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Great Aortic Valve Disappointment when Fibroelastoma Mimics Infective Endocarditis

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Abstract **Case Report**

Certain tumors are specific to the heart, or have certain characteristics when they develop in the heart, notably myxoma and papillary fibroelastoma. Papillary fibroelastoma is a very rare benign cardiac tumor of preferential valvular localization. The aortic valve (AV) is most frequently affected. Patients are generally asymptomatic, although they are at high risk of cardiac and systemic embolic events. The systematic use of echocardiography has increased the detection of these tumors. Surgical excision remains the gold-standard treatment, with low operative risk and cure of symptoms. We report the case of a patient in whom infective endocarditis was strongly suspected based on clinical and echocardiographic findings. However, further investigation and surgical pathology revealed a papillary fibroelastoma masquerading as endocarditis. This case highlights the diagnostic challenges in differentiating between these two entities and underscores the importance of histological confirmation.

Keywords: papillary fibroelastoma, benign cardiac tumor, the aortic valve, asymptomatic, echocardiography, embolism, excision.

INTRODUCTION

Papillary fibroelastomas are rare, benign primary cardiac tumors, accounting for approximately 5 to 10% of all cardiac neoplasms. Despite their relatively low prevalence, with an estimated incidence of 0.02% in the general population, they represent the second most common primary tumor of the heart after myxomas. These tumors most frequently arise from valvular endocardium, with a particular predilection for the aortic valve. Although they are often discovered incidentally in asymptomatic patients, papillary fibroelastomas carry a significant risk of embolic events, including stroke, myocardial infarction, and peripheral arterial occlusion, due to their mobility and friable structure. Advances in cardiac imaging, particularly the use of transesophageal echocardiography and cardiac MRI, have markedly improved their detection and characterization. Surgical excision remains the treatment of choice, especially in symptomatic patients or when the tumor is mobile, due to the potential for serious thromboembolic complications.

CASE PRESENTATION

A 71-year-old patient with cardiovascular risk factors : diabetic for 30 years, under insulin therapy, with a last HbA1c of 7.9%, dyslipidemia treated with statins, chronic smoker (now quit), and a history of ischemic heart disease complicated by left heart failure with moderately impaired ejection fraction (EF), requiring the placement of 6 active stents. The last angioplasty was performed 2 years ago. The patient has also been known to have paroxysmal atrial fibrillation (AF) for over 10 years, with the occurrence of a transient ischemic attack (TIA) 2 years ago. Additionally, the patient has benign prostatic hypertrophy, which was treated with transurethral resection in October 2024, followed by an episode of macroscopic hematuria and urinary infection with *Staphylococcus aureus*, treated with antibiotics. The patient has a history of coronary syndrome complicated

by tachycardia ventricular (TV), treated with external electrical shock in 2021. The patient was hospitalized in the electrophysiology department in October 2024 for the management of syncopal episodes related to several episodes of non-sustained ventricular tachycardia (NSVT). During his preoperative workup, a transthoracic echocardiogram was performed, revealing a mobile filiform element attached to the ventricular aspect of the anterior sigmoid valve, measuring 10 mm, with a moderate eccentric leak (Figure 3). The patient was hospitalized for further exploration to rule out possible infective endocarditis.

At. Admission

The patient was hemodynamically, respiratory, and neurologically stable. Infectious history was negative.

Clinical examination:

- Heart rate (HR) = 57 bpm
- Blood pressure (BP) = 126/45 mm Hg in both arms
- Heart sounds were clear at regular rhythm, with a soft diastolic murmur, aspiratory at the aortic focus, graded 2/6, radiating to the left border of the sternum.

The ECG showed a rhythm of atrial fibrillation (AF) with no electrical changes compared to previous ECGs (Figure 1). The chest X-ray was unremarkable, with no detectable infectious focus (Figure 2).

