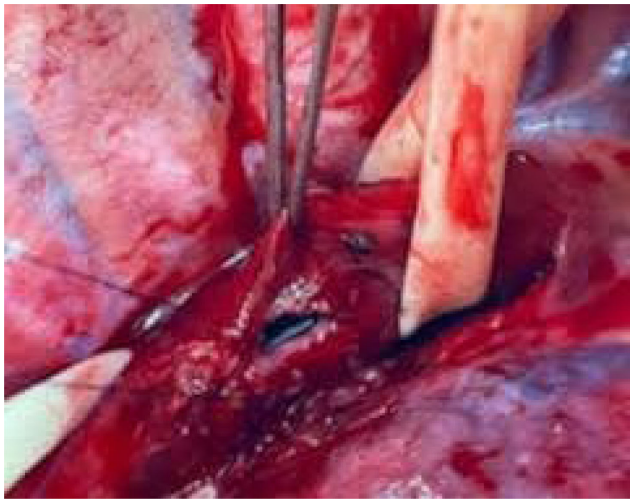

Figure 2: Intraoperative images showing the atrio-esophageal fistula.

performed urgently to assess for possible AEF and cerebral air emboli. The identification of air emboli within the cerebral vasculature on head CT scans should raise suspicion for AEF.

Furthermore, clinicians should be aware of the potentially fatal consequences of AEF and the importance of prompt surgical intervention. In this case, timely surgery to repair the fistula led to a favorable outcome for the patient.

Atrio-esophageal fistula is a rare but life-threatening complication of catheter ablation for AF. Clinicians should maintain a high index of suspicion for this complication in patients presenting with cerebral air emboli and neurological symptoms following the procedure. Neuroimaging plays a vital role in the early detection and management of AEF and prompt surgical intervention can lead to favorable outcomes.

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