

Case Report

A Case of Stenosis of Mitral and Tricuspid Valves in Pregnancy, Treated by Percutaneous Sequential Balloon Valvotomy

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Abstract

Rheumatic mitral stenosis is associated with other lesions, but combination of mitral stenosis and tricuspid stenosis is unusual. We are reporting a case of mitral and tricuspid stenosis in a pregnant lady that was successfully treated by sequential balloon valvuloplasty in a single sitting.

Keywords: Mitral stenosis; Tricuspid stenosis; Balloon valvotomy

Abbreviations

MS: Mitral Stenosis; TS: Tricuspid Stenosis; BMV: Balloon Mitral Valvotomy; CMV: Closed Mitral Valvotomy, BTV: Balloon Tricuspid Valvotomy, PHT: Pressure Half Time, MVA: Mitral Valve Area; TVA: Tricuspid Valve Area; LA: Left Atrium; RA: Right Atrium; TR: Tricuspid Regurgitation

Introduction

Rheumatic tricuspid valve stenosis (TS) is rare, and it generally accompanies mitral valve disease [1]. TS are found in 15% cases of rheumatic heart disease but it is of clinical significance in only 5% cases [2]. Isolated TS accounts for about 2.4% of all cases of organic tricuspid valve disease [3] and is mostly seen in young women [4]. Combined stenosis of mitral and tricuspid valves is extremely uncommon. Combined stenosis of both the valves has never been reported in pregnancy. Balloon Mitral Valvotomy (BMV) and surgical Closed Mitral Valvotomy (CMV) are two important therapeutic options in the management of rheumatic mitral stenosis. Significant stenosis of the Tricuspid Valve can also be treated by Balloon Tricuspid Valvotomy (BTV) [6].

Case Presentation

A 24 years old female, 22 weeks primigravida patient presented with complaints of dyspnea (NYHA class II) of 5 years duration which had progressed to class IV over past 15 days. She had been previously diagnosed to have acute rheumatic fever at age of 11 years. On examination the patient had a regular pulse of 96 bpm, BP of 100/60 mmHg and the Jugular venous pressure was raised. Auscultation

of the heart showed a loud first heart sound and an opening snap. The second heart sound was normal. A mid diastolic murmur with pre-systolic accentuation was heard in the mitral area. Another low pitched mid diastolic murmur was present in left parasternal region; this murmur increased in intensity on inspiration. ECG revealed sinus rhythm and left atrial overload. Pre pregnancy X-ray chest showed right and left atrial enlargement.

Echocardiography revealed severe Mitral Stenosis (MS); Mitral Valve Area (MVA) was 0.9 cm² as measured by Pressure Half Time (PHT) and MVA by planimetry was 0.8 cm² (Figure 1A). There was also severest; Tricuspid Valve Area (TVA) was 1 cm² by PHT (Figure 1B). There was moderate Tricuspid valve regurgitation and moderate Aortic regurgitation. The Left Atrium (LA) was enlarged (4.3 cm).

BMV was performed using an Inoue balloon size 26 through an antegrade approach after transseptal puncture (Figure 2A). Peak Left Atrial (LA) pressure decreased from 28 mmHg to 16 mmHg. Thereafter, BTV was performed, using the same balloon (Figure 2B). The mean Right Atrial (RA) pressure decreased from 9 mmHg to 5 mmHg. MVA and TVA post procedure were 1.8 cm² and 2.1 cm² respectively. There was no increase in Tricuspid regurgitation and no new Mitral regurgitation.