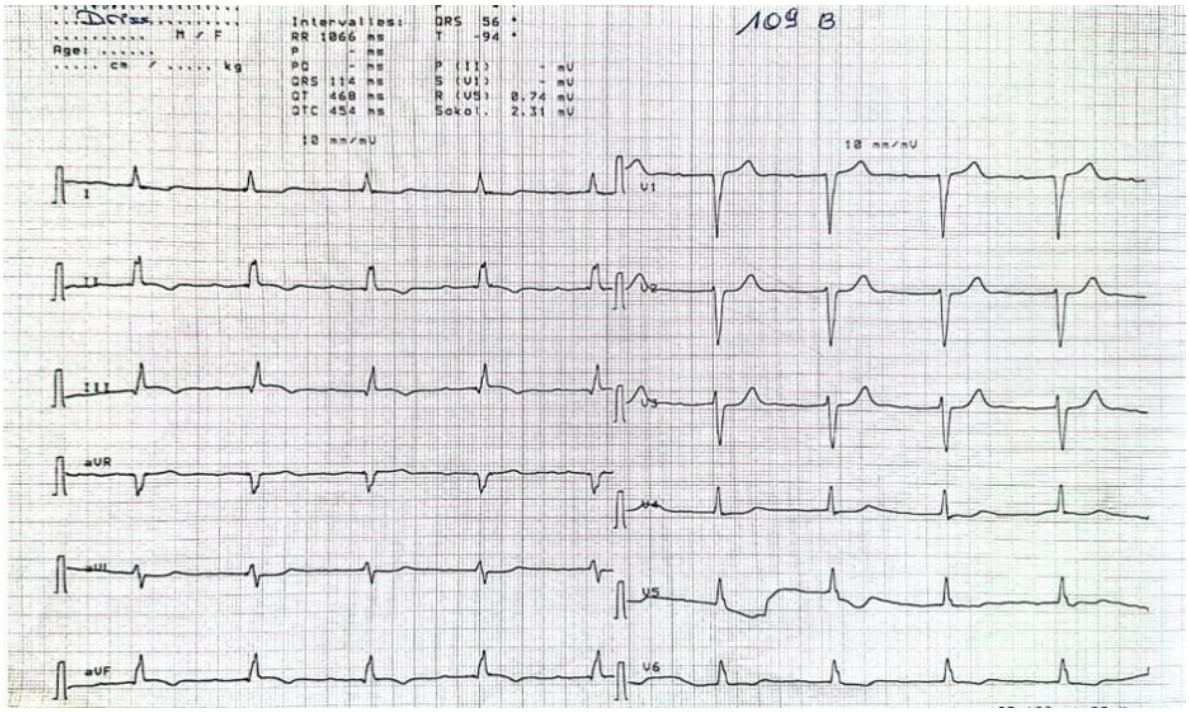

Figure 1: **The ECG shows a Sinus rhythm with a prolonged PR interval of 220 ms; the axis is normal; narrow QRS complexes with a decrease in the R wave in the anterior leads, and negative T waves in the inferior leads.**

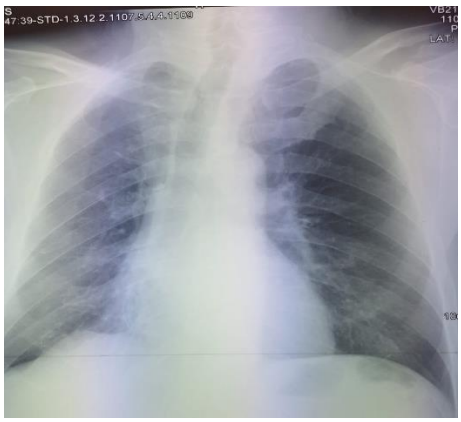

Figure 2: Chest X-ray (frontal view)

Biological Findings: Infectious workup negative:

- White blood cells (WBC) = 7700 /mm³
- C-reactive protein (CRP) = 2 mg/L
- Urine culture (ECBU) sterile
- A series of blood cultures returned sterile
- C3, C4 levels; rheumatoid factor; renal function; 24-hour proteinuria tests, all normal, performed to check for minor criteria of infective endocarditis.

