

Case Report

A Case Report of Severe Mitral Regurgitation Due to Flail Posterior Mitral Leaflet

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Case Presentation

Mitral valve regurgitation (MR) is recognised as the second most common valvular heart disease. We present a 62-year-old gentleman who presented to our emergency department with acute onset shortness of breath, notably worse on exertion or lying down. Background of known mitral valve prolapse and high body mass index. Patient had been engaging in intensive exercise programme prior to initial presentation. Transthoracic and transoesophageal echocardiography showed severe MR and flail P2. Patient referred and transferred to tertiary centre for mitral valve repair.

Discussion

This case demonstrates the importance of consideration for monitored cardiac rehabilitation and

fitness regimes in patients with multiple cardiac risk factors and known valvular heart disease.

Keywords: Mitral valve repair; Mitral valve prolapse; Cardiac rehabilitation

Learning points

- Importance of cardiac rehabilitation is important in the context of valvular heart disease
- Community intensive exercise programmes come with own risks

Introduction

This article reports the case of a gentleman with severe mitral regurgitation secondary to P2 rupture on a background of intensive exercise with known mitral valve disease who was successfully treated with open mitral valve repair.

Timeline

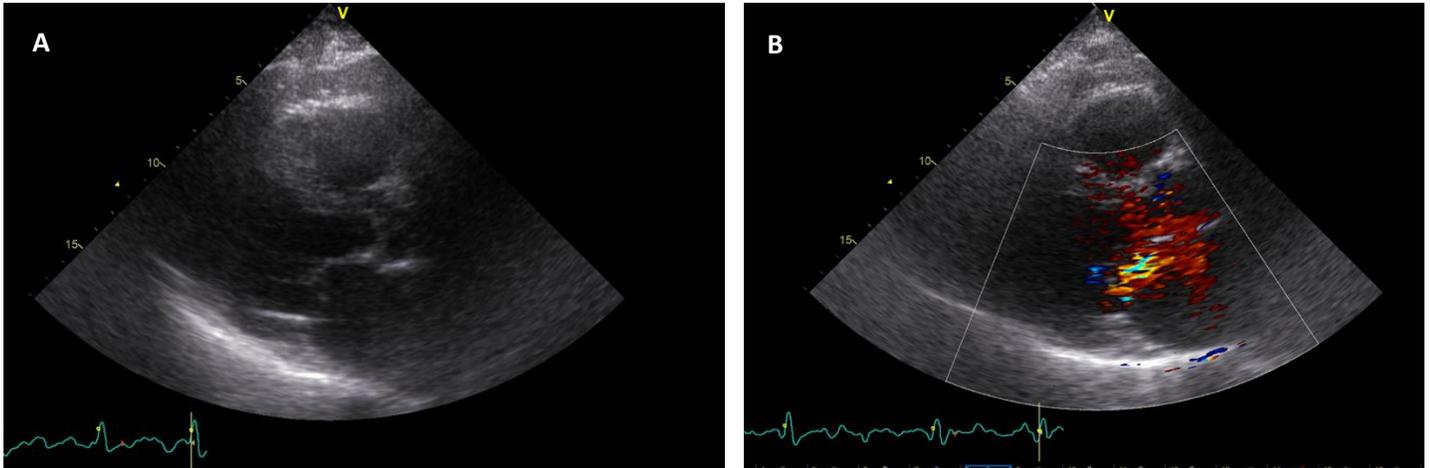
Timeline	Events
20 th January 2020	Presentation with acute onset shortness of breath, orthopnoea and fatigability
3 rd February 2020	Referred to tertiary centre for angiogram and mitral valve repair
7 th February 2020	Mitral valve repair for P2 rupture
11 th February 2020	Post operative echocardiogram shows functioning MV repair. Max PG 3mmHg. Trace regurgitation. Preserved systolic function. Upper normal left heart chambers.
14 th February 2020	Discharged

Case Presentation

A 62-year-old gentleman presented with acute onset shortness of breath, orthopnoea and fatigability due to cardiogenic pulmonary oedema. Symptoms began on finishing work out routine in the gym as part of ongoing intensive exercise programme, having lost 40kg over the last 12 months, now weighing 120kg. His medical background history is significant for CVA 2007, atrial fibrillation, raised BMI and hypertension and mitral valve prolapse (MVP) as found during routine review. On clinical examination at presentation, he was afebrile, blood 123/79, heart rate 107, respiratory rate 25 with oxygen saturations of 82% on room air. On cardiovascular examination a 3/6 pansystolic murmur was noted with a point maximal impulse at fifth left intercostal space midclavicular line. The jugular venous pressure was elevated with pitting oedema to the mid-shin region bilaterally. Coarse inspiratory crepitations were noted bibasally. He had no other remarkable physical findings on examination.

Electrocardiogram on presentation showed atrial fibrillation with a rate of 100 beats per minute. Chest radiography revealed pulmonary oedema, bilateral pleural effusions and a raised cardiothoracic ratio,

confirmed on CT imaging. Subsequent transthoracic echocardiogram (TTE) showed overall good left ventricular function, ejection fraction >55%, progression of mitral valve regurgitation with anteriorly directed incompetence. Further, a transoesophageal echocardiogram (TOE) revealed a flail posterior mitral valve leaflet, visible ruptured chordae tendinae and severe mitral regurgitation with jet extending into pulmonary veins.



Figures: **A** – parasternal TTE echo view showing flail P2 leaflet; **B** – parasternal TTE echo view showing severe mitral regurgitation with jet extending into pulmonary veins

Patient symptomatically improved with furosemide infusion, monitored in coronary care unit and was referred to tertiary centre for mitral valve repair. Angiogram revealed no flow limiting disease.

Discussion

Mitral regurgitation (MR) is the second most common valvular heart disease [1]. There are two well-established subdivisions of mitral regurgitation; primary, degenerative MR and secondary MR which may be due to a dilation or ischaemia [1,2]. Mitral valve prolapse (MVP) is a common disorder afflicting 2- 3% of the general population [3]. The structure and linked function of the mitral valve is complex and unlike the aortic valve its innate mechanical function cannot be easily replicated via valvular replacement, valve repair is the preferred treatment option.¹ It confers various benefits such as lower impairment of left ventricular function, lack of need for anticoagulation, lower complication and post-operative mortality rates and overall better long-term results [4]. The surgical repair involves multiple steps including annuloplasty and shortening or repair of tendinous

chords in addition to prolapse and leaflet resection as seen in our case.

Cardiac rehabilitation (CR) is a service available to patients diagnosed with heart disease that offers education and support in cardiovascular risk reduction strategies, health education, physical activity and stress management [5]. It is now recommended in international guidelines as an intervention in heart failure and postmyocardial infarction and stable coronary heart disease [6-8]. There is evidence that cardiac rehabilitation programmes reduce mortality, morbidity and hospital admissions. In addition, improvements in patient quality of life, exercise tolerance and well-being have been reported [5]. There are no current guidelines or recommended rehabilitation for patients with valvular heart disease such as mitral regurgitation.

It could be hypothesized that this patients acute pulmonary oedema and decompensation were secondary to a ruptured P2 leaflet secondary to intensive gym workout on a background of known MR. This highlights the importance for the need for recommended safe exercise programmes and work out intensities for community weight loss programmes in those with known valvular heart disease going forward. In addition to exercise training, cardiac rehabilitation programme could be recommended in this patient cohort to include psychological and education-based interventions. Alternative modes of CR inpatient or outpatient ambulatory delivery could include approved home-based exercise programmes and e-health programs using e.g. the Internet and mobile phones [9].

Conflict of Interest: None declared.

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