

## **ST-Elevation Myocardial Infarction of Inferior wall and Right ventricle in a Rheumatic mitral stenosis due to thrombus at Right coronary sinus.**

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### **Abstract**

Coronary embolization is a rare cause of myocardial infarction. Here we describe a case of severe rheumatic mitral stenosis, presented as acute (inferior wall and right ventricle) ST elevation myocardial infarction (STEMI) due to embolism of thrombus in the right coronary aortic sinus.

**Key Words:** Coronary embolization; mitral stenosis; ST-Elevation Myocardial Infarction

### **Introduction**

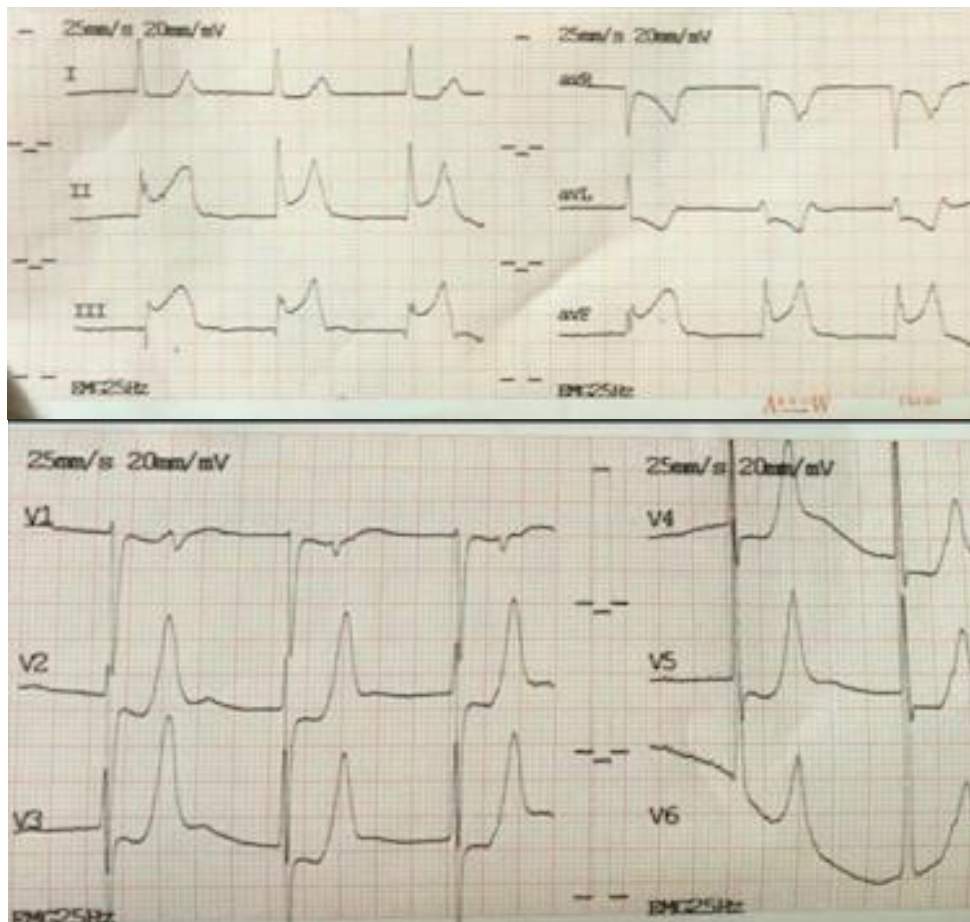
Coronary embolism is a uncommon but highly catastrophic clinical entity. Suspicion should arise when acute myocardial infarction occurs in association with an underlying condition which predisposes to embolism. The common predisposing conditions are valvular heart disease, a prosthetic heart valve, infective endocarditis, cardiomyopathy with mural thrombus and arrhythmia. The diagnosis is frequently masked by atypical symptoms, ECG changes which are also frequently transient. The diagnosis often requires demonstration of normal coronary arteries by selective coronary arteriography. Treatment requires compliance to long-term anticoagulants may prevent further embolic event.