An echotransesophageal ultrasound (ETO) was performed, suggesting infective endocarditis on the native valve (Figure 4).A thoraco-abdominal-pelvic CT scan was done to search for signs of distal embolization or abscess formation related to infective endocarditis, which returned without any particular findings.

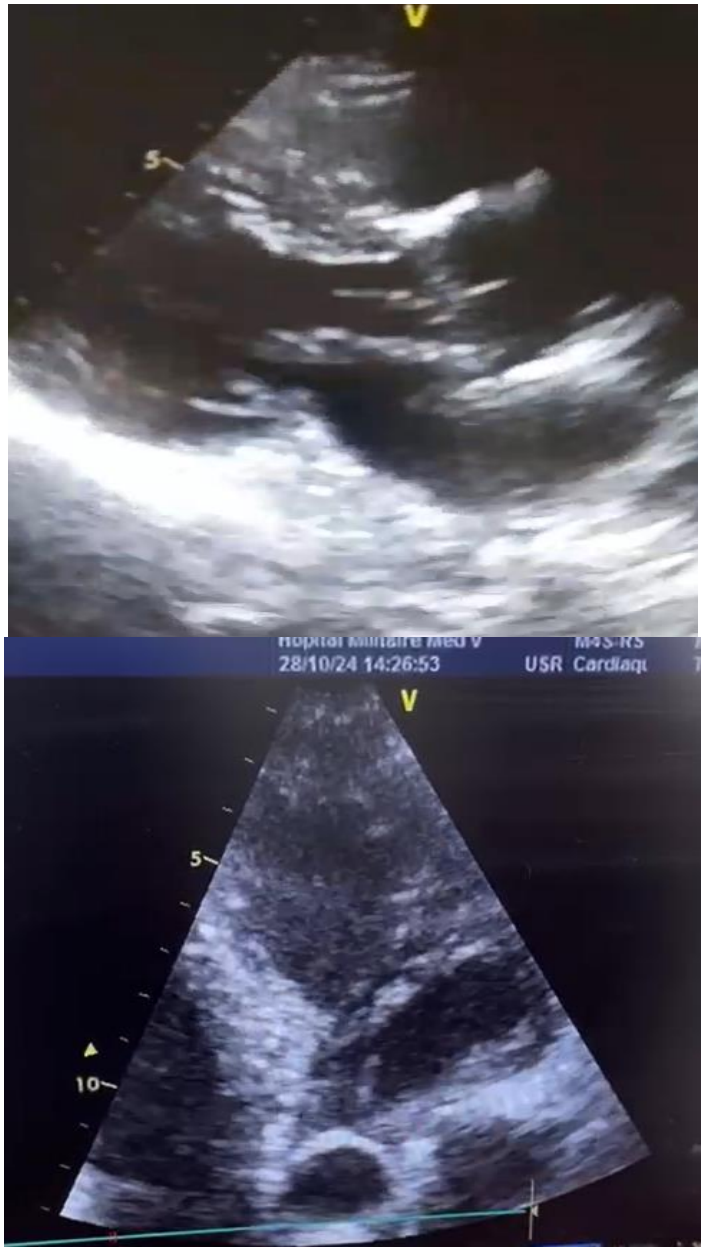

Figure 3: **Echocardiographic images in parasternal long-axis and apical 5-chamber views showing the element on the aortic valve**

