

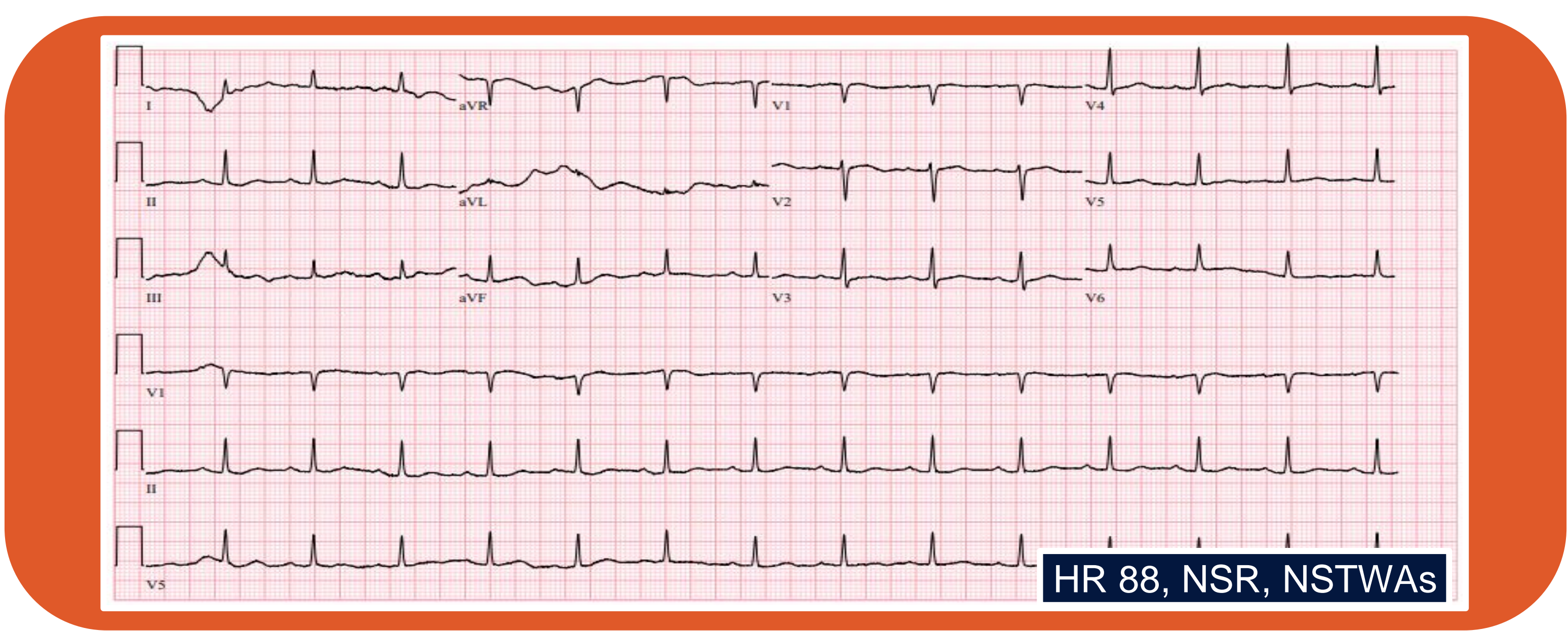
FATAL ATRIO-ESOPHAGEAL FISTULA PRESENTING AS NEW ONSET SEIZURES

Hytham Rashid, DO, MPH¹; Jonathan Brown¹, DO ; Eryn Percenti MD¹ ; Justin Saunders MD^{1,2} ; Sarva Sivatej MD, PhD¹
¹University of Houston/HCA Houston Healthcare, Department of Internal Medicine, Houston, TX; ²Vital Heart & Vein, Houston, TX

Background

- An atrio-esophageal fistula (AEF) is a rare complication of a cardiac ablation warranting emergent open heart surgery to occlude the tract.
- An AEF can lead to cerebral air and septic emboli presenting as acute neurologic symptoms.
- We report such a case of an AEF following catheter ablation for refractory atrial fibrillation.

