

Rare Case of Mitral Valve and Tricuspid Valve Aneurysm Presented with Progressive Dyspnea

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Introduction: Mitral valve aneurysm (MVA) is a saccular, bulging structure of the mitral leaflet that expands during systole and collapses during diastole. Morand provided the first description of the MVA case in 1729. There are no symptoms or indicators particular to an aneurysm in MVA; instead, the clinical findings are comparable to those in mitral regurgitation. Tricuspid valve aneurysms are a bulging or outpouching of the septal leaflet of the tricuspid valve and have been documented in the literature less frequently in association with endocarditis, but as congenital anomaly they have not yet been reported.

Case Presentation: We present a case of mitral valve aneurysm and tricuspid aneurysm causing progressive dyspnea. To our knowledge this is the first case of an incidental finding of bilateral atrioventricular valve aneurysm. The patient cardiac findings were limited to mild symptoms and were managed with a medical approach.

Conclusion: Atrioventricular aneurysm discovery by accident is infrequent. Shortness of breath and increasing dyspnea may result from this. Only a few cases have been described in the medical literature. In this instance, an unexpected cause of dyspnea in an elderly patient is presented.

Keywords: tricuspid valve aneurysm, mitral valve aneurysm, pulmonary hypertension

Background

Mitral valve aneurysm (MVA) is a saccular, protruding structure of the mitral leaflet that expands during systole and shrinks during diastole.¹ However, it is unclear what caused it to arise in the first place. Endocarditis, rheumatic disease, and other connective tissue disorders such mitral valve prolapse, osteogenesis imperfecta, Marfan syndrome, and pseudoxanthoma elasticum may cause the mitral leaflet to weaken.² In patients receiving TEE, the incidence of MVA has been reported to be only 0.2–0.29% in the past.³ There have been a few incidental case reports of tricuspid valve aneurysm in the literature.⁴ We present a case of mitral valve aneurysm and tricuspid aneurysm causing progressive dyspnea.

Case Presentation

A 56-year-old male presented to the cardiology outpatient with exertional dyspnea and fatigue. There was no history of medical condition, bad habits, or family history of cardiac disease. The patient maintained a healthy condition but had experienced exertional dyspnea and weakness for one week, not associated with fever or cough. He was vitally stable. On cardiac examination the patient had mild lower limb edema grade 1, NYHA class 1, no JVD, loud S2, and no additional murmur was noted on the examination. The basic blood tests of the patient were unremarkable. Twelve-lead EKG showed sinus rhythm and complete right bundle branch block. The basic blood tests including D-dimer and troponin I were normal. The transthoracic echocardiogram (TTE) showed normal systolic ejection fraction, normal left chamber size, and mitral valve aneurysm (Figure 1A and B) plus tricuspid septal valve aneurysm, tricuspid peak velocity 3 m/s, systolic pulmonary hypertension (SPAP) 45 mmHg, mild tricuspid regurgitation with eccentric jet, and normal right ventricular function parameters. Figure 2A and B.

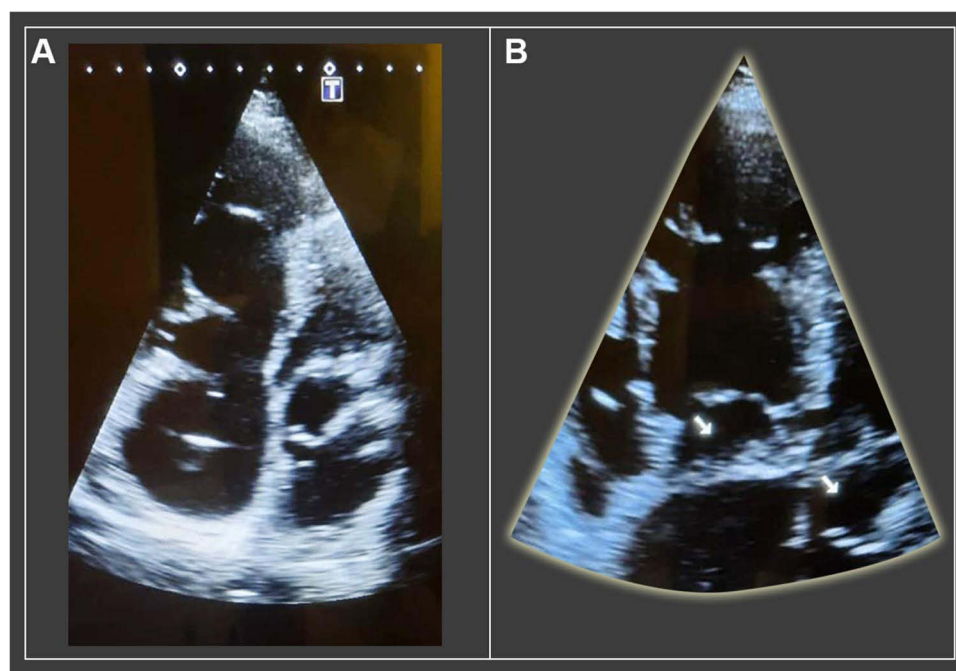


Figure 1 (A) Outpouching of mitral valve that is expanding during systole and collapsing during diastole. (B) Bilateral aneurysm of the mitral and tricuspid valve.

