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ORIGINAL ARTICLE

Frequency of LV Thrombus Formation after Anterior Wall St-Segment Acute Myocardial Infarction

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ABSTRACT

Objective: To assess the frequency of thrombus formation in LV post Anterior wall ST Segment elevation acute MI.

Methodology: In this descriptive case series during the year 2018 we included 100 cases of age 40-70years of either gender presenting with STEMI planned to undergo Transthoracic echocardiography. Demographic information including name, age, gender, BMI, smoking and diabetes (BSR>186mg/dl) was also noted. Then patients were admitted in cardiology wards and were followed-up there. Then patients were discharged after 3days and were followed-up in OPD for one week. After one week, patients were evaluated on 2-D Transthoracic echocardiography and LV thrombus was labeled. The patients who had LV thrombus, were managed as per hospital protocol.

Results: The mean age of patients was 56.68±8.59years. There were 90 (90%) males and 10 (10%) females. The mean BMI of patients was 24.54±3.49kg/m^2. There were 43 (43%) smokers and 57 (57%) were non-smokers. There were 36 (36%) diabetics and 64 (64%) were non-diabetics. In this study, 63 (63%) underwent thrombolysis and 87 (87%) underwent primary PCI after STEMI. There were 7 (7%) cases who developed LV thrombus while 93 (93%) were remained free of LV thrombus.

Concussion: Frequency of Left ventricular thrombus formation is low in our local population.

Keywords: Left ventricular thrombus, anterior wall myocardial infarction, ST-segment elevation myocardial infarction, Transthoracic echocardiography

INTRODUCTION

STEMI is a type of ACS (acute coronary syndrome) [1]. Thin fibrous cap with large lipid core and inflammation of atherosclerotic plaque may result in plaque fissuring. Rupture of the plaque results in activation of platelets and this thrombosis leads to coronary artery occlusion which results are the majority of ST-segment elevation myocardial infarction. In 5-10% of the patients with non obstructive coronary artery disease the main causes of STEMI are coronary artery dissection, vasospasm and embolisation [2].

Arrhythmias, HF severity, Heart Rate, LAD disease and Caucasians etc are independent baseline factors that can cause thrombus in LV [3,17]. In STEMI patients left ventricular dysfunction is often seen with increased Troponin-T levels [4,15]. thrombus formation in LV is an important and lethal complication of MI (myocardial Infarction) and associated mostr often with SATEMI [5].

Iqbal MW and collegues revealed in their study that occurrence of thrombus in LV was 28% in ptainets with STEMI [6]. Solheim S and collegues showed LV thrombus occurred in 15% of STEMI patients [7]. Some other studies revealed very low frequencies of thrombus formation ranging 4%, 4.3% and even 2% respectively [8-10,12].

No local evidence was found in data to assess the frequency of LV thrombus formation in our local population. This study was conducted to find risk of LV thrombus in our population and hence to improve the management of such patients and building up guidelines for the treatment of STEMI in our part of the world.

METHODOLOGY

In this descriptive case series during the year 2018 we included 100 cases of age 40-70years of either gender presenting with STEMI planned to undergo Transthoracic echocardiography, we excluded those with liver disease (AST>40IU, ALT>40IU, hepatitis C or B), abnormal clotting profile (PT>20sec, aPTT>15sec, INR>2), history of MI, chronic LV thrombus or coronary artery bypass grafting and with posterior or inferior wall STEMI. Demographic information including name, age, gender, BMI, smoking and diabetes (BSR>186mg/dl) was also noted. Then patients were admitted in cardiology wards and were followed-up there. Then patients were discharged after 3days and were followed-up in OPD for one week. After one week, patients were evaluated on 2-D Transthoracic echocardiography and LV thrombus was labeled. The patients who had LV thrombus, were managed as per hospital protocol.

RESULTS

The mean age of patients was 56.68±8.59years. There were 90 (90%) males and 10 (10%) females. The mean BMI of patients was 24.54±3.49kg/m^2. There were 43 (43%) smokers and 57 (57%) were non-smokers. There were 36 (36%) diabetics and 64 (64%) were non-diabetics. In this study, 63 (63%) underwent thrombolysis and 87 (87%) underwent primary PCI after STEMI.

There were 7 (7%) cases who developed LV thrombus while 93 (93%) were remained free of LV thrombus. Fig 1

In male patients, LV thrombus was developed in 7 (7.8%) cases. In female patients, LV thrombus was developed in 0 (0.0%) cases.