Figure 1. Admission ECG



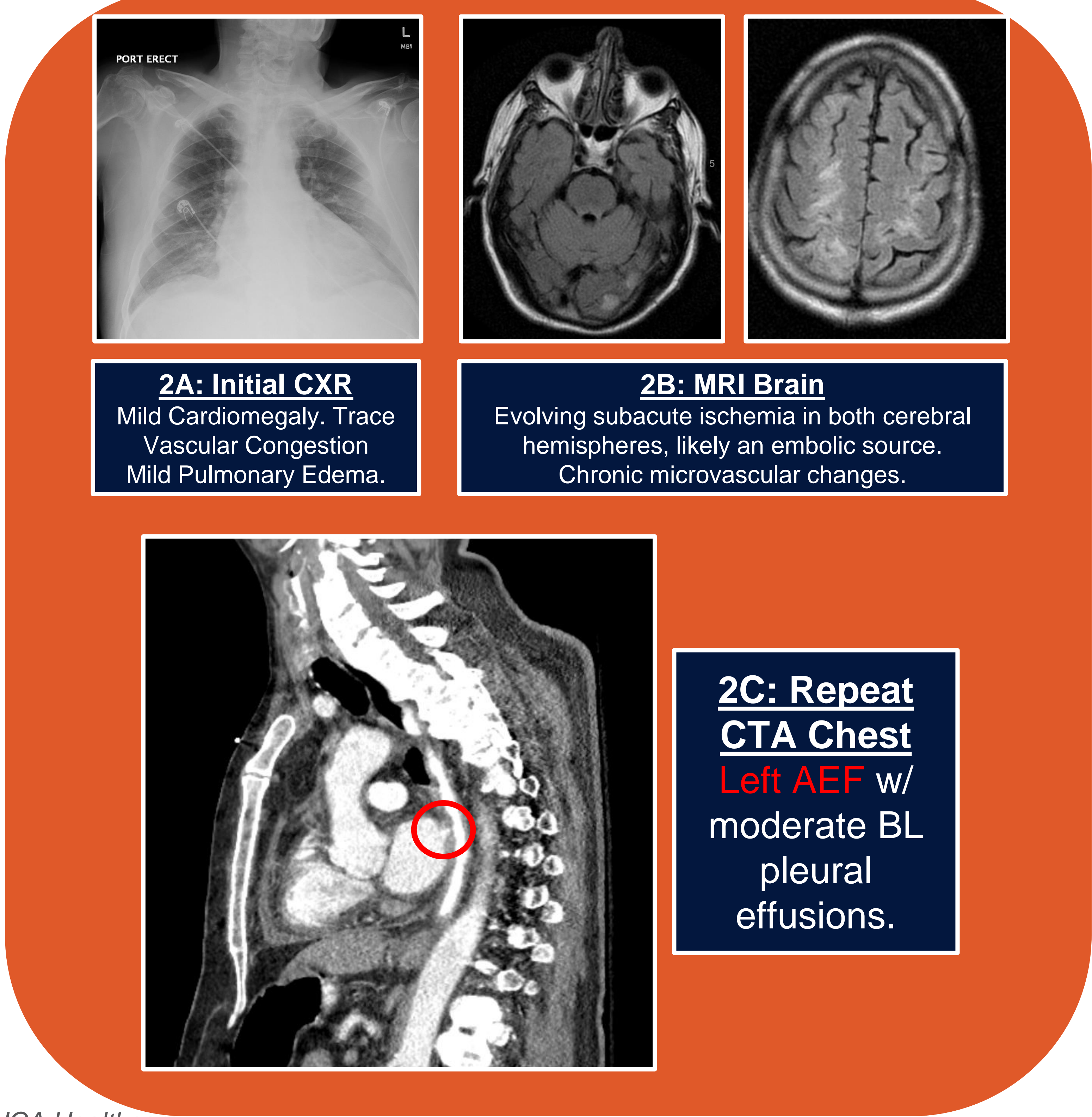
Case Presentation

- **HPI:** 79yoWM w/ PMHx of Afib s/p RFA 1mo ago, HTN, HLD, BPH, and GERD who presented to the ED via EMS after his holter monitor went off for “bradycardia” at which time he reported dizziness and vomiting. He called his EP who advised him to come to the ED.
- **EMS:** reported Afib with RVR lasting 30 secs.
- **Outpatient Holter:** sinus bradycardia, paroxysmal Afib with spontaneous conversion to NSR w/ pauses up to 6.6sec.
- **Family hx:** non-contributory
- **Home Meds:** Warfarin 5 mg PO MWF, Sotalol 120 mg PO BID, Tamsulosin 0.4 mg PO daily, Losartan 100 mg PO daily, Amlodipine 10 mg PO daily, Celexocib 200 mg PO daily, Atorvastatin 40 mg PO daily, Famotidine 20 mg PO BID
- **ROS:** Denied fevers, neck pain, CP, SOB, cough, abdominal pain
- **Pertinent Physical Exam Findings:**
 - VS: T: 103.3°F, HR: 81bpm, RR: 24bpm, BP: 122/62mmHg, SpO2: 94% on RA, WT: 91 kg
 - CV: RRR, no murmurs, no carotid bruits, no JVD
 - Neuro: AOx3, expressive aphasia, L UEX hemiparesis
- **Pertinent Lab Findings:**
 - WBC 9.5k, Hg 11.5 (L), Hct 34.5%, PLT 219k
 - Na 140, K 3.8, Cl 106, CO2 25, BUN 19, Cr .9, Glu 136 (H)
 - LA .8
 - PT 27.8 (H), INR 2.5, PTT 36.2
