

A Tragic Cascade: Post-Ablation Atrial Mass, Sepsis, and Neurological Decline in a 48-Year-Old Female

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INTRODUCTION

In cases where a left atrial thrombus is identified, its occurrence is typically associated with clinical conditions such as atrial fibrillation and mitral valve stenosis. However, it is noteworthy that such thrombi can also arise post radiofrequency ablation procedures. When these thrombi form within the left atrium they adhere to the atrial septum, their morphological characteristics can closely resemble those of left atrial tumors. This case report presents the intricate clinical journey of a 48-year-old African American female who encountered a lethal combination of sepsis, a post-ablation atrial mass, and extensive neurological dysfunction. Sepsis, a severe response to infection causing widespread organ impairment, can have devastating consequences, particularly when intertwined with cardiac complications and neurological dysfunction.

CASE PRESENTATION

The patient arrived to the emergency department with symptoms of chest pain, extremity paresthesias and an altered mental state. This was her third visit to the emergency department over the last month. In prior visits, the patient presented with less severe symptoms of intermittent chest pain and was discharged with recommendations to follow up with outpatient specialists including cardiology and electrophysiology. On this visit, once again an EKG and CT scans of the brain and chest, failed to provide clear answers. Due to her worsening mental status, the patient required intubation. Blood cultures revealed a septic state with the growth of *Candida glabrata* and *Streptococcus* species. Following this, the cardiac monitor revealed abnormalities. Another EKG was performed, showing signs of inferior infarction (Figure 1). After a multidisciplinary discussion, a transeophageal echocardiogram was ordered (Figure 2). This revealed a mobile density in the left atrium, raising concern and speculation about its etiology. Is this a thrombus due to the patient's pre-existing atrial fibrillation? Could this potentially be the nidus of the patient's septic state? Could the recent cardiac ablation have anything to do with this? A brain MRI uncovered extensive bilateral cerebral and cerebellar lesions, raising the suspicion for showering emboli (Figure 3). This would ultimately explain the neurological findings.

Her condition required transfer to a tertiary care center for potential open removal of the thrombus. Despite exhaustive medical interventions, the patient's condition rapidly deteriorated before the procedure, culminating in her passing three days later.

