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Case Report

A case report of successful thrombolytic therapy in stuck mechanical mitral valve in a case of post mitral valve replacement with severe left ventricular dysfunction

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ABSTRACT

Stuck mechanical heart valves had always been tricky to manage and there has been always a debate on how to proceed with management plan. There is uncertainty regarding the type of thrombolytic agent, its dose, and rate of administration. We are reporting a case of stuck mitral valve with extremely low left ventricular ejection fraction (LVEF) which was successfully thrombolyzed using slow thrombolytic regimen. 57 years old lady, an old case of rheumatic heart disease (RHD) with severe mitral stenosis (MS), post mitral valve replacement (mechanical SJM 29 mm) in 2013, has presented with breathlessness New York Heart Association (NYHA) class 3 since 15 days. She has history of drug default. Clinically she was in heart failure and heart sounds were muffled (no clicks). On suspicion of stuck mitral valve urgent 2D ECHO was done which confirmed stuck mitral valve leaflet, with a high mean pressure gradient across prosthetic mitral valve (MV) (18 mmHg). She had severe Pulmonary arterial hypertension with maximum gradient right ventricular systolic pressure (RVSP) of 60 mm. LVEF was 20%. Fluoroscopy is not available at our centre. She was urgently thrombolysed with 25 mg alteplase over 06 hours along with unfractionated heparin infusion @1000 u/hour for 24 hours. 2D ECHO was repeated after 24 hours which revealed leaflets of mitral valve moving freely, with MVA >2 cm^2. Mean gradient was reduced to 4 mm Hg across mitral valve. Pulmonary arterial hypertension (PAH) has reduced to 36 mm. LVEF has improved to 35%. Patient has been in follow up for more than a year with sustained results. Thrombolytic agents are a good alternative for stuck mechanical valves especially when cardiothoracic surgery is unavailable at remote centres.

Keywords: Stuck, Mechanical valve, Severe left ventricular dysfunction, Thrombolytic, Case report

INTRODUCTION

Adherence to oral anticoagulation and maintaining international normalized ratio (INR) in desired range is a major limitation of the mechanical prosthetic valves.[1] Also, due to un availability of health care facilities at remote areas, the chances of drug default also increase. The rate of prosthetic valve thrombosis (PVT) was found to be between 0.03% and 0.13% per patient-year.[2] The average mortality rates reported at 12% (range 6% to 69%) Various thrombolytic agents and regimens have been used to improve the outcomes.[4-6] There has always been uncertainty regarding type of thrombolytic agent, its dose, and rate of administration. There are no clear guidelines regarding the predictors of thrombolytic therapy and various complications especially bleeding. Direct comparison of surgery with fibrinolysis is difficult, so, all the present guidelines depend on individual opinions and non-randomized trials. There are no class IA recommendations for these modalities. We are reporting a case of stuck mitral valve with severe left ventricular

dysfunction which was successfully thrombolysed with alteplase.

CASE REPORT

A 57 years old lady, an old case of rheumatic heart disease (RHD) with severe mitral stenosis (MS), post mitral valve replacement (mechanical SJM 29 mm) in 2013, has presented with breathlessness New York Heart Association (NYHA) class 3 since 15 days. She has history of drug default. On examination she had blood pressure (BP) 90/56 mmHg, pulse 90 /min irregularly irregular, had bilateral pedal edema. Cardiovascular (CVS) examination revealed muffled heart sounds. There was pansystolic murmur grade III at lower left sternal edge. She also had bilateral basal crackles. The electrocardiography (ECG) was suggestive of atrial fibrillation.

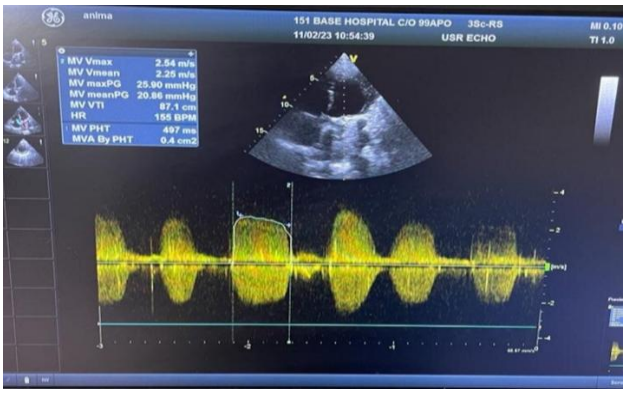

Figure 1: Prethrombolysis MVA.

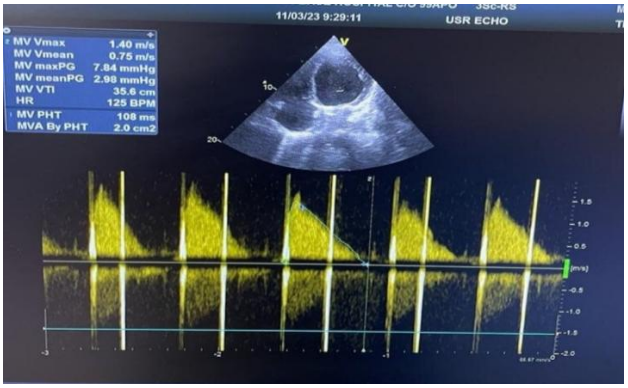

Figure 2: Post thrombolysis MVA.

Laboratory investigations were normal except low INR, hematocrit, and hemoglobin level (10 gm/l due to iron deficiency anemia). On suspicion of stuck mitral valve urgent 2D ECHO was done. Transthoracic echocardiogram (TTE) confirmed stuck mitral valve leaflet, with a high mean pressure gradient across prosthetic mitral valve (MV) (18 mmHg). She had severe pulmonary arterial hypertension (PAH) with maximum gradient right ventricular systolic pressure (RVSP) of 60 mm. Left ventricular ejection fraction (LVEF) was 20%. Fluoroscopy is not available at our centre. She was thrombolysis with 25 mg alteplase over 06 hours along with unfractionated heparin infusion @1000 u/hour for 24 hours. 2D ECHO was repeated after 24 hours which revealed leaflets of mitral valve moving freely, with MVA >2 cm^2. Mean gradient was reduced to 4 mm Hg across mitral valve. PAH has reduced to 36 mm. she was successfully discharged in NYHA 1 state after restarting oral anticoagulants and getting INR in therapeutic range.

DISCUSSION

The low flow MV is more prone for stuck valve complications than high flow aortic valve. The most common cause of mechanical valve dysfunction is thrombosis especially due to drug default in patients living in remote areas with limited access to health care and follow up. Karthikeyan et al in their meta-analysis of seven studies concluded that urgent surgery was not superior to fibrinolytic therapy for stuck valve.[7] The major drawback with thrombolytic therapy is bleeding and thromboembolism there has been different views regarding thrombolysis of stuck valve and few advocate slow thrombolysis to prevent thromboembolism. TROIA trial compared 5 different thrombolytic regimens.[8] The authors concluded that low-dose slow infusion of t-PA was effective and safe thrombolysis for prosthetic valve thrombosis.[9] In our case we were successfully able to thrombolyse the stuck valve without any complications.

CONCLUSION

Slow thrombolytic regimen can be tried for stuck mechanical heart valves especially were cardiothoracic surgical option in not available. It is safe and effective.

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Ethical approval: Not required

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