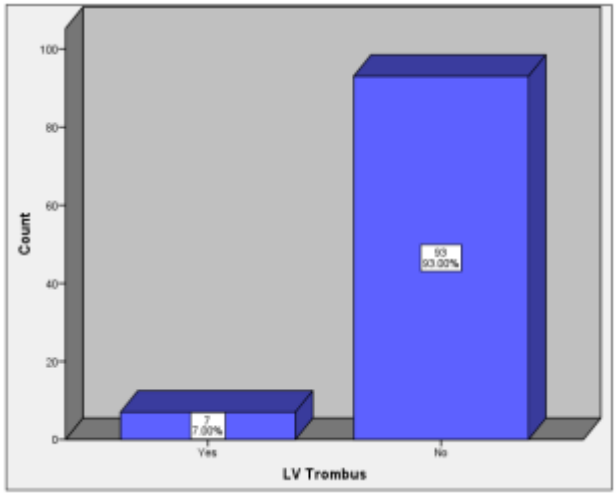

Fig. 1

In patients given thrombolysis, LV thrombus was developed in 5 (7.9%) cases. In patients not given thrombolysis, LV thrombus was developed in 2 (5.4%) cases. The difference was insignificant (p>0.05). In patients underwent PCI, LV thrombus was developed in 5 (5.7%) cases. In patients not underwent PCI, LV thrombus was developed in 2 (15.4%) cases. The difference was insignificant (p>0.05). Table II

Table 1: Comparison of LV thrombus in thrombolysis strata

		Thrombolysis		Total
		Yes	No	
LV Thrombus	Yes	5	2	7
		7.9%	5.4%	7.0%
	No	58	35	93
		92.1%	94.6%	93.0%
Total		63	37	100
		100%	100%	100%

Chi-Square Test = 0.229, p-value = 0.632 (Insignificant)

Table 11: Comparison of LV thrombus in PCI strata

		PCI		Total
		Yes	No	
LV Thrombus	Yes	5	2	7
		5.7%	15.4%	7.0%
	No	82	11	93
		94.3%	84.6%	93.0%
Total		87	13	100
		100%	100%	100%

Chi-Square Test = 1.614, p-value = 0.204 (Insignificant)

DISCUSSION

The formation of thrombus in Left Ventricle in patients with acute anterior wall STEMI is a well known complication. Earlier studies revealed that the incidence of this complication is ranging from2% - 60%in large Anterior wall STEMI, which significantly depends on time and method of reperfusion therapy post STEMI [13,14,19].

Our study revealed that LV thrombus was formed in 3 (7%) of the STEMI patients and remaining 93 (93%) of patients didn't develop thrombus in LV. Iqbal and colleagues showed that thrombus in LV occurs in 27% of their patients with STEMI [6].

Rehan et al., also showed 4.3% LV thrombus in STEMI patients.[9] Zielinska et al., reported very low frequency of LV thrombus i.e. 2.5% in STEMI patients.[10]

Porter A and colleagues revealed that 23.5% of their patients developed thrombus in LV. They adopted aggressive reperfusion therapy along with the use of anti aggregant therapy in patients with acute anterior wall STEMI. Their study showed high incidence of LV thrombus in anterior wall STEMI[20]. Study conducted by Solheim and his colleagues showed that 15a5 of their patients with STEMI developed LV thrombus [7].

Sacham and colleagues reported that 4% of their STEMI patients developed thrombus in LV. Their study also revealed that individuals with LV thrombus had lower ejection fraction in comparison with individuals who were without thrombus in LV on (p = 0.005) and at discharge (p <0.001). Decreased EF on admission, thrombolysis in MI flow grade ≤1 before PCI and prolong time between onset of symptoms and primary PCI were independent p[predictors of early thrombus formation in LV. It was concluded that decreased EF, delayed reperfusion and lower thrombolysis in MI score markedly raised the incident of thrombus formation in LV even in presence of primary PCI [8].

Rehan and colleagues reported 4.3% thrombus formation in LV [9]. Zielinska and colleagues showed a low incidence of thrombus formation in LV i.e. 2.5% [10].

CONCLUSION

Incidence of LV thrombus was very low in our population who presented with STEMI. These results will help us in updating protocols for screening patients with STEMI for LV thrombus in our local hospitals thus will help in avoiding the lethal consequences of this complication. The results of this study will help us to improve our practice by implementation of better management and therapeutic protocols.

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