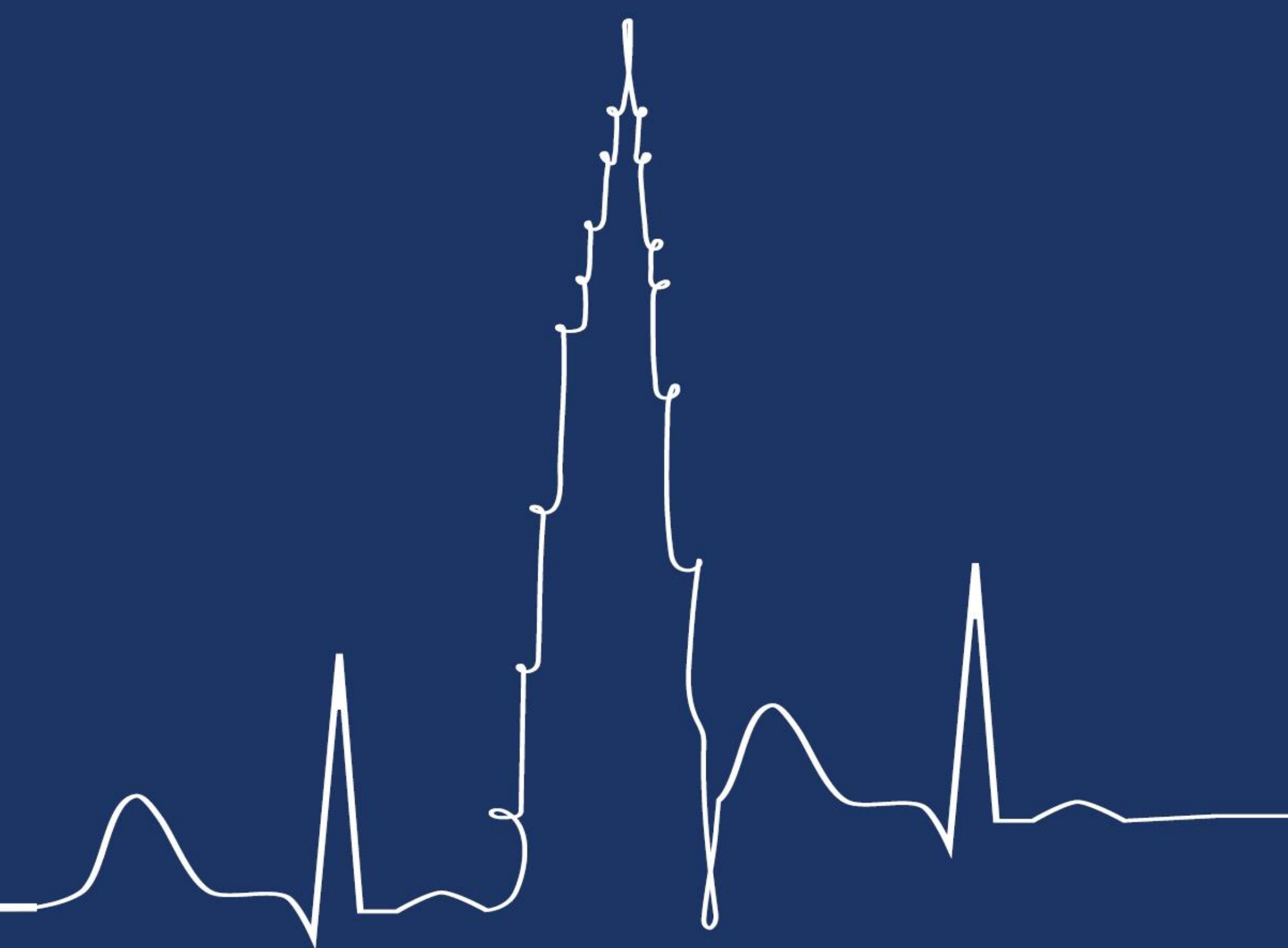




GAC 2025 GULF ARRHYTHMIA CONGRESS

ePOSTER



Hemoptysis in patient post radiofrequency ablation for atrial fibrillation

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INTRODUCTION

Pulmonary veins thrombosis (PVT) is rare condition with an unknown incidence . (1). In some cases the cause of PVT is unknown, clinically recognized primarily in association with pulmonary vein stenosis, radiofrequency ablation (RFA) in patients with atrial fibrillation (AF), lobectomy and post lung surgery (2). It yields low levels of suspicion and can be considered very rare due to similar symptoms similarity with other lung diseases (3). However, there are multiple imaging techniques used to detect PVT, such as computed tomography (CT) scanning, transesophageal echocardiography (TEE), pulmonary angiogram and magnetic resonance imaging (MRI) (4). Nevertheless, the treatment remains challenging and require high level of suspicion.

