

## “Silent” mitral stenosis in sinus rhythm with left atrial thrombus presenting as embolic stroke in an elderly male

Sourya Acharya<sup>1,\*</sup>, Nakul Kadam<sup>2</sup>, Akash Daswaney<sup>3</sup>

<sup>1</sup>Professor, <sup>2</sup>Assistant Professor, <sup>3</sup>Intern, Dept. of Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Wardha, Maharashtra, India

**\*Corresponding Author:**

Email: souryaacharya74@gmail.com

### Abstract

Silent mitral stenosis (MS) is an occult clinical entity. It remains hidden because of absence of clinical signs. Left atrial thrombus in mitral stenosis is usually common with atrial fibrillation (AF). We present a case of a 63 year old man who presented with acute stroke and found to have silent mitral stenosis in sinus rhythm with LA thrombus.

**Keywords:** Thrombus, Atrial, Stroke, Mitral stenosis.

### Introduction

Silent MS described on the basis of absence of classic mid diastolic murmur in MS. This occurs in severe MS where the hugely dilated RV causes clockwise rotation of heart and the LA lies posterior to the RV which forms the apex. Furthermore, the severely stenotic valve itself decreases the mitral diastolic flow. Other common causes of silent MS are MS with atrial septal defect (ASD) also known as Lutembacher's syndrome, emphysema, obesity. Rarely, large LA thrombus also can decrease the flow through the valve and silence the diastolic rumble.<sup>1</sup>

### Case Report

A 63 year old male obese, sedentary shopkeeper who sits in his ration shop from 8 am to night 10 pm presented with sudden onset dense right sided hemiplegia. The weakness was instantaneous and complete to begin with. There was no history of vomiting, seizures, diplopia, unconsciousness and fever. On asking leading questions the patient gave history of gradually progressive dyspnea of 8 months now, (NYHA grade 3) for which patient was consulting his family doctor and was given asthma medications. There was no history of diabetes, hypertension.

In this hospital, General examination; Body mass index (BMI) 34 Kg/m<sup>2</sup>. Pulse was 102/minute, regular but low volume. BP was 98/60 mm of Hg. JVP was 13 cm of water in 45<sup>0</sup> angle. His oxygen saturation while breathing ambient air was 94%. CNS examination revealed complete right sided hemiplegia with supranuclear right 7<sup>th</sup> nerve palsy. CVS examination revealed RV apex, Grade 3 parasternal heave and diastolic shock. Auscultation of apex revealed soft s1 and physiologic splitting of second heart sound, there were no murmurs. Pulmonary component of second heart sound was loud in left 2nd space. Abdominal examination revealed palpable liver 1cm below right costal margin which was soft and tender. CT brain revealed infarct in left gangliocapsular and centrum

semi ovale. ECG showed right axis deviation, P mitrale and R:S > 1 in V1 suggestive of RV hypertrophy. A 2D echo was planned.

Echocardiographic finding: Mitral valve area measured 0.40 cm<sup>2</sup> suggesting critical stenosis with mitral annular calcification (MAC). (Fig. 1) An enlarged left atrium measuring 3.39x4.48 cm in diameter. The left atrium showed intracavitary thrombus with spontaneous echo contrast inside the left atrium. (Fig. 2) He was started with anticoagulation therapy inj. Enoxaparin overlapped with oral warfarin with a target INR of 2.5 to 3. Patient underwent mitral valve replacement with thrombectomy after 1 month.



**Fig. 1: Trans thoracic echocardiogram short axis view showing stenotic mitral valve**



**Fig. 2: 2D echo showing dilated left atrium, left atrial thrombus, echo contrast in LA**

## Discussion

Diagnosis of cardioembolic stroke is usually clinical. In a classic situation it occurs instantaneously and is often complete with maximum neurodeficit at the onset. Rarely, it can cause seizures along with weakness. Rheumatic mitral stenosis is a common cause of stroke.<sup>2</sup> The estimated prevalence of cardioembolic strokes is around 3-8% in various studies.<sup>3-5</sup>

Rheumatic heart disease with mitral valve involvement is one of the leading cause of cardioembolic strokes in developing countries like India.<sup>6,7</sup>

Silent mitral stenosis is a state where a severely stenosed and heavily calcified mitral valve does not produce a loud S1 or apical diastolic rumbling murmur.

A study described the patho-anatomical factors that are responsible for disappearance of the classic apical mid diastolic rumble in mitral stenosis.<sup>8</sup> The factors described were; marked restriction of mitral valve movement, adhesion, thickening and shortening of chordae tendineae causing further stenosis beneath the valve, a postero-medially deviated mitral valve orifice, huge left atrial thrombus and combinations of these factors.<sup>9,10</sup>

The risk of systolic embolism in patients with left atrial thrombus is estimated to be around 10.4% per year.<sup>11</sup> The presence of left atrial spontaneous echo contrast, severe left ventricular dysfunction, and mitral annular calcification (MAC) or stenosis further augment the pathophysiologic process for thrombus formation. It may also be seen in patients who are in sinus rhythm. In a study of patients in sinus rhythm the incidence of spontaneous echo contrast was 21% and 13% percent out of these cases had an associated left atrial thrombus.<sup>12</sup> In a study concerning the left atrial size, mitral valve score and valve gradient, it was observed that LA thrombus was more commonly found in MS with atrial fibrillation rather than in normal sinus rhythm.<sup>13</sup>

It has also been suggested that MAC may serve as a nidus for thrombus formation. MAC is associated with a twofold increase in the incidence of stroke, independent of traditional risk factors. The rarity of our case was the LA thrombus in severe MS in normal sinus rhythm. The large size of LA secondary to severe MS and spontaneous echo contrast contributed to formation of thrombus.

Development of left atrial thrombus in mitral stenosis in sinus rhythm is the rarity of our case. Severe calcific critical stenosis with LA thrombus was the reason for absent diastolic murmur with a soft first heart sound.

## Conclusion

Silent MS is a rare entity. Because of lack of clinical signs it may remain undiagnosed. Development of left atrial thrombus is a complication of rheumatic mitral stenosis. Atrial fibrillation increases the chances of development of LA thrombus. In patients of MS in normal sinus rhythm the prevalence of LA thrombus remains low. In patients of acute ischemic stroke, cardiovascular examination and evaluation with ECG and echocardiography should be mandatory.

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