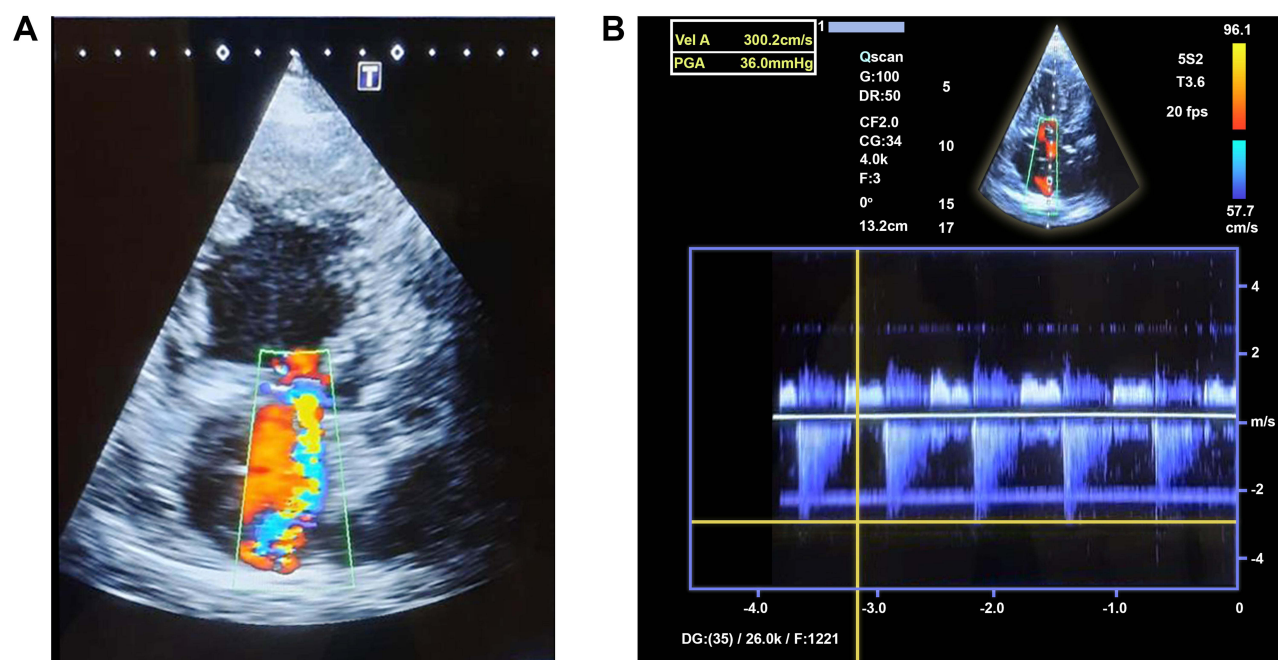


Figure 2 (A) Eccentric jet directed to the septal tricuspid leaflet. (B) TR velocity 3 cm/s and SPAP \approx 45 mmHg.

After evaluating the symptoms of the patient it was supposed that the clinical findings were due to pulmonary hypertension impacted by tricuspid valve aneurysm.

The patient was managed with a low dose of diuretic and a low dose of B-blocker as there were minimal symptoms, and further management, including imaging, was suggested at an advanced center.

Discussion

In patients undergoing TEE, the incidence of MVA has previously been reported to be 0.2–0.29%, with the posterior leaflet being much less frequently affected than the anterior leaflet. It is a typical symptom of infective endocarditis.^{3,5,6} Increased pressure from the left ventricle causes the leaflet to protrude into the left atrium. Degenerative changes brought on by age may be the underlying cause of leaflet failure and mitral valve aneurysm in the absence of any other cardiac or systemic disease.⁷ In our patient a specific etiology could not be identified. There are no symptoms or indicators particular to an aneurysm in MVA; instead, the clinical findings were similar to those in mitral regurgitation. The most dangerous MVA consequence, perforation, causes severe regurgitation. Microscopically, a single valve aneurysm that has the potential to burst is typically discovered; nevertheless, reports of numerous aneurysms have also been made.⁸ Even though TTE can occasionally detect minor valvular anomalies, TEE's superior resolution allows for a more certain identification of these uncommon lesions. Flow-of-color Doppler shows a straight connection between the aneurysm and the left ventricle, separating the aneurysm from other anomalies. Regardless of how the mitral valve aneurysm forms, there is a substantial risk of life-threatening consequences such as valvular perforation.^{9,10}

Aneurysms of the tricuspid valve have been previously reported in the literature less frequently. However, the regurgitant jet and transthoracic, two-dimensional appearance are the same as those mentioned in mitral valve aneurysm. Although the specific cause of a tricuspid leaflet aneurysm is unknown, it may be caused by a ruptured valve abscess that allows direct right ventricle communication with the cavity that receives the regurgitant flow.⁴ Our case study patient presented with growing dyspnea and fatigue, which were mostly triggered by atrioventricular valve aneurysms, but were complicated by tricuspid regurgitation and mildly elevated pulmonary arterial pressure. Because the patient exhibited right ventricular dilatation, pulmonary embolism was ruled out with a normal D-dimer titer because the patient had a low risk probability. Ultimately the patient was managed with a low dose of diuretic therapy and B-blocker, and further imaging was suggested.

Nevertheless, the current case describes a rare development of a mitral valve aneurysm and tricuspid valve aneurysm in an old patient without any underlying pathology that could be identified.

Conclusion

Incidental finding of atrioventricular aneurysm is unusual. This can be a cause of shortness of breath and progressive dyspnea. In the medical literature only few cases have been reported. In this case we present an unusual cause of dyspnea in an old patient.

Ethics Approval

Based on the regulations of the review board of the Mogadishu Somali Turkish Training and Research Hospital, institutional review board approval is not required for case reports.

Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising, or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors report no conflicts of interest in this work.

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