

LEFT ATRIAL THROMBUS IN PATIENTS WITH MODERATE MITRAL STENOSIS AND SINUS RHYTHM

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ABSTRACT

Background: Clot in left atrial (LA) is one of the complications rheumatic mitral valvular stenosis. Many factors determine the risk of LA thrombus which include atrial fibrillation, larger left atrium size, elderly people, and severity of lesion. Objective: To assess frequency of left atrial clot in patients with moderately stenotic valve. **Methodology:** Study design: cross sectional study. Study Setting: Choudry Parvaiz Elahi Institute of Cardiology, Multan. Study duration: 1st, November 2016 to 31st May 2017. Study subjects comprises of 147 patients of either gender, moderate mitral stenosis on echocardiographic assessment and sinus rhythm were included in the study. Transesophageal echocardiographic assessment was performed to see left atrial clot. Data was entered in SPSS version 20 and analyzed. **Results:** Patients were between 18 to 60 years with mean age of 40 ± 7 years. Mean LA size was 42.9 ± 1.1 mm. Majority of the patients were of 18-40 years, 95 (64.6%). Majority of patients were female 82 (55.8%). Echo contrast as moving shadows was present in 53 (36.1%) patients. LA thrombus was seen in 20 (13.6%) of patients. **Conclusion:** Frequency of LA clot is quite high even in patients with moderately stenotic valve and sinus rhythm. Anticoagulating these patients can reduce the risk of associated thromboembolism.

Keywords: Rheumatic mitral stenosis, Left atrial thrombus, Frequency

INTRODUCTION

Mitral stenosis (MS) is among the common sequelae of rheumatic involvement of valves of heart, leading to increase in left atrium size and risk of clot formation.¹ LA clots frequency range is between 26-33% of patients, with severely stenotic mitral valve.^{2,3,4} Peripheral embolic events are also increased in these patients.⁵ TEE is highly sensitive for detecting LA clots even smaller with high sensitivity and specificity.^{6,7} Left atrial (LA) clot is common even with relatively smaller LA size if co-existent atrial fibrillation is also present and with sinus rhythm there is still chance of atrial fibrillation about 4-31%.⁸⁻¹⁰ The present study targeted the specific population of moderate mitral stenosis and sinus rhythm to determine the frequency of left atrial thrombus in these patients on transesophageal echocardiography.

METHODOLOGY

It is a cross sectional study conducted in department of cardiology CPEIC Multan from 1st November 2016 to 31st May 2017. A total of 147 patients of moderate mitral stenosis and sinus rhythm of both genders and between 18-60 years of age from indoor department of Choudry Parvaiz Elahi Institute of Cardiology, Multan were included in the study by non-probability consecutive sampling technique after permission from ethical committee and research department. Following group of patients were excluded who

had mitral regurgitation (MR), previous PTMC, patients taking antiplatelet or anticoagulation and who had IHD. Informed consent was taken. Patients were evaluated and basic demographics like age and gender were noted. Every patient with moderate mitral stenosis was evaluated with transesophageal echocardiography for visualization of left atrial (LA) thrombus. Transesophageal echocardiography was performed in study patients to detect LA clot. Data was collected for left atrial thrombus. Data was analyzed with SPSS version 20.0. Frequency and percentage were calculated for qualitative variables like age groups, gender, spontaneous echo contrast and left atrial thrombus. Mean \pm SD was presented for quantitative variables like age and LA size. Stratification was done with regard to age, gender, spontaneous echo contrast and LA size to see the effect of these variables on left atrial thrombus. Chi-square test was used for post stratification and $p \leq 0.05$ was considered statistically significant.

RESULTS

Age range in this study was from 18 to 60 years with mean age of 40 ± 7 years. Mean LA size was 42.9 ± 1.1 mm. Majority of the patients were of 18-40 years 95 (64.6%) and 52 (35.4%) were above 41 years. Majority of patients were female 82 (55.8%). Spontaneous Echo Contrast was present in 53 (36.1%) patients. LA Thrombus was seen in 20 (13.6%) patients, as shown in Figure-I. Stratification of LA Thrombus with respect to age groups, gender,

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LA size and Spontaneous echo contrast are shown in Table I.