### **Case report**

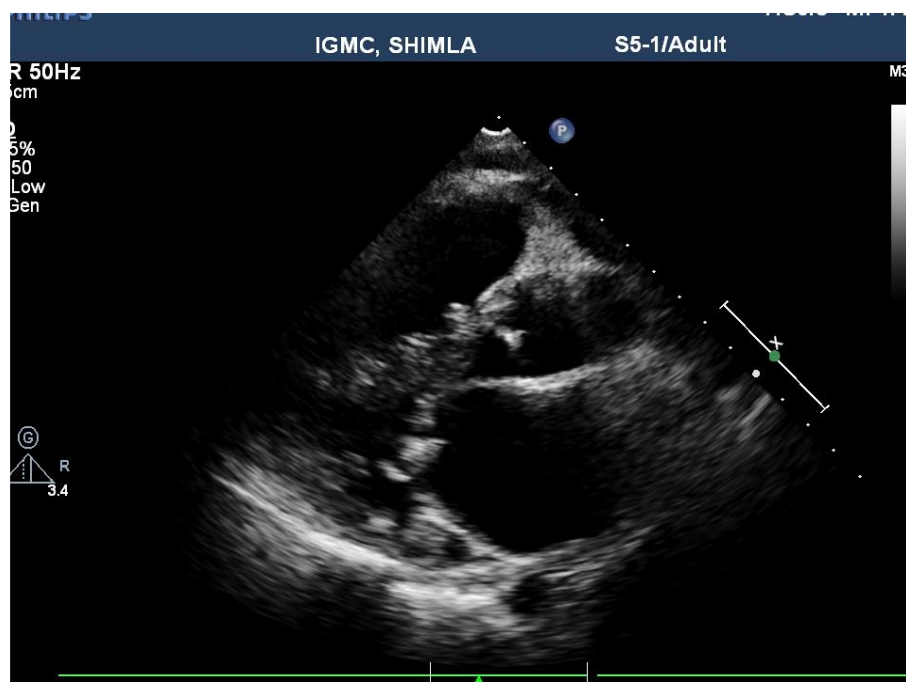
A 34 year male presented with a prolonged episode of retrosternal crushing pain of sudden onset on the day of admission.

On presentation the patient had STEMI (Inferior and RV myocardial infarction) and was in Cardiogenic shock with a systolic pressure of 60 mmHg and heart rate of 120 beats per minute which was irregularly irregular.

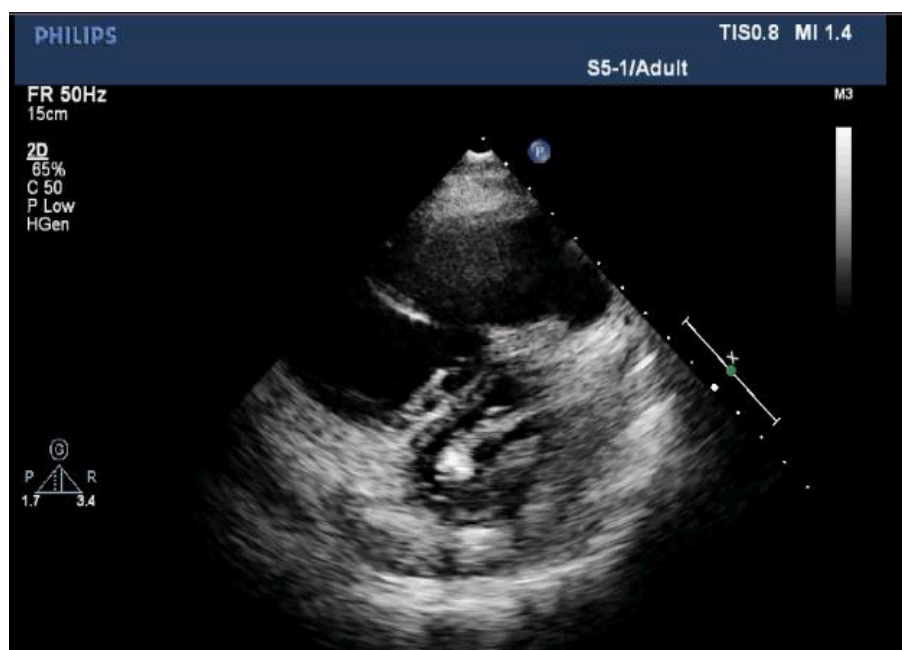
Precordial examination revealed a tapping apical impulses, S2 single, opening snap, and a mid-diastolic rumble over the apex. These findings were suggestive of severe mitral stenosis. ECG was suggestive of Inferior and RV MI (ST segment elevation in leads II, III, aVF with reciprocal changes in chest leads (Figure 1,2). Echocardiography showed severe mitral stenosis with MVA of 0.7cm<sup>2</sup>, akinetic inferior wall, reduced LV functions, RA, RV dilated, RV contractions markedly reduced, TAPSE = 8, tricuspid valve non coaptation, tricuspid regurgitation, IVC dilated and collapsing index <50% (Figure 3-8). The incidental and shocking finding was the presence of thrombus at right coronary sinus in short axis view at great arteries. (Figure 9)