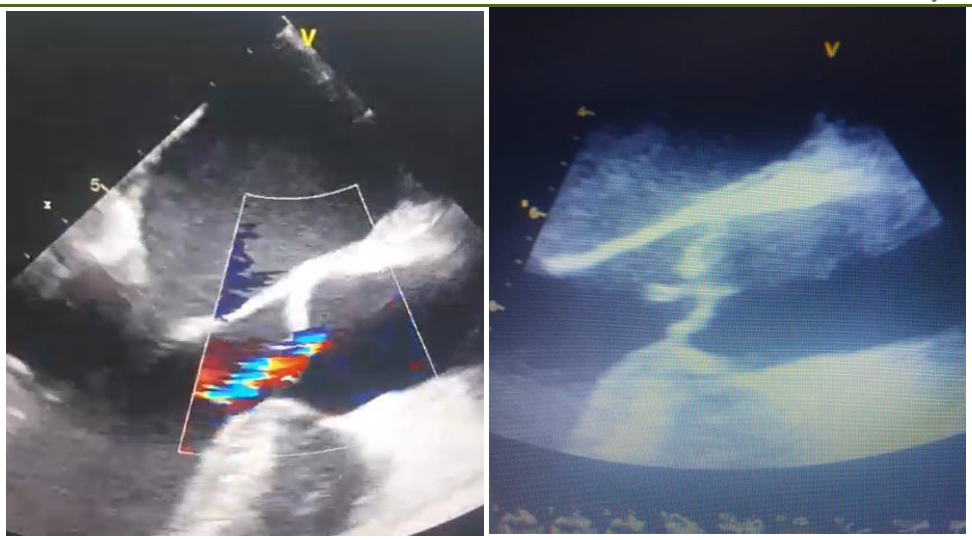

Figure 4: Transesophageal echocardiographic images showing the element on the aortic valve as well as the eccentric aortic regurgitation

A cardiac MRI (Figure 5) was performed to study the nature of the element and to help in the differential diagnosis between infective endocarditis and a benign lesion. The MRI revealed a 9 mm mobile mass attached to the left anterior sigmoid valve, displaying low signal intensity on anatomical sequences and no enhancement on delayed imaging, which was not consistent with a definite infective endocarditis.

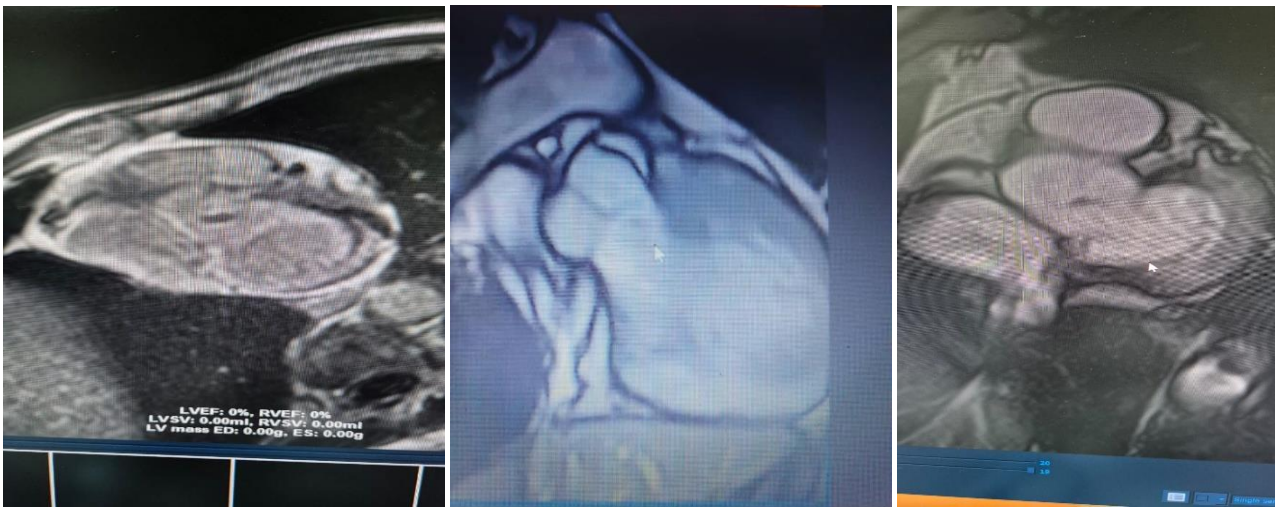

Figure 5: Cardiac MRI image.A follow-up echocardiogram was performed to assess the size of the element 2 weeks after the initiation of parenteral empirical antibiotic therapy (third-generation cephalosporins and aminoglycosides at endocarditis doses), showing the same appearance and dimensions

A follow-up PET scan (Figure 6) was performed, showing the absence of any pathological hypermetabolic foci suspicious for infection near the cardiac area, particularly around the aortic valve. Additionally, there were no suspicious hypermetabolic foci identified in the rest of the body.