Figure I: Frequency of left atrial thrombus (n=147)

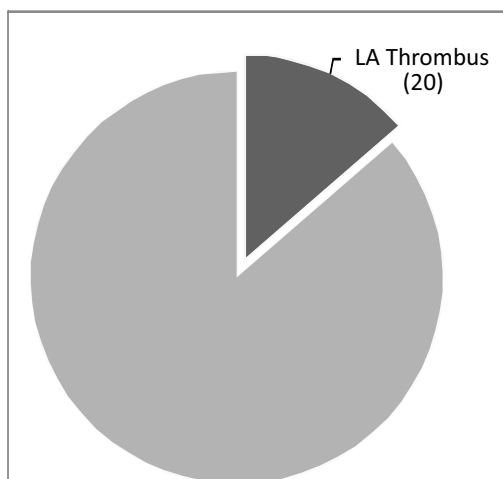


Table I: Stratification of LA Thrombus with respect to age, gender, LA size and spontaneous echo contract.

Age Groups (Years)	LA Thrombus		P-value
	Yes	No	
18-40	10(10.5%)	85(89.5%)	0.141
41-60	10(19.2%)	42(80.8%)	
Total	20(13.6%)	127(86.4%)	
Stratification of LA Thrombus with respect to gender			
Gender	LA Thrombus		P-value
	Yes	No	
Male	9(13.8%)	56(86.2%)	0.940
Female	11(13.4%)	71(86.6%)	
Total	20(13.6%)	127(86.4%)	
Stratification of LA Thrombus with respect to LA size.			
LA size (mm)	LA Thrombus		P-value
	Yes	No	
≤ 42	4(9.8%)	37(90.2%)	0.397
> 42	16(15.1%)	90(84.9%)	
Total	20(13.6%)	127(86.4%)	
Stratification of LA Thrombus with Spontaneous Echo Contrast			
Spontaneous Echo Contrast	LA Thrombus		P-value
	Yes	No	
Yes	6(11.3%)	47(88.7%)	0.544
No	14(14.9%)	80(85.1%)	
Total	20(13.6%)	127(86.4%)	

DISCUSSION

Mitral stenosis is an important cause of morbidity and mortality especially in under developed countries. Severity of MS is also related with increasing incidence of LA clot and atrial fibrillation.¹⁰ LA appendage is most common site of clot formation in patients with MS regardless of severity of MS and presence of atrial fibrillation. TEE has much greater sensitivity and specificity for detecting LA clot especially for seeing clot in

LAA.¹¹ In our study, there were 147 patients. There was a female predominance with 55.8% patients being females as compared to 44.2% being males. This is probably due to the fact that valvular heart diseases especially rheumatic mitral valve disease is more common among females. LA Thrombus was seen in 13.6% patients. Hassan M and his associates has also found that frequency of left atrial thrombus in patients with rheumatic mitral stenosis and sinus rhythm on transesophageal echocardiography was 4.02%.⁸ Ali SM and his associates has found in another study that frequency of left atrial thrombus in patients with rheumatic mitral stenosis and sinus rhythm on transesophageal echocardiography was 31.1%.⁹

In a study in China,¹² left atrial clot presence in mitral stenosis patients and no mitral regurgitation showed strong statistical relation, however they did not show a relation to left atrial size. Another result of this study was the comparison of clot frequency in patients in sinus rhythm with those in atrial fibrillation.

Ahmad et al also showed high frequency of LA clot in stenotic mitral valve patients and again noted the previously observed finding of high atrial fibrillation prevalence in this group of patients.¹³ LA appendage clot can be found in LA as well as in LAA with slightly higher incidence in LAA.¹⁰

Hwang *et al* in a study observed LA thrombus in 28 patients (56%) by TEE.¹⁴ In another small study conducted on 22 patients with mitral stenosis and AF Karatasakis et al observed LA thrombus in 12 patients (54%).¹⁵ Srimannarayana et al noted 33.2% of patients have LA clot.¹⁶

CONCLUSION

Frequency of Left atrial clot is quite high even in patients with moderate mitral stenosis and sinus rhythm. Anticoagulating these patients can reduce the risk of associated thromboembolism. TEE should be performed in all patients with moderate mitral stenosis in whom a thrombus in LA is suspected or needs to be excluded regardless of rhythm.

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