 - TC 96, LDL 43, HDL 26, TG 64
 - Magnesium of 2.0mg/dL (N:1.8-2.4)
 - Trop <.012 (N <.04)
 - NT-proBNP 390 (N: <100)
 - Lipase 25

Hospital Course

- Admitted to ICU with aphasia, L UEX hemiparesis.
- Neurology consulted, CTA Head and Neck showed no LVO, MRI ordered, initiated DAPT w/ ASA/Clopidogrel
- ID consulted for **fever of unknown origin**, blood cultures negative, CT Chest/A/P w/o contrast showed a small hemopericardium w/ BL hemothorax; gave IV doxy w/ piperacillin/tazobactam
- Cardiology consulted for concerns of SSS post ablation w/ intermittent episodes of near syncope
- MRI Brain demonstrated multiple subacute embolic strokes.
- TTE LVEF 45-49%, no PFO, moderate TR
- EP consulted, plan for pacemaker implantation, NPO.
- Patient suffered a **generalized tonic-clonic seizure**, loaded with levetiracetam and given lorazepam.
- Developed **respiratory distress**; intubated to protect airway.
- Repeat CT chest w/ contrast: left AEF w/ air embolization.
- Transferred via helicopter for emergent surgical repair.
- On arrival he quickly deteriorated into cardiac arrest with diffuse ECG changes concerning for further embolization.
- ROSC was achieved, however his family elected to make him comfort measures only, and he expired the following morning.