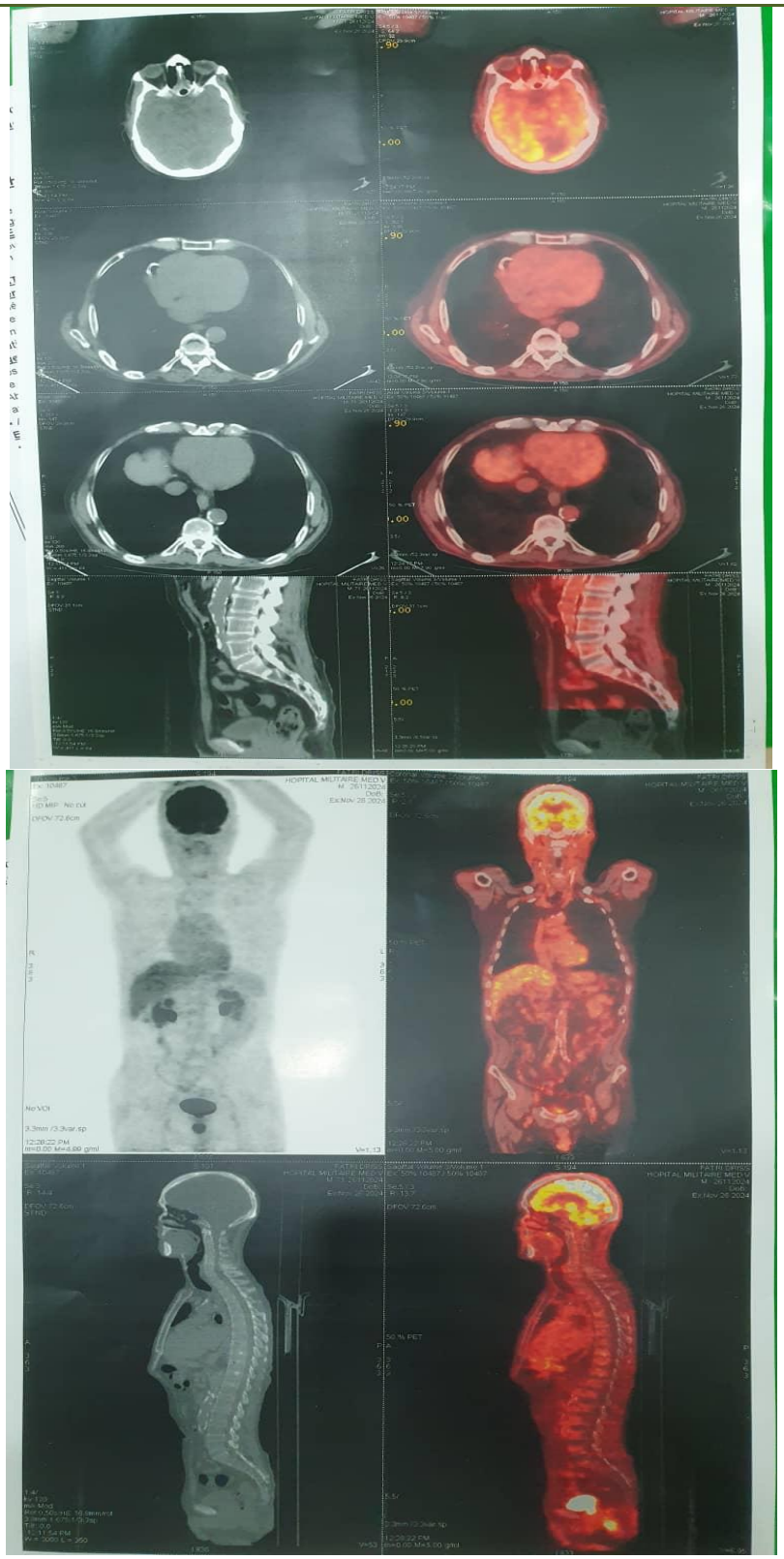

Figure 6: PET scan image.In our case, there is only one major criterion, which is this filiform element on the native aortic valve. This allows the exclusion of the diagnosis of infective endocarditis according to the modified Duke criteria

➔The diagnosis of a fibroelastoma was retained as a diagnosis of exclusion. The antibiotic therapy was stopped, and the patient was discharged with regular follow-up scheduled to monitor for any potential complications, particularly embolic events from this benign tumor, which may require surgical management.

DISCUSSION

Papillary fibroelastoma (PFE) is a rare, benign cardiac tumor that mainly affects the valves [1-6]. It is the most common primary valvular tumor, accounting for 70-90% of all cases [4,3,7,8]. The most frequent site of papillary fibroelastomas is the aortic valve in 35 to 63% of cases, the mitral valve in 9 to 55%, the tricuspid valve in 6 to 15% and the pulmonary valve in 0.5 to 8%. They are common in men over 40, with the majority diagnosed before the age of 60, but have also been described in infants and young children, particularly those with congenital cardiac anomalies [8,7]. Clinically, most papillary fibroelastomas are asymptomatic and are diagnosed incidentally during cardiac imaging examinations, such as echocardiography or CT scan, performed for other pathological indications. In a minority of cases, fibroelastoma may manifest as embolic events, the most frequent of which are transient ischemic attacks and strokes, followed by myocardial infarction, syncope, pulmonary or peripheral embolism and sudden cardiac death [8,10] requiring treatment, medical or surgical [11].

The best imaging modality for papillary fibroelastomas is echocardiography [12] Preoperative diagnosis and imaging relies heavily on multimodal imaging, including echocardiography, computed tomography, magnetic resonance imaging and coronary angiography [10,13,7] and positron emission tomography (PET).