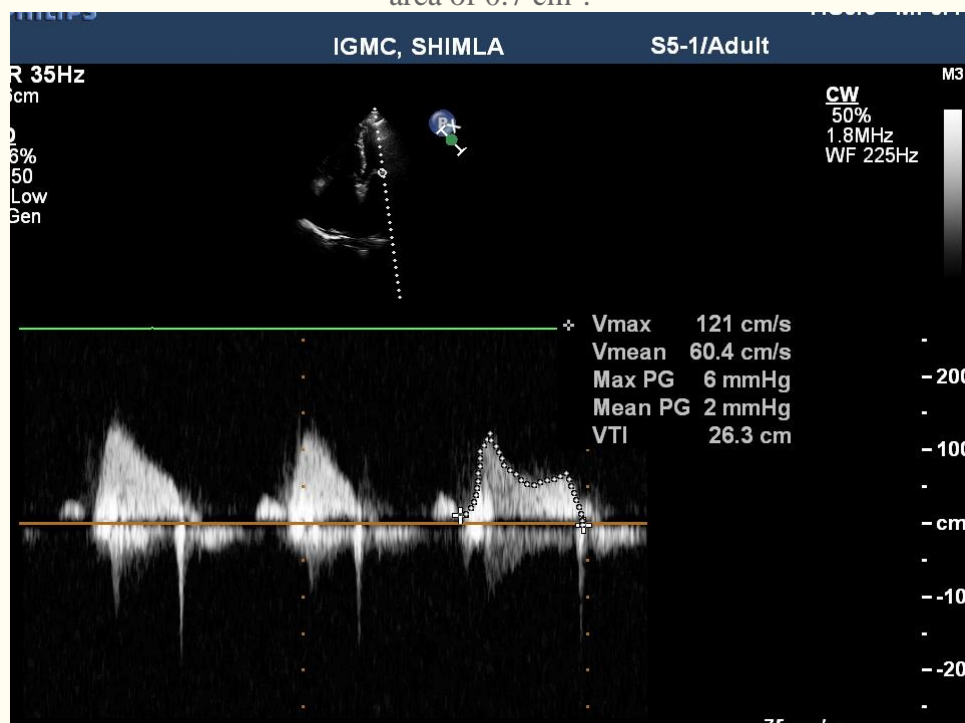
**FIGURE 1,2:** ECG was suggestive of Inferior and RV MI (ST segment elevation in leads II, III, aVF with reciprocal changes in chest leads



**FIGURE 3:** Transthoracic echocardiogram parasternal long-axis view showing mitral stenosis with a thickened posterior mitral leaflet and the doming of the anterior mitral leaflet.



