

Trans-oesophageal Echocardiographic Appraisal of Left Atrial Appendage Clot in Severe Mitral Stenosis.

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ABSTRACT

Background and Aims

Left atrial appendage clot is a common complication of mitral stenosis. The management of patient differs significantly if there is presence of clot. Various factors had been studied as a risk factor for clot formation. We aim to assess the prevalence of left atrial appendage clot by trans-oesophageal echocardiography in patients of severe mitral stenosis planned for percutaneous transvenous mitral commissurotomy and analyze the factors responsible for it.

Methods: An observational prevalence study was conducted among 100 patients of severe mitral stenosis who were undergoing trans-oesophageal echocardiography before percutaneous transvenous mitral commissurotomy and prevalence of left atrial appendage clot were recorded. Data were entered in the SPSS and factors responsible for clot formation were analyzed.

Results: Out of 100 enrolled patients, 69 (69%) were female. Mean age of presentation was 37.4±13.70 years. Mean age of female was 38.11±13.13 years and male was 35.80±14.98 years. Mean mitral valve area was 0.87±0.12 cm² and mean left atrial size was 4.79±0.60 cm. Atrial Fibrillation was present in 32 (32%) patients. Trans-oesophageal echocardiography revealed left atrial appendage clot in 28 (28%). Gender showed no correlation with presence of clot (p=0.06). Increasing age (p=0.002), presence of Atrial Fibrillation (p=0.005) and larger left atrial size (p<0.01) showed significant positive correlation with left atrial appendage clot formation.

Conclusion: Left atrial appendage clot was common finding in severe mitral stenosis patients. Patients with advanced age, presence of atrial fibrillation and larger left atrial size were more likely to have clot formation.

Citation

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Keywords

Left atrial appendage clot, Mitral stenosis, Trans-oesophageal echocardiogram,

INTRODUCTION

Mitral stenosis (MS) is a pathological narrowing of mitral valve, the commonest cause of which is a rheumatic heart disease (RHD).^{1,2,3} Normal mitral valve area is 4-6 cm². Significant hemodynamic change occurs when it is reduced to half. In severe MS valve area is reduced to less than 1 cm².

Studies have shown the higher incidence of thromboembolic complications in patients with mitral stenosis specially if they are in atrial

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fibrillation (AF).^{4,5,6} Left Atrial Appendage (LAA) is the common site of thrombus formation. Enlargement of Left Atrium (LA) increases the risk of thrombus formation.⁷ Increasing age and severity of MS also increase the risk of thrombus formation.^{5,8} Depressed LAA function has also shown to be one of the predictor of LAA clot.⁹

The objective of this study was to see the prevalence of LAA clot in severe MS patients who were planned for percutaneous transvenous mitral commissurotomy (PTMC) and factors associated with increased risk of clot formation.

METHODS

This was an observational prevalence study. Patients who presented at Shahid Gangalal National Heart Centre between October 2012 to April 2013 who were diagnosed as a severe MS and planned for PTMC were randomly included. The patients who were under aspirin or anticoagulants were excluded. Trans-oesophageal echocardiography (TEE) was done under local anesthesia spray. Presence or absence of LAA clot was noted. The relationship of clot to age, gender, LA size and presence of AF were observed. Data entry was done in SPSS version 14 for windows. Relation of gender and presence of AF to LAA clot were tested using Chi Square test. The One Way ANOVA test was applied to compare mean of Age and LAA size to the presence of LAA clot. P value was calculated and value less than 0.05 was considered significant.

RESULTS

Out of 100 enrolled patients 69 (69%) were female and 31(31%) were male. The age of presentation ranged between 12-65 years. The mean age of presentation was 37.4±13.70 years. The mean age of female was 38.11±13.13 years and male was 35.80±14.98 years. The mean mitral valve area was 0.87±0.12 cm². AF was present in 32 (32%) patients. The LA size ranged between 3.6-7.0 cm with mean of 4.79±0.60 cm. The baseline characteristics of the enrolled participants are shown in table 1.