AIM

The aim of this case report is to highlight the diagnostic challenges and clinical implications of pulmonary vein thrombosis (PVT) following radiofrequency ablation (RFA) in patients with atrial fibrillation (AF). By presenting this rare case, we emphasize the importance of a multidisciplinary approach and the use of advanced imaging modalities for accurate diagnosis and management of PVT, particularly in patients presenting with nonspecific respiratory symptoms post-procedure.

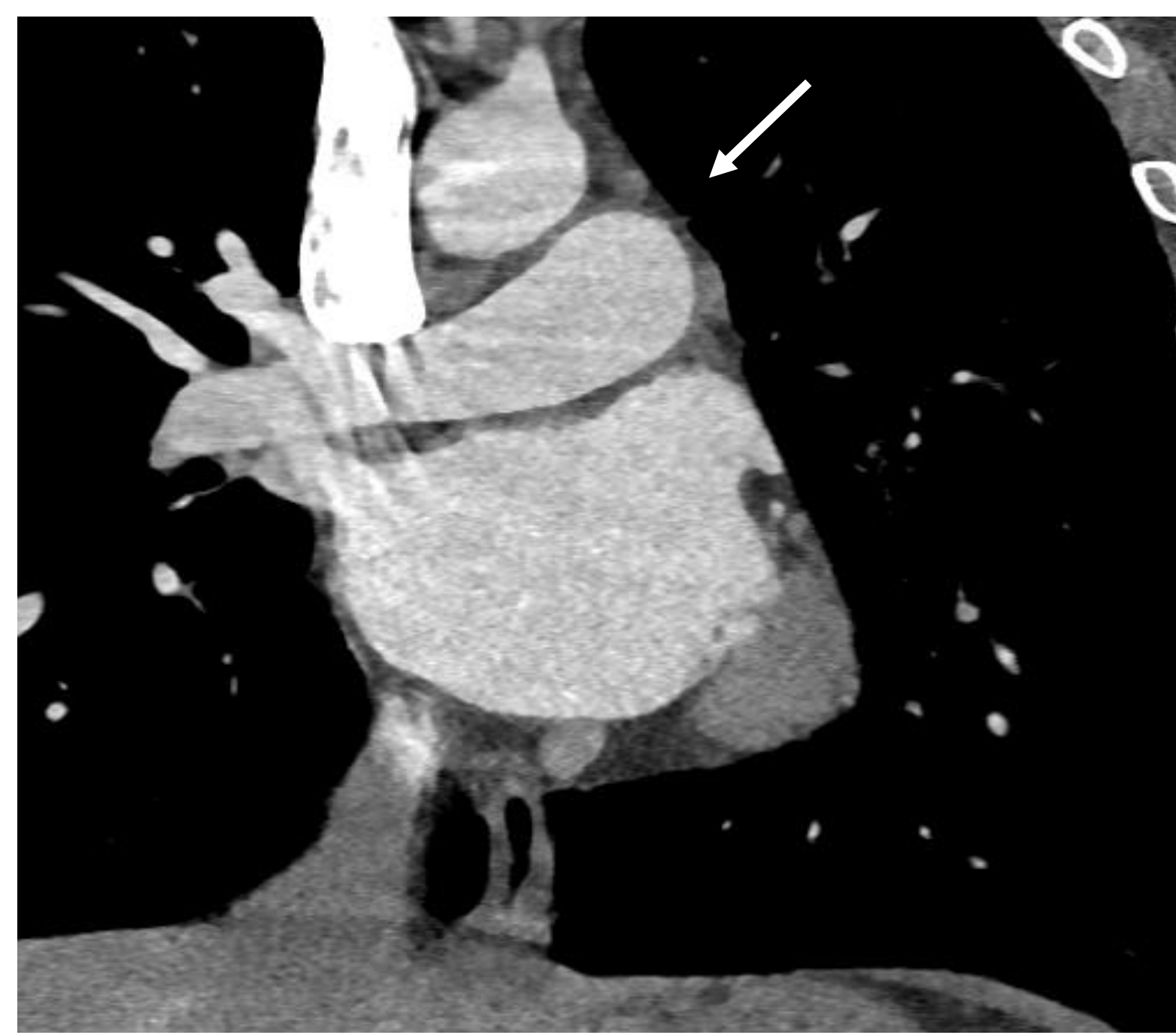
CASE DESCRIPTION

This case involves a 32-year-old male with a known history of paroxysmal atrial fibrillation that was refractory to medication. The patient was assessed prior to radiofrequency ablation (RFA) with a CT angiogram in 2018, which showed patent pulmonary veins. Three years post-ablation, the patient experienced atrial fibrillation recurrence. A CT atrial mapping prior to a second ablation showed thrombosis in the pulmonary veins, though an echocardiogram revealed a patent pulmonary venous system. A second radiofrequency ablation was performed in 2021.

One year post-procedure, the patient presented with chest pain, hemoptysis, and a cough lasting three days. A chest X-ray was normal, and a CT pulmonary angiogram revealed no evidence of pulmonary embolism (PE). However, patchy pulmonary opacities suggested infection. The patient was admitted as a case of pneumonia. Respiratory cultures and tests for acid-fast bacilli were negative. A follow-up CT high resolution two weeks post-discharge showed resolution of the previous left upper lobe bronchial ground-glass opacities but revealed new opacities. Bronchoscopy identified significant redness and edema with submucosal vessels in the left upper lobe, and bronchial lavage revealed *Staphylococcus aureus* (negative for AFB).

Transesophageal echocardiography could not visualize the left upper pulmonary vein by color flow Doppler. However, the lower left pulmonary vein was patent. CT atrial mapping illustrated occlusion of the left upper lobe pulmonary vein consistent with chronic thrombosis. Other pulmonary veins appeared normal. Additionally, patchy infiltrates were found in the left upper lobe, secondary to venous thrombosis. There was also an enlarged pulmonary artery as a consequence of pulmonary arterial hypertension.

Patient was commenced on Antibiotic therapy as bronchial lavage revealed *Staphylococcus aureus* (negative for AFB). He was Advised to seek Emergency when ever hemoptysis is back



CT Atrial Mapping

The left upper lobe pulmonary vein is occluded , consistent with chronic thrombosis.