On echocardiography, fibroelastoma is characterized by a small, round, echodense, pedunculated mass with high independent motion, with a glossy appearance associated with filiform projections [8]. Although the combination of new imaging methods, may increase the sensitivity and specificity of detection, histological examination is still necessary to confirm a diagnosis [9]. The final diagnosis, however, remains uncertain at least until surgical removal and histological analysis of the mass [12].

The etiopathogenesis of PFE is not completely known, but is thought to be multifactorial in nature, comprising genetic, mechanical and biological factors.

One hypothesis holds that PFE results from acquired lesions, which originate from microthrombi that adhere to minor endothelial lesions on valve surfaces and, over time, evolve into outgrowths to form the neoformation [8].

PFE's risk of embolic complications justifies a therapeutic approach aimed at surgical removal, making it the most frequently surgically removed cardiac tumor, almost twice as often as cardiac myxoma [8]. However, once the diagnosis has been made, surgical resection is recommended to avoid embolic complications; this is a definitive treatment, as recurrences are very rare [14].

The management of asymptomatic fibroelastomas remains controversial, with some authors recommending systematic surgical excision, and others advocating a more conservative approach [15].

CONCLUSION

Fibroelastoma is the second most common benign tumour in adults, and can be the cause of vascular complications. The most frequently reported location is the aortic valve. Although mostly asymptomatic and usually diagnosed incidentally, stroke has been reported as the most common presentation in symptomatic individuals. Fibroelastomas can be surgically removed or maintained in follow-up if they do not interfere with hemodynamics or present a risk of embolization.

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