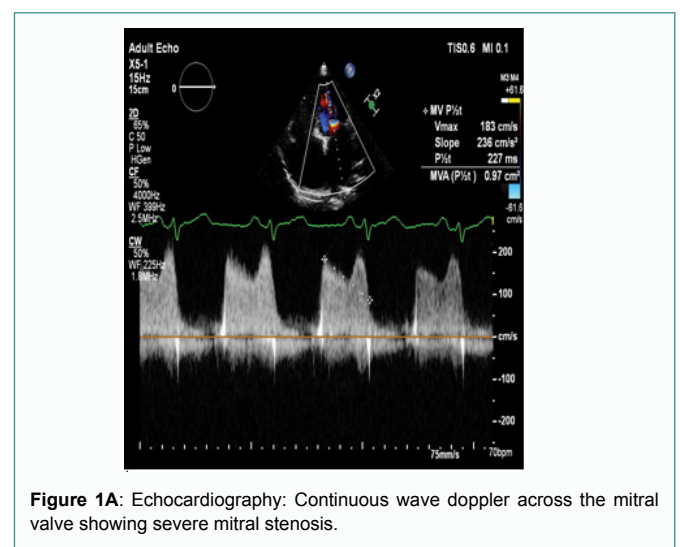


Figure 1A: Echocardiography: Continuous wave doppler across the mitral valve showing severe mitral stenosis.

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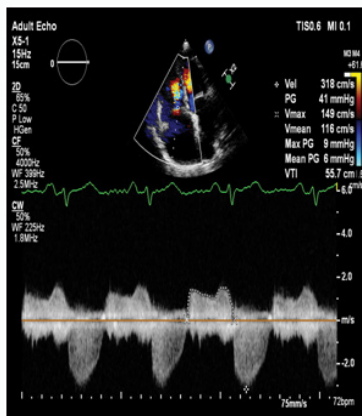


Figure 1B: Echocardiography: Continuous wave doppler across the tricuspid valve showing tricuspid stenosis.

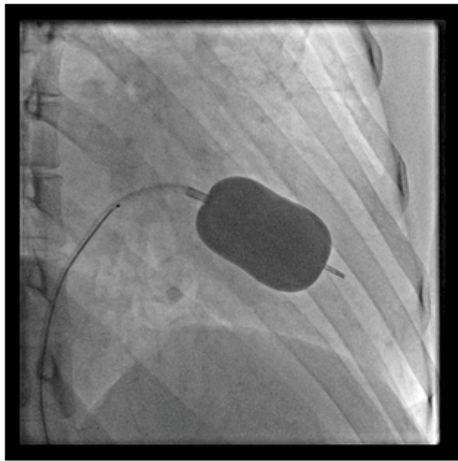


Figure 2A: Inflation of inoue balloon 26 size at mitral valve.

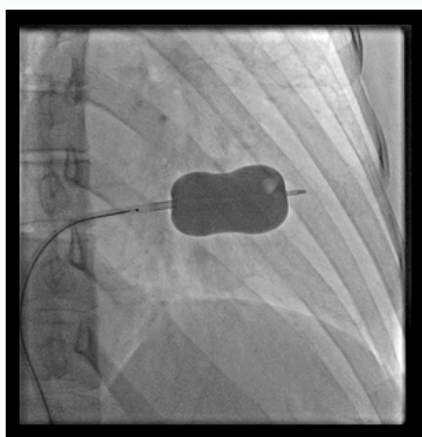


Figure 2B: Inflation of Inoue Balloon 26 size at tricuspid valve.

Patient significantly improved after the procedure and was discharged after 2 days. After 3.5 months, she delivered a healthy child without any complications.

Discussion

Stenosis of the Tricuspid valve in rheumatic heart disease is very rare and almost always occurs in conjunction with mitral stenosis [6]. Organic tricuspid valve disease is more common in India, Pakistan, and other developing nations near equator than in North America or Western Europe [7]. Often tricuspid stenosis is associated with severe Tricuspid Regurgitation (TR) making the lesion unsuitable for balloon valvuloplasty. Combined dilatation for rheumatic mitral and tricuspid stenosis by inoue balloon catheter has been seldom reported [8,9]. To the best of our knowledge, combined dilatation of both the valves in a pregnancy has never been reported.

The patient in this report had rheumatic MS and TS with moderate TR and both the valves had morphology suitable for balloon valvuloplasty. There is extensive literature available for BMV but for BTM, available data is sparse. We were able to perform BTM with same Inoue balloon that was used for mitral valvuloplasty. Both the procedures were thus performed in a single sitting.

Conclusion

Combined occurrence of Mitral Stenosis and Tricuspid is a rare clinical entity. If the valve morphology is suitable, percutaneous dilatation of both the valves can be done successfully in the same sitting. This treatment is particularly suitable modality for pregnant women where there no other treatment options are limited.

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