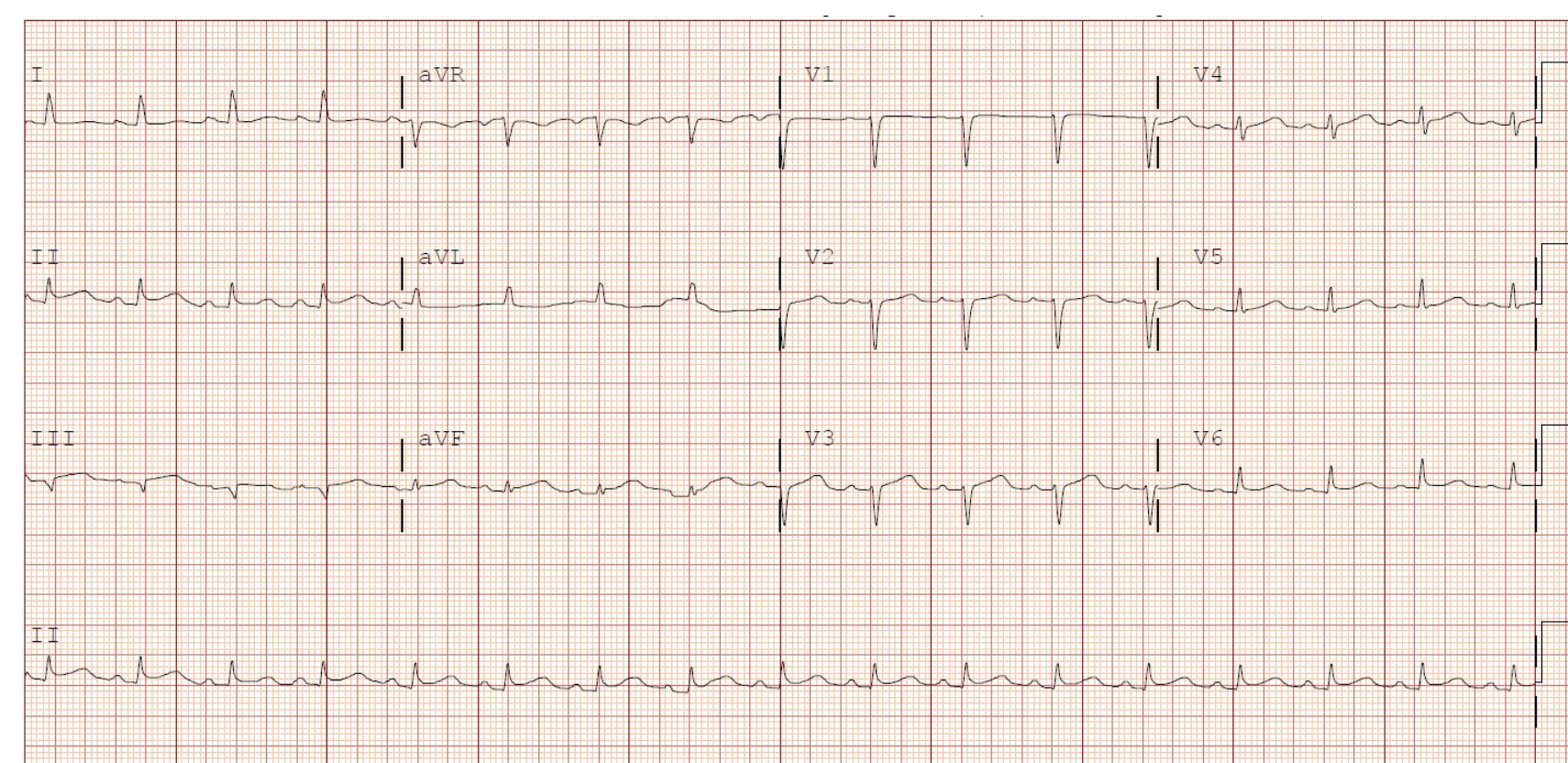


Figure 1: Sinus rhythm, heart rate 99, new ST elevation in the inferior leads

RADIOLOGY

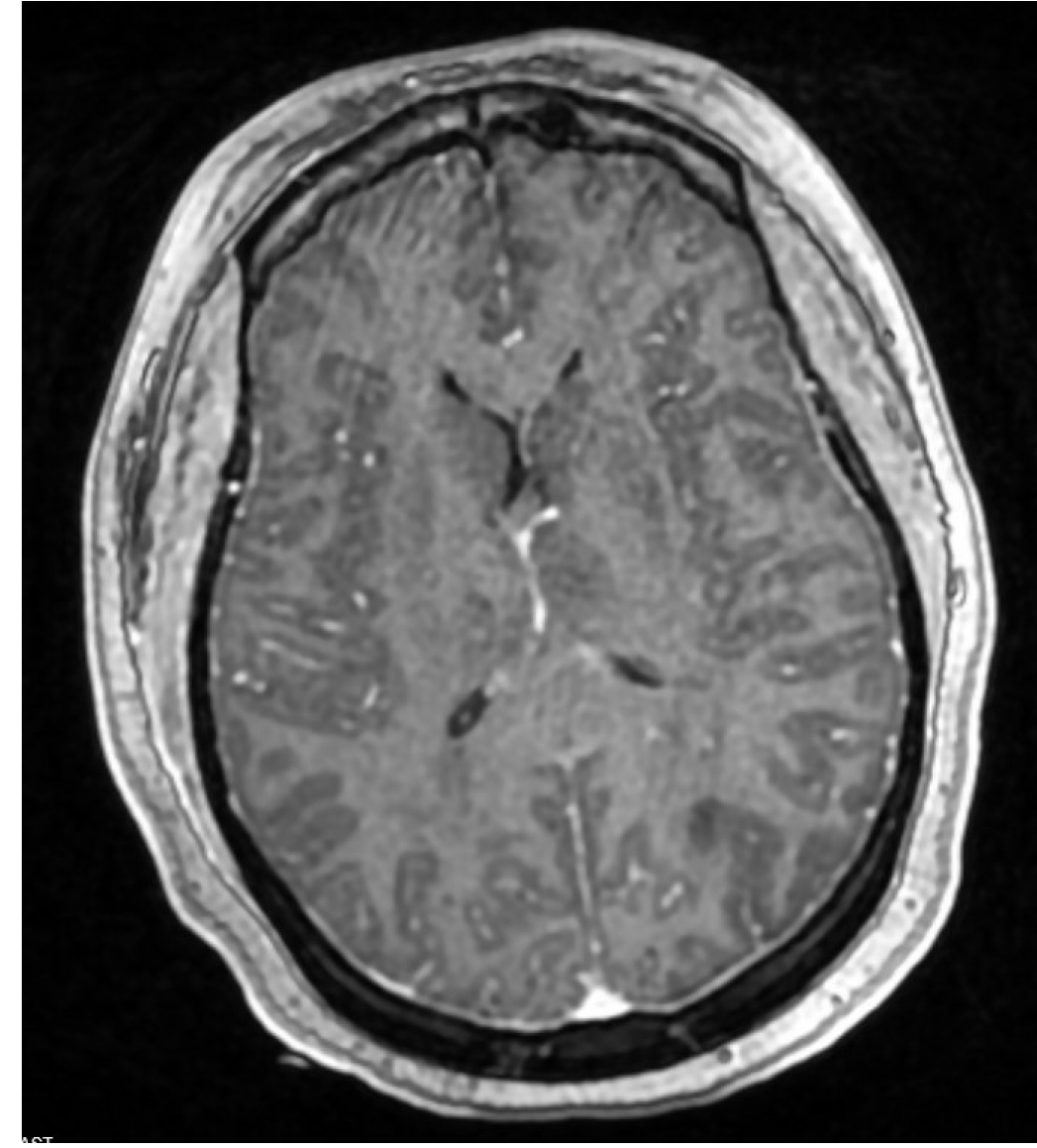


Figure 2: MRI brain showing extensive areas of restricted diffusion throughout the brain parenchyma with numerous tiny punctate lesions throughout