**FIGURE 4 :**Parasternal short-axis view at the mitral valve level showing the mitral valve area of 0.7 cm<sup>2</sup>.



**FIGURE 5 :** Doppler interrogation of the mitral valve showing the elevated mean and peak transmitral gradients and the pressure half-time

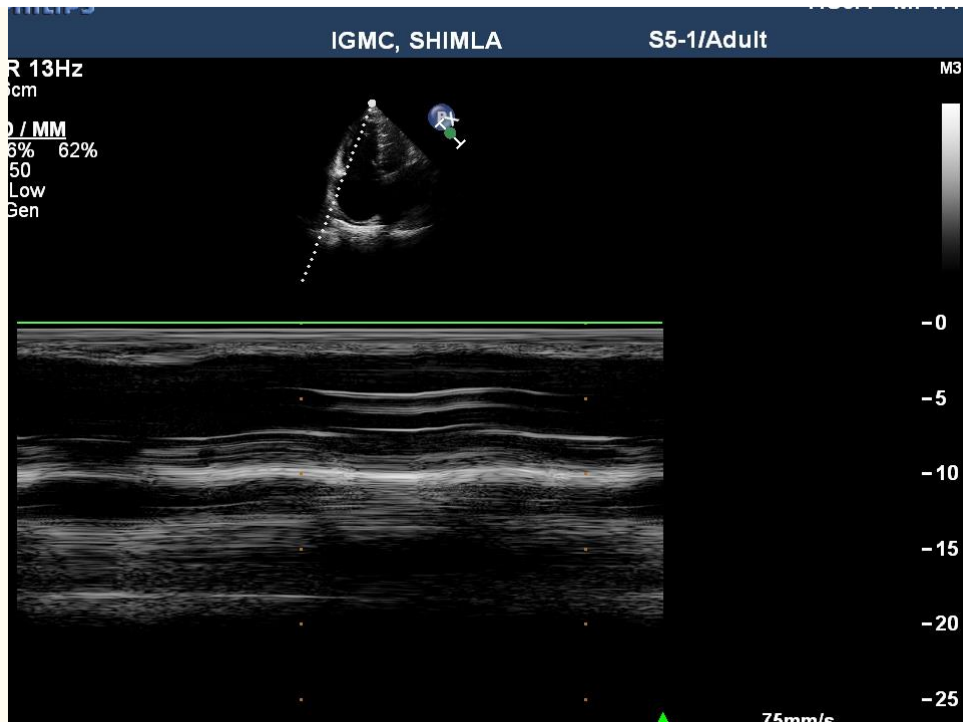


FIGURE 6 : Dilated right atrium and right ventricle, with right ventricle dysfunction ,TAPSE is 8.

