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ORIGINAL ARTICLE

Assessment of incidence of LV thrombus in patients undergoing Echocardiography: An observational study

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***ABSTRACT*:**

Background: Left ventricular thrombus (LVT) can complicate left ventricular (LV) systolic dysfunction both in ischemic and non-ischemic cardiomyopathies and can lead to thromboembolic complications such as stroke.Hence; the present study was conducted for assessing theincidence of LV thrombus in patients undergoing Echocardiography. **Materials & method:**A total of 150 patients scheduled to undergo echocardiography were included in the present study. A self-framed questionnaire was given to all the patients for obtained the detailed demographic profile of the patients. Complete haematological and biochemical picture of all the patients was obtained. All the patients underwent echocardiography under the hands of skilled cardiologist. Compilation of all the results was done in Microsoft excel sheet, followed by analysis with SPSS software. **Results:** Thrombus was detected in 20 patients. Among the thrombus positive patients, hypertension was present in 8 patients, while diabetes and dilated cardiomyopathy were present in 4 and 6 patients respectively. Among the thrombus negative patients, hypertension was present in 48 patients, while diabetes and dilated cardiomyopathy were present in 23 and 20 patients respectively. **Conclusion:** Thrombus is present in significant proportion among general population.

Key words: Echocardiography, Thrombus.

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INTRODUCTION

With improvement in interventional and pharmacological therapies, patients with cardiovascular disease are enjoying longer lives despite extensive myocardial disease. Left ventricular thrombus (LVT) can complicate left ventricular (LV) systolic dysfunction both in ischemic and non-ischemic cardiomyopathies and can lead to thromboembolic complications such as stroke.[1-3] Thrombus formation reflects the presence of factors that represent the Virchow's triad in the ventricle – reduced wall motion, local myocardial injury and hypercoagulability/stasis of blood flow.[4-6]The combination of blood stasis, endothelial injury and hypercoagulability, often referred to as Virchow's triad, is a prerequisite for in vivo thrombus formation. In the presence of LV thrombus formation after AMI, the three components of this triad can also be recognised.[5, 6]Hence; the present study was conducted for assessing the incidence of LV thrombus in patients undergoing Echocardiography.

MATERIALS & METHODS

We planned the present research in the cardiology department of the medical institute and it was aimed forassessing the incidence of LV thrombus in patients reporting to the hospital OPD for medical health check-up. Ethical approval was obtained before the starting of the study. A total of 150 patients scheduled to undergo echocardiography were included in the present study. A self-framed questionnaire was given to all the patients for obtained the detailed demographic profile of the patients. Complete haematological and biochemical picture of all the patients was obtained. All the patients underwent echocardiography under the hands of skilled cardiologist. Compilation of all the results was done in Microsoft excel sheet, followed by analysis with SPSS software.

RESULTS

In the present research, we assessed the incidence of LV thrombus in patients undergoing routine medical checkup. Analysis of a total of 150 patients was done. Echocardiography was carried out in all the patients. Mean age of the patients of the present study was 42.5 years. Thrombus was detected in 20 patients.Among the thrombus positive patients, hypertension was present in 8 patients, while diabetes and dilated cardiomyopathy were present in 4 and 6 patients respectively. Among the thrombus negative patients, hypertension was present in 48 patients, while diabetes and dilated cardiomyopathy were present in 23 and 20 patients respectively.