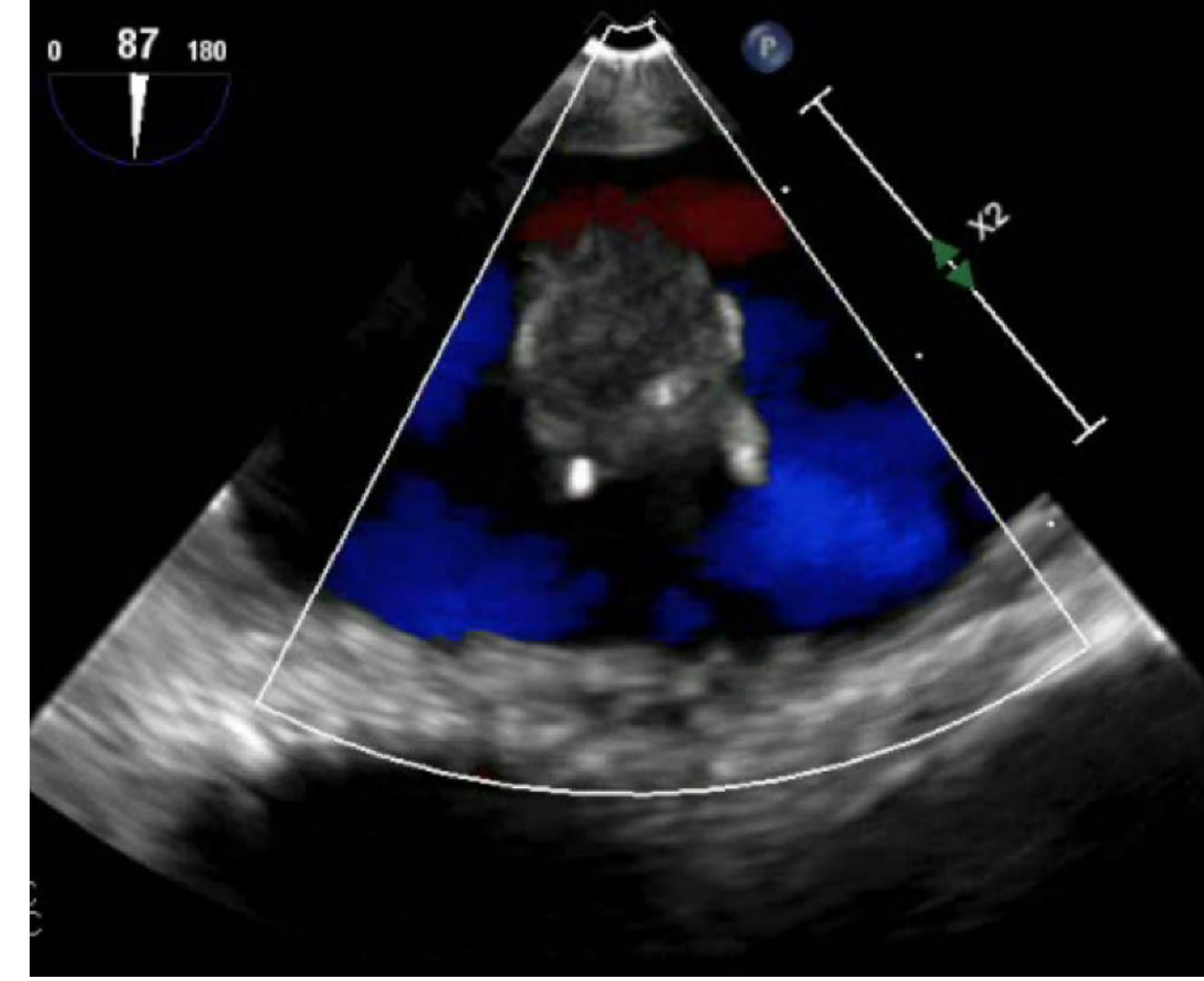


Figure 3: Transeophageal echocardiogram demonstrating mobile density visualized in the left atrium with hyper and hypochoic features. "Fronds" at the right upper pulmonary vein area can be seen, a feature of thrombus formation

DISCUSSION

This case brings to light the severe implications of a post-ablation atrial mass evolving into a septic state with neurological involvement. It illustrates the importance of post-procedure monitoring and considering atrial thromboembolism formation in the differential diagnosis during that critical time. This patient had multiple recent visits to the emergency room. The outcome highlights the need for taking a thorough history. This could have led to earlier detection and accurate diagnosis by prompting comprehensive imaging and intervention with more urgency. Furthermore, this reinforces the strict practice of sterile technique. If sterile technique was followed, this tragedy could have ultimately been prevented.

This report would prove to be a valuable contribution to the literature on post-ablation complications. It highlights the importance of educating patients about potential post-ablation complications and importance of disclosing a thorough history when presenting to the emergency room. Furthermore, it emphasizes the continual need for research to refine diagnostic and therapeutic strategies. Are there ways to enhance sterility in the operating room? What can we do to manage and potentially prevent another tragic event in the future?

In summary, this case exemplifies the essential need for thorough diagnostic evaluation, the application of advanced imaging techniques, and a tailored management strategy in the face of combined cardiac, infectious, and neurological complications. It stresses the importance of vigilant monitoring, early intervention for thrombus detection, advanced diagnostic modalities, and educating patients about potential post-ablation risks. This case serves as a critical reminder of the complexities and potential hazards in managing septic conditions following cardiac interventions, emphasizing the need for preparedness and comprehensive care in similar clinical scenarios.

LEARNING POINTS

- Heightened Monitoring Post-Ablation:** Patients who have undergone cardiac ablation should be closely monitored for signs of left atrial mass formation, particularly thromboemboli. This includes low threshold for transeophageal echocardiography and, if necessary, more advanced imaging techniques like contrast echocardiography or cardiac MRI to accurately characterize the nature of the mass.
- Early Intervention for Thrombus Formation:** In cases where a thromboembolism is suspected or identified post-ablation, prompt anticoagulation therapy should be initiated. However, the anticoagulation regimen must be carefully tailored, especially in patients with concurrent risks such as potential brain hemorrhage in the setting of thromboemboli or a history of bleeding.
- Interdisciplinary Approach in Management:** Complex cases involving cardiac, infectious and neurological complications require a coordinated, interdisciplinary approach. Collaboration among cardiology, neurology, infectious disease and critical care teams is essential for comprehensive management and decision-making.
- Individualized Approach to Sepsis Management:** In patients presenting with sepsis and cardiac complications, an individualized approach to management is critical. This includes targeted antimicrobial therapy based on culture results, careful monitoring of hemodynamic status, and supportive care tailored to the patient's specific needs.
- Sterile Technique:** Sterile technique should be strictly practiced during every procedure. Reinforcement and continuing education to physicians may be necessary in certain cases.
- Research and Education:** Further research is needed to better understand the incidence, prevention, causes and management strategies for atrial septic thromboemboli post-cardiac ablation. Additionally, ongoing education for healthcare providers regarding the potential complications and management strategies in such complex cases is vital.
- Patient and Family Education:** Educating patients and their families about the potential risks, signs and symptoms of complications following cardiac ablation procedures is crucial. This includes informing them about the importance of regular follow-up appointments and adherence to prescribed therapies.

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