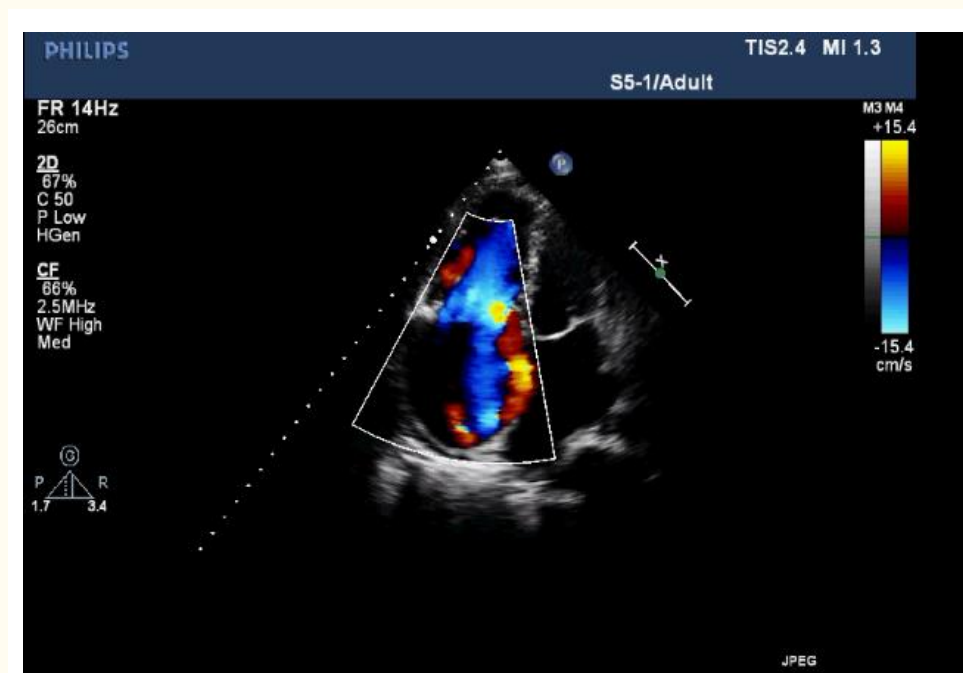


FIGURE 7 : Non coapting tricuspid leaflets with severe tricuspid regurgitation which is eccentric.

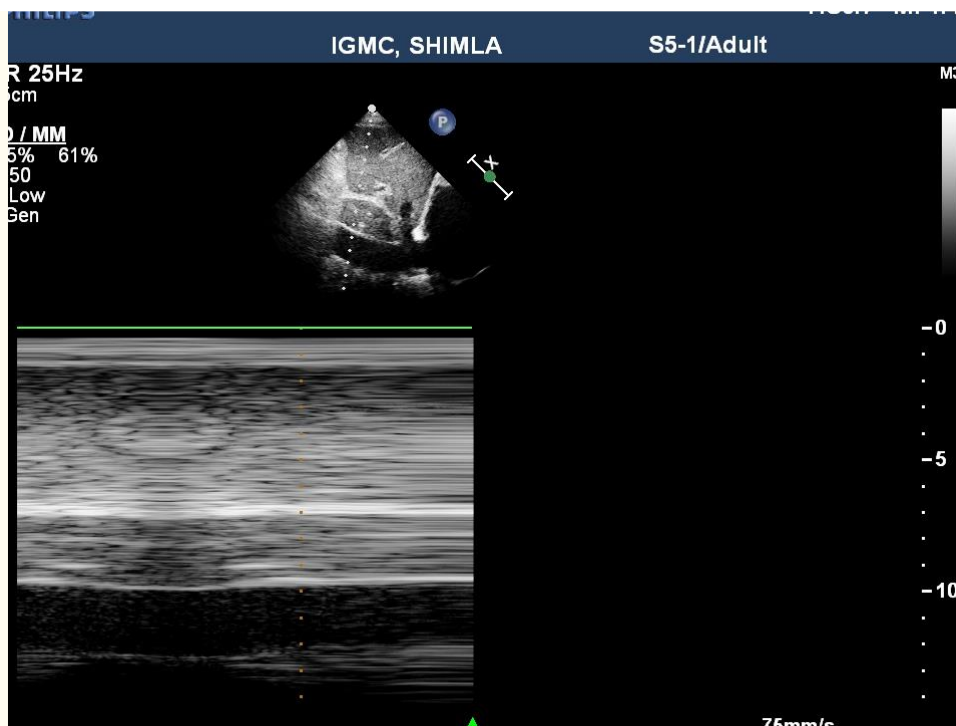


FIGURE 8 :Dilated IVC with no respiratory variation.