Table 1: Demographic data

Parameter	Number
Mean age	42.5
Males	102
Females	48
Total	150

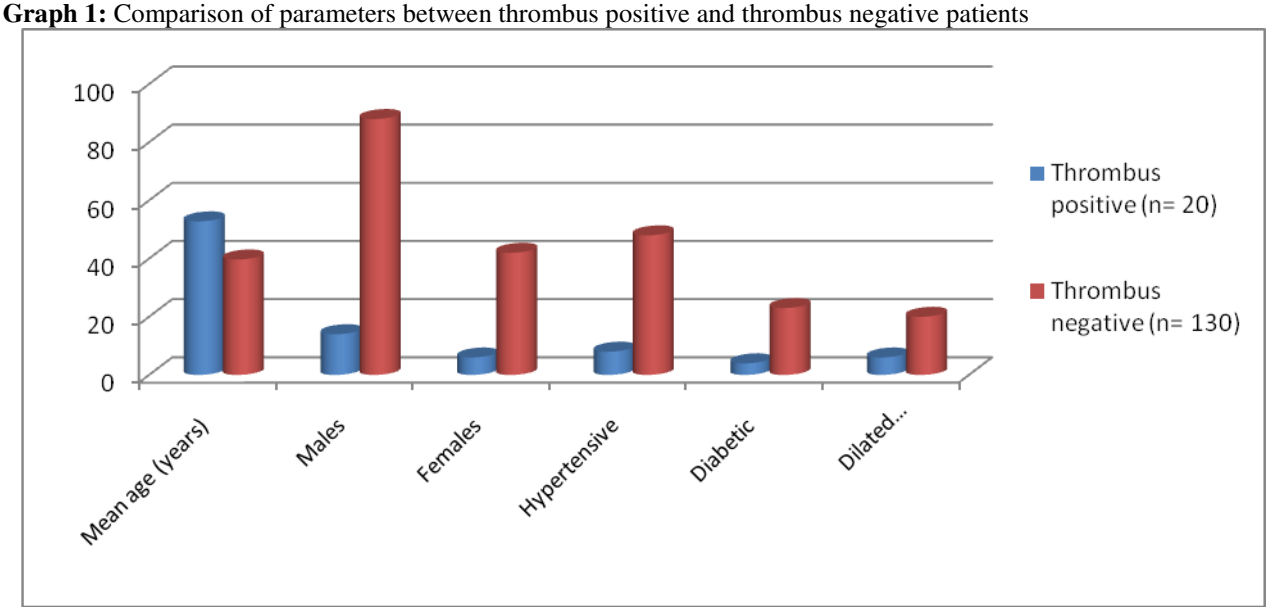
Table 2: Incidence of thrombus

Parameter	Number of patients	Percentage
Incidence	20	8

Table 3: Comparison of parameters between thrombus positive and thrombus negative patients

Parameter	Thrombus positive (n= 20)	Thrombus negative (n= 130)
Mean age (years)	52.8	39.7
Males	14	88
Females	6	42
Hypertensive	8	48
Diabetic	4	23
Dilated cardiomyopathy	6	20

Graph 1: Comparison of parameters between thrombus positive and thrombus negative patients



DISCUSSION

Left ventricular (LV) mural thrombus formation is a recognized complication of acute myocardial infarction, as well as LV dysfunction associated with nonischemic cardiomyopathy.1,2 In the past, the incidence of LV mural thrombus have been reported to be as high as 20% to 40% for patients who suffer a large anterior ST elevation infarction, resulting in severe apical dyskinesis or akinesis with possible aneurysm formation. Factors contributing to mural thrombus formation include segmental dysfunction of the infracted myocardium, causing stasis of endocardial tissue, inflammation, which provides a thrombogenic surface, and development of a hypercoagulable state. Congestive cardiomyopathy has also been shown to increase the risk of LV mural thrombus formation.[7- 9]

In the present research, we assessed the incidence of LV thrombus in patients undergoing routine medical checkup. Analysis of a total of 150 patients was done. Echocardiography was carried out in all the patients. Mean age of the patients of the present study was 42.5 years. Thrombus was detected in 20 patients. Uchida Y et al assessed the prevalence of ventricular thrombi. From April 2000 to 31 March 2008, 258 patients (104 females and 154 males; age 63 ± 6 years) with a heart disease underwent cardioscopy of the left ventricle. LVT were detected by cardioscopy in 78 of 258 patients; 12.5% of 57 patients with stable angina, 0% of 9 with unstable angina, 45.2% of 42 with acute myocardial infarction, 23.2% of 43 with old myocardial infarction, 61.9% of 21 with idiopathic acute myocarditis, 44.3% of 68 with idiopathic chronic myocarditis, 33.3% of 6 with rheumatic valvular disease, 25.7% of 31 with idiopathic dilated cardiomyopathy and in 8.0% of 12 with idiopathic hypertrophic cardiomyopathy. Nine of 78 thrombi were globular and 69 were mural. The detection rate of LVT by cardioscopy, left venticulography, non-contrast and contrast echocardiography was 30.2%, 2.7%, 1.9% and 7.0%, respectively. LVT were frequently detected by cardioscopy in patients with heart diseases.[10]

In the present study, among the thrombus positive patients, hypertension was present in 8 patients, while diabetes and dilated cardiomyopathy were present in 4 and 6 patients respectively. Among the thrombus negative patients, hypertension was present in 48 patients, while diabetes and dilated cardiomyopathy were present in 23 and 20 patients respectively. Talle MA et al determined the prevalence and aetiology of LVT among patients undergoing echocardiography. They reviewed case notes and echocardiographic data of patient diagnosed with LVT using noncontrast transthoracic echocardiography. Definition of various conditions was made using standard guidelines. Total of 1302 transthoracic echocardiograms were performed out of which 949 adult echocardiograms were considered eligible. Mean age of all subjects with abnormal echocardiograms was 44.73 (16.73) years. Abnormalities associated with LVT were observed in 782/949 (82.40%) subjects among whom 84/782 (8.85%) had LVT. The highest prevalence of 39.29% (33/84) was observed in patients with dilated cardiomyopathy,

followed by myocardial infarction with a prevalence of 29.76% (25/84). Peripartum cardiomyopathy accounted for 18/84 (21.43%) cases with some having multiple thrombi, whereas hypertensive heart disease was responsible for 6/84 (7.14%) cases. The lowest prevalence of 2.38% (2/84) was observed in those with rheumatic heart disease. Left ventricular EF of <35% was recorded in 55/84 (65.48%). Left ventricular thrombus is common among patients undergoing echo, with dilated cardiomyopathy being the most common underlying aetiology followed by myocardial infarction.[11]

CONCLUSION

Under the light of above obtained results, the authors conclude that thrombus is present in significant proportion among general population. However; further studies are recommended.

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