There is enlarged pulmonary artery, in keeping with pulmonary arterial hypertension.



Bronchoscopy

DISCUSSION

Atrial fibrillation (AF) is one of the most frequent and serious types of cardiac arrhythmias, with recurrence rates reaching up to 50% (6). Radiofrequency ablation (RFA) is considered a first-line treatment for patients with drug-refractory AF (7). However, it can result in significant pulmonary complications, including pulmonary vein stenosis, which has a reported prevalence of up to 40% (8, 9).

Another potential complication is pulmonary vein thrombosis (PVT), a condition with an unknown incidence. Diagnosing PVT can be particularly challenging due to its nonspecific signs and symptoms, such as shortness of breath, cough, chest pain, and hemoptysis (3). High clinical suspicion is required, even when CT pulmonary angiography results are negative (2, 5, 12). Although CT pulmonary angiography remains one of the primary diagnostic tools for detecting PVT, a combination of modalities—including MRI and transesophageal echocardiography (TEE)—is often necessary for a comprehensive evaluation (2, 10, 12).

CONCLUSIONS

Pulmonary vein thrombosis (PVT) is a serious and life-threatening complication that can occur following radiofrequency ablation (RFA) for atrial fibrillation. Early detection is critical to prevent severe and irreversible outcomes, such as pulmonary arterial hypertension, which is often associated with delayed or missed diagnoses (3, 5). The lack of standardized treatment protocols for PVT means that management strategies are guided by the underlying etiology, clinical evaluation, and pathological findings. Current treatment options include systemic anticoagulation, antibiotic therapy for associated infections, and surgical interventions such as thrombectomy or lobectomy in severe cases (2, 3, 9).

Despite these interventions, the clinical course of PVT remains challenging due to its nonspecific symptoms, such as shortness of breath, chest pain, and hemoptysis, which overlap with other pulmonary and cardiac conditions (3, 5, 12). Comprehensive diagnostic approaches, including CT pulmonary angiography, MRI, and transesophageal echocardiography (TEE), are often necessary for accurate diagnosis (3, 4, 10).

Additionally, patient education plays a vital role in early detection. Educating individuals undergoing RFA about the potential pulmonary complications, including PVT, and encouraging them to report symptoms such as persistent cough, chest pain, or hemoptysis, can lead to timely medical evaluation and intervention, reducing the risk of long-term complications (2, 7).

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