Table 1. Baseline characteristics of 100 patients.

Variables	Values
Age (Years) (SD)	37.4±13.70
Gender Male/Female (No.) (%)	31/69 (31/69%)
Age Male/Female (Years) (SD)	35.80±14.98/38.11±13.13
AF (No.) (%)	32 (32%)
Mitral valve area (cm ²)	0.87 ±0.12
LA Size (cm)	4.79 ± 0.60

TEE revealed LAA clot in 28 (28%) patients

Gender showed no correlation with the presence of LAA clot. A total of 23 (33.33%) female and 5

(16.12%) male had LAA clot with p values of 0.06.

Age showed positive correlation with presence of LAA clot. The mean age of those with absent clot was 34.73±13.33 years and those who had clot was 44.25±12.39 years with p value of 0.002.

The presence of AF showed positive correlation with LAA clot. Among 28 (28%) patients with LAA clot 15 (53.57%) were in AF. On the other hand among 72 (72%) patients without LAA clot only 17 (23.61%) were in AF with p value of 0.005.

The mean LA size of those without LAA clot was 4.63±0.47 cm while the mean LA size of those with LAA clot was 5.18±0.72 cm. The LA size showed positive correlation with LAA clot, with p value of < 0.01. All 4 (4%) participants having LA size of 6.1 cm or more were having LAA clot.

Table 2. p value in relation to the variables tested.

Variables	No LAA Clot	With LAA Clot	P values
Gender (Male/ Female) (No.) (%)	26 / 46 (83.87/66.66)	5/23 (16.12/33.33)	0.06
Age Years (SD)	34.73±13.33	44.25±12.39	0.002
AF (No.) (%)	17 (23.61%)	15 (53.57%)	0.005
LA size (cm)	4.63±0.47	5.18±0.72	<0.01

DISCUSSION

RHD is one of the common cardiovascular problem in Nepal.^{10,11,12} As the severity of MS increases, the incidence of thrombus formation in LA and LAA increases.⁸ The present study evaluated the cases of severe MS for the presence of LAA clot using TEE.

The mean age of the participants was 37.4±13.70 years. Muhammad Tariq et al in the study of severe MS with AF had mean age of 39.20± 11.41 years.¹³ In another study the mean age of presentation was 32.32±12.21 years.⁸ The majority of the participants in our study (69%) were female. This was expected as MS is more common in female. In a study by Mahmood ul Hassan et al 60.6% of the participants were female.¹⁴

Our study found 32 (32%) patients in AF. In a study by Ali M et al 13.2% of patients of MS were in AF.¹⁵ In an another study 37.5% of patients of severe MS were in AF.⁸

The study found no correlation between gender and presence of thrombus. Age showed positive correlation with presence of LAA thrombus. Patients with advanced age were more likely to have thrombus (p=0.002). This was in accordance with the published literatures by Goswami et al and Ali M et al.^{9,15}

Presence of AF was more likely to have LAA

thrombus in the cases of MS. Ahmad et al had previously reported AF as an important factor associated with LA thrombus.¹⁶

The present study found that those who have larger LA size were more likely to have LAA thrombus. Mahmood ul Hassan et al had shown those with LA size ≥ 4.5 cm were more likely to have LAA clot.¹⁴ Similarly Conradie C et al reported LA enlargement a risk factor for LA thrombus.¹⁷

Our study had some limitations. We only included the cases of severe MS planned for PTMC and not

those who were not fit for PTMC. The patients who had significant mitral regurgitation were not included. Only variables like age, gender, presence of AF and LA size were evaluated. Duration of AF was not considered.

CONCLUSION

Our study suggests that LAA clot was common finding in severe MS patients. Patients with advanced age, AF and larger LA size were more likely to have LAA clot in our setting.

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