

ORIGINAL ARTICLE

Frequency of Pericardial Effusion after Acute Anterior Wall Myocardial Infarction Presenting at Tertiary Care Hospital, PeshawarWASIM SAJJAD¹, SAMI UR REHMAN², ABDUL LATIF³, ABDUR RAHIM⁴, RAHID ULLAH⁵, DAUD AHMAD JAN⁶, HAFIZ ADIL BILAL⁷¹FCPS Cardiology, Registrar Cardiology Unit Lady Reading Hospital, Peshawar²FCPS Cardiology, Registrar Cardiology Unit Lady Reading Hospital, Peshawar³FCPS Cardiology, FCPS-II Interventional Cardiology Interventional Fellow Hayatabad Medical Complex (HMC), Peshawar⁴FCPS Cardiology Medical Officer Cardiology Unit Saidu Teaching Hospital, Swat⁵FCPS Cardiology, Fellowship Intervention Cardiology at National Institute of Cardiovascular Diseases (NICVD), Karachi⁶FCPS Cardiology in Charge Cardiology Unit DHQ, Charsadda⁷FCPS Cardiology Medical Officer at THQ Hospital Tangi CharsaddaCorrespondence to: Abdul Latif, Email: abdullateyf189@hotmail.com, Cell: +92 3334589092**ABSTRACT****Objective:** To determine the frequency of pericardial effusion after acute anterior wall myocardial infarction.**Design of the Study:** Cross sectional study.**Study Settings:** The study was conducted at Cardiology Department, Lady Reading Hospital, Peshawar from 13/5/2019 to 13/11/2019.**Material and Methods:** Total of 122 patients were included. Baseline investigation including ECG (cardiofax) and transthoracic echocardiography (Siemens' Accuson CV-70), was done within 72 hours of acute anterior wall myocardial infarction. All the information like for age, gender, hypertension, diabetes, previous history of CAD, and smoking were recorded.**Results of the Study:** In this study mean age was 63 years with standard deviation ± 8.99 . Sixty two patients were male while 38% patients were female. More over 24% patients had pericardial effusion and 76% patients didn't had pericardial effusion. More over 24% patients had pericardial effusion and 76% patients didn't had pericardial effusion.**Conclusion:** Conclusion of our study states that the frequency of pericardial effusion was 24% after acute anterior wall myocardial infarction..**Keywords:** Pericardial effusion, acute, anterior wall myocardial infarction.**INTRODUCTION**

A leading cause of morbidity and mortality in recent years is cardiovascular disease (CVD). It has been estimated that CVD is the reason of more than 100,000 deaths annually.¹The main contributor to the high rate of heart failure is Myocardial infarction. In a clinical setting acute myocardial infarction (AMI) is termed as necrosis of cardiomyocyte consistent with acute myocardial ischemia, the rise in values of cTn or fall in cTn values of detection having minimum one value exceeding the 99th percentile URL.² Pericardial effusion (PE) can grow from any condition comprising pericarditis and a variety of systemic disorders that affects the pericardium. PE may also have a significant impact on the prognosis or diagnosis of the disease. PE has very diverse clinical causes; iatrogenic causes, along with common causes such as malignancies, autoimmune or idiopathic diseases and infections, have attracted attention.^{3,4,5}

Pericardial effusion in setting of STEMI can present clinically with chest pain and can mimic another episode of myocardial infarction. Echocardiography is a convenient apparatus for establishing the diagnosis of pericardial effusion.⁸ Moderate pericardial effusion may lead to cardiac tamponade in patients with ST-elevation myocardial infarction which may shows as arterial hypotension and can also produce heart failure and hence can increase morbidity and mortality (1.5%- 32%).^{9,10} These hemodynamic changes correlate with the clinical features of cardiac tamponade.^{11,12}

Although many studies had been conducted on this topic but our study differs those because of different cultural, socioeconomic conditions, education level and living standards of our population. Furthermore, the findings of this research will be shared to other health professionals and will be used for further research work in health sciences.

MATERIAL AND METHODS

After receiving approval from the hospital's ethical and research committee, the study was carried out. Patients reporting to the Outpatient Cardiology Department, Lady Reading Hospital, Peshawar from 13/5/2019 to 13/11/2019.

Patients of both genders age between 30 years to 60 years presenting with severe anterior STEMI with central, retro sternal, constant chest pain for more than four hours were involved in this

research. Patients with history of previous myocardial infarction, heart failure (on the basis of echocardiography), CKD chronic kidney disease (on the basis of ultrasound), tuberculosis (on the basis of history and sputum examination, chest x-ray), hypothyroid. (On the basis of thyroid function test) were not included in the reserach. After taking the informed consent patients were admitted in cardiology ward. Baseline investigation including ECG (cardiofax) and transthoracic echocardiography (Siemens' Accuson CV-70), was done within 72 hours of acute anterior wall myocardial infarction. All the information like for age, gender, hypertension, diabetes, previous history of CAD, and smoking were documented in a predesign proforma. To prevent bias in the study results, exclusion criteria were strictly observed.

The data was examined in SPSS version 22, thoroughly. The standard and mean deviation were computed for continuous variable factors such as age. Frequency and percentage were computed for categorical factors like previous history of CAD, gender, diabetes, hypertension and smoking, pericardial effusion. Pericardial effusion was stratified for age, gender, previous history of CAD, diabetes, hypertension and smoking to see the effect modifiers. The chi square test was used after stratification in which value of $P \leq 0.05$ was considered significant.

RESULTS

Age distribution was studied in this research as 15(12%) patients of 30-40 years of age, 41(34%) patients of 41-50 years age, 66(54%) patients of 51-60 years age as shown in Table 1. Status of hypertension was analyzed and it was present in 87(71%) patients, diabetes mellitus 71(58%) patients, smoking 41(34%) patients, history of CAD 38(31%) patients and pericardial effusion 29(24%) patients as shown in Table 2. Stratification of pericardial effusion regarding age, gender, hypertension, diabetes, previous history of CAD, and smoking is given in Table 3.

Table 1: Distribution of age and gender of the patients

Parameter	Age (years)	Frequency	Percentage
Age	30- 40	15	12%
	41-50	41	34%
	51-60	66	54%
Gender	Male	76	62%
	Female	46	38%

Table 2: Frequency of different variable in study sample

Parameter	Age (years)	Frequency	Percentage
Hypertension	Yes	87