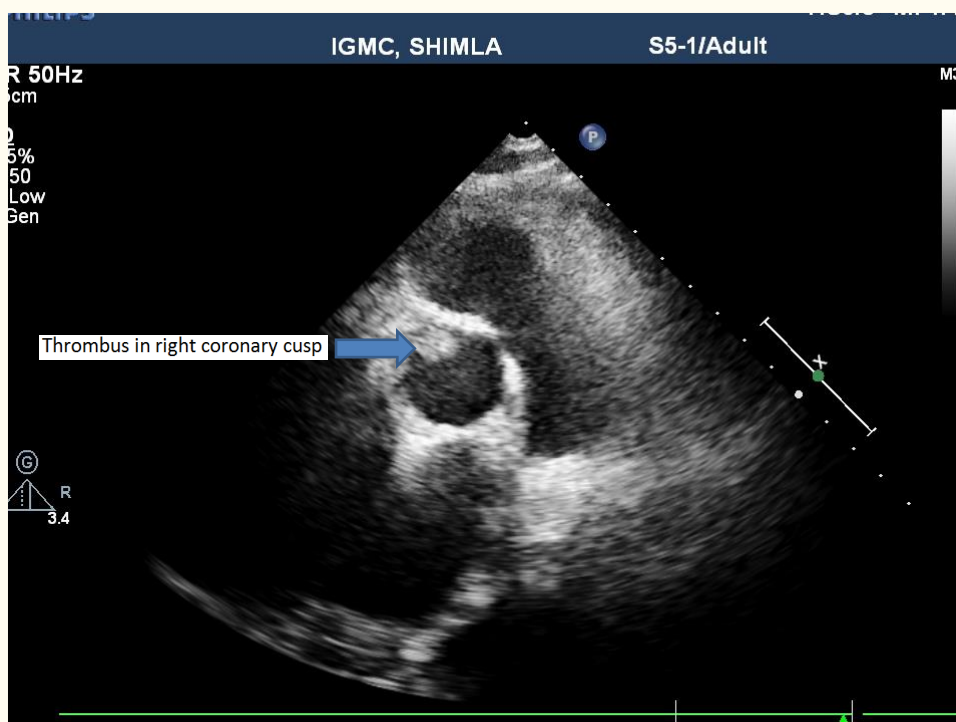


FIGURE 9 : short axis at great arteries level showing thrombus at right coronary sinus extending into RCA ostium.

The patient was hemodynamically unstable and started on inotropic and ventilatory supports immediately. The need for urgent coronary angiography followed by revascularization was

explained to the patient attendants. The risks and prognosis associated was discussed with the relatives.

During the discussion the patient collapsed and resuscitative measures were initiated. Despite best efforts of the cardiac and critical care team the patient could not be resuscitated and was declared.

### **Discussion**

This is a case of acute STEMI due to coronary artery embolism in a patient with mitral stenosis. Mitral stenosis is a known cause of systemic and pulmonary embolism. The presence of atrial fibrillation increases the risk of systemic embolism. Data available on the incidence of coronary embolism in patients with mitral stenosis with or without associated atrial fibrillation is very scant. Mitral stenosis presenting for the first time as acute STEMI is uncommon. The study by Prizel et al <sup>(1)</sup> showed that 13% of infarcts are related to coronary artery embolism in the autopsy-studied infarcts. The first case was published by Virchow in 1856, that was a postmortem description of coronary embolism. In angiographically normal coronary arteries coronary embolism appears to be the most reasonable explanation for acute myocardial infarction <sup>(2)</sup>. Wenger and Bauer <sup>(3)</sup> found 11 cases of coronary artery embolism in 17,469 consecutive autopsy cases at Mount Sinai Hospital, New York, with a general necropsy incidence of 0.06%. Charles and colleagues reported that coronary embolism occurs in the left coronary artery in 75% of cases and three-quarters of them present with ST elevation myocardial infarction, whereas the rest present with non-ST elevation myocardial infarction <sup>(4)</sup>. Underlying diseases predisposing to coronary emboli included valvular heart disease (40%), cardiomyopathy (29%), coronary atherosclerosis (16%), and chronic atrial fibrillation (24%), mural thrombi were present in 18 (33%). In our case, the right coronary artery was involved and the patient presented with ST elevation myocardial infarction.

### **References**

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