University Journal of Medicine and Medical Specialities

ISSN 2455- 2852 2020, Vol. 6(1)

AN INTERESTING CASE OF PROSTHETIC VALVE THROMBOSIS POSING THERAPEUTIC CHALLENGE IN PREGNANCY

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Abstract :
Pregnant females presenting with prosthetic valve thrombosis carries high morbidity and mortality if not timely intervened. In the few reported cases of prosthetic mitral valve thrombosis, where surgical intervention was considered as high risk, fibrinolytic therapy was utilized and found to be life saving. We present clinical, laboratory, and imaging data from a pregnant patient, with prosthetic mitral valve thrombosis and its successful management with tenecteplase. The use of tenecteplase as a viable fibrinolytic agent was justified, due to the immunogenicity concerns of streptokinase.

Keyword :
Pregnancy , Prosthetic valve thrombosis , Thrombolysis, Tenecteplase

INTRODUCTION

Prosthetic valve thrombosis [PVT] is an emergency condition following prosthetic valve replacement. It may produce systemic embolism and deterioration of clinical status. The hypercoagulable state during pregnancy increases the incidence of prosthetic valve thrombosis. The occurence of prosthetic valve thrombosis in a pregnancy carries a worse prognosis as it can cause death of either fetus or mother even both. In this context treatment of this condition in pregnancy pose a challenging task for treating personnel to ensure the safety of the mother and the fetus.

CASE REPORT

A 23 year old female had prosthetic valve replacement for severe mitral stenosis six months ago [TTK CHITRA valve, 25 mm size] . She was advised to continue tablet Acenocoumarol 2 mg daily. She became pregnant after 2 months and had excessive vomiting due to which she stopped Acenocoumarol for 5 days. Soon after she developed acute onset of dyspnoea which was NYHA class III associated with 2 episodes of hemoptysis and palpitation at rest. On examination patient was tachypnoeic; Pulse 120 per minute; BP 110 / 80 mmHg; On auscultation prosthetic valve sound was absent; bilateral basal creptitations present. ECG showed sinus tachycardia with rate 120 / minute QRS axis 30. PT INR was below the target level [2.5-3.5] and was 1.08 in this patient.

FIGURE 1 : ECG of patient during presentation

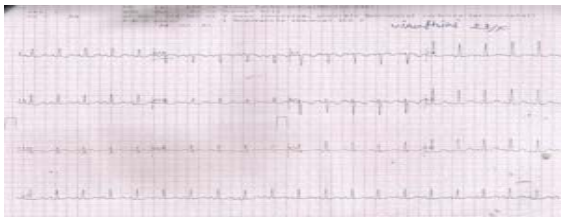

FIGURE 1

ECHO showed restriction of prosthetic mitral valve opening and Thrombus of 14 X 8 mm size was noted in the prosthetic mitral valve. The gradient across the prosthetic mitral valve was higher with mean value of 23 mmHg and the peak gradient value of 35 mmHg. Aortic regurgitation was moderate and was having mild pulmonary hypertension with normal biventricular function. Patient was diagnosed as a case of prosthetic valve thrombosis and was started on Streptokinase 2.5 lakhs bolus followed by 1 lakh per hour infusion as per the recommendation. After 45 minutes patient developed hypersentivity reaction to streptokinase in the form of utricaria and hypotension. Streptokinase infusion was stopped and was started on unfractionated heparin infusion at the rate of 800 units / hour. Patient continued to have dyspnoea and the mean and peak gradients were 16.5 and 23.7 mmHg respectively. PT INR was 1.14 .It was decided to start Tenecteplase as infusion 25 mg in 250 ml normal saline at the rate of 1 mg / hour infusion. Obstetrician opinion was obtained .Patient developed weakness of right upper and lower limb with confusion after half an hour. Tenecteplase was stopped . Neurophysician opinion was obtained. CT brain was taken with abdominal lead shielding. CT did not show evidence of hemorrhage. Tenecteplase was started again . Later the hemiparesis improved. Echo showed opening of prosthetic mitral valve and there was no evidence of prosthetic valve thrombosis. The mean and peak gradient across prosthetic mitral valve came down to 7 and 12 mmHg respectively. Patient improved symptomatically.. Patient was started on unfractionated heparin 5000 I.U. 6 th hourly instead of continous infusion since the patient had hemoptysis at presentation and aPTT could not be monitored, along with Acenocoumarol 2 mg once daily. PT INR was 2.4. After 3 days heparin was stopped and Acenocoumarol was continued after discharge.

FIGURE 2 : ECHO showing increased gradient across prosthetic mitral valve

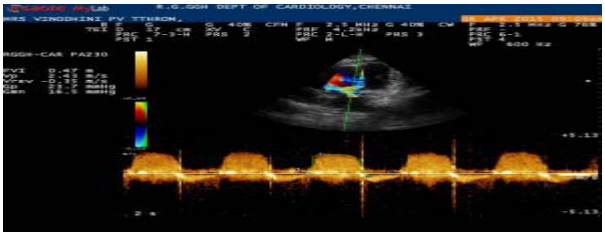

FIGURE 2

FIGURE 3 : Reduced gradient across prosthetic mitral valve after lysis

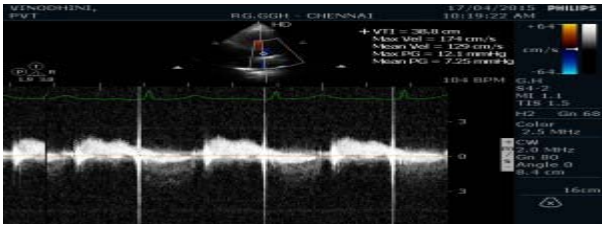

FIGURE 3

DISCUSSION

Inadequate thromboprophylaxis due to interruption in oral anticoagulant therapy or recent episodes of atrial fibrillation are important causes of PVT. [1,2]The risk of embolism is greater with the valve in mitral position as compared to aortic position. Embolic episodes were more when size of thrombosis is more than 10 mm in size . The largest literature review of women with a prosthetic heart valve who were on anticoagulation during pregnancy reported that maternal death related to prosthetic valve thrombosis occurred in 2% of the women taking only warfarin, 4% of the women who received unfractionated heparin in the first trimester followed by warfarin, and 15% of the women treated with unfractionated heparin throughout their pregnancy. [3] The guidelines for prosthetic valve thrombosis suggest optimizing anticoagulation in noncritically ill patients with recent subtherapeutic anticoagulation. Surgery is recommended when anticoagulation fails, for critically ill patients with obstructive thrombosis, or for patients with large (10 mm) nonobstructive PVT complicated by embolism. Fibrinolysis is recommended for either critically ill patients when surgery is not immediately available or when PVT is right-sided. During pregnancy cardiac surgery is associated with very high maternal mortality (6 %)and fetal mortality (30%).[4] Choosing an appropriate lytic agent is important. Streptokinase and urokinase are associated with lower cerebral hemorrhagic complication rates, and streptokinase is associated with increased incidence of allergic reactions. Recombinant tissue plasminogen activator has the fastest onset of action and shortest half-life. [5] In our case streptokinase allergy made us to resort to tenecteplase.

The incidence of miscarriage was 20% in previous studies. Miscarriages occurred 1 to 5 weeks after thrombolysis. In our case patient was found to continue her pregnancy on two months follow up after the tenecteplase . Low-dose, slow infusion of tPA protocol was associated with the highest thrombolytic success (86%) and lowest complication rates (10.5%) with no mortality in previous studies. This suggests guidelines for the treatment of PVT in pregnant patients need to be updated for the extended usage of thrombolysis in these patients. Eventhough tenecteplase was not recommended routinely for thrombolysis in prosthetic valve thrombosis, its use in our case resulted in a dramatic response. This case is presented for the rarity of this combination and successful outcome with tenecteplase.

CONCLUSIONS

Low-dose, slow infusion of tenecteplase with repeat doses if necessary is an effective treatment with very high rate of thrombolytic success for the treatment of PVT in pregnancy. This protocol is safer than cardiac surgery. Thrombolysis should be considered as first-line therapy in pregnant patients presenting with PVT.

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