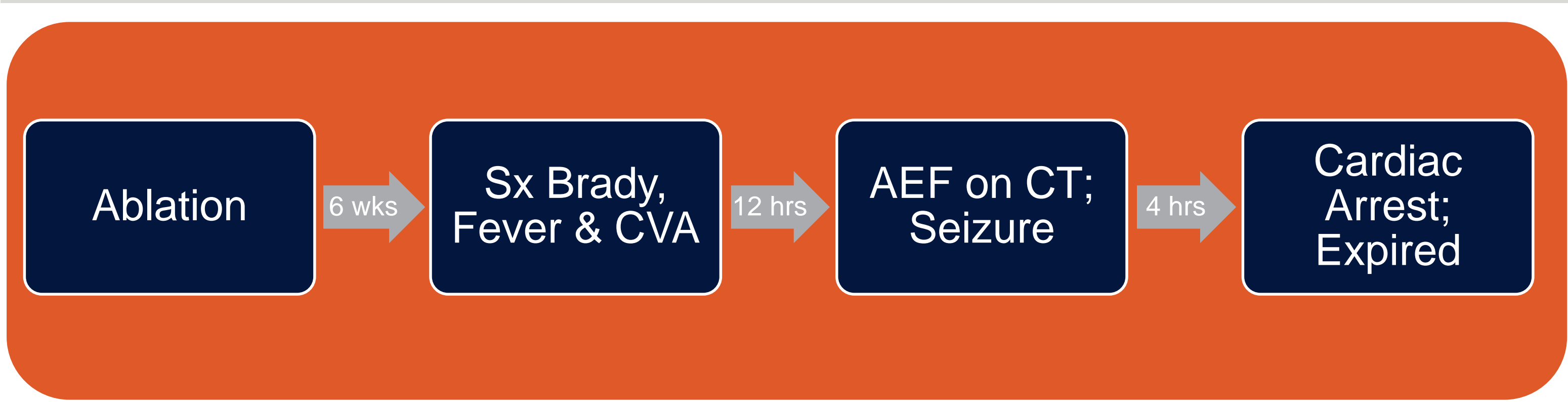
Figure 2. Imaging



Discussion

- Left atrio-esophageal fistulas (AEF) may arise as a delayed complication of catheter pulmonary venous ablation, often seen 3-6 weeks after an initial successful procedure.
- The complication may result from thermal injury to the atrial and esophageal walls during RFA.
- Post-ablative fever is the most common clinical manifestation, often prompting broad spectrum antibiotics among patients.
- CT of the chest can reveal contrast extravasation from the left atrium into the esophagus or pneumomediastinum and serves as the most reliable diagnostic tool.
- Even with an incidence of less than 1%, early diagnosis and surgical intervention of AEF is essential due to a mortality rate of 80% and severe CV morbidity from embolic stroke.
- Cerebral air embolism is a potentially fatal complication of AEF, resulting from air in the esophagus migrating to the left atrium and into the cerebral circulation.
- Neurologic manifestations are often a delayed finding w/ acute focal deficits, seizures, and change in mental status.
- CT of the brain may detect air within the intracranial arteries but may be falsely negative as in our case, likely due to a small amount of air or from rapid resorption by arterioles.
- Cerebral air embolism is a devastating complication of AEF that should be suspected in a patient with acute neurologic symptoms and a recent history of catheter ablation.
- Early recognition of AEF is essential in order to initiate surgical intervention or stenting.

Figure 3. Timeline



References

1. Pappone C, Vicedomini G, Santinelli V. Atrio-Esophageal Fistula After AF Ablation: Pathophysiology, Prevention & Treatment. *J Atr Fibrillation*. 2013;6(3):860. Published 2013 Oct 31. doi:10.4022/jafib.860
2. Dagres N, Kottkamp H, Piorkowski C, et al. Rapid detection and successful treatment of esophageal perforation after radiofrequency ablation of atrial fibrillation: lessons from five cases. *J Cardiovasc Electrophysiol*. 2006;17(11):1213-1215. doi:10.1111/j.1540-8167.2006.00611.x
3. Oka Y, Tsuzaki K, Kamei M, Kikuya A, Hamano T. Postoperative cerebral air embolism with delayed abnormal brain MRI findings. *eNeurologicalSci*. 2020;22:100305. Published 2020 Dec 25. doi:10.1016/j.ensci.2020.100305

The authors have no conflicts of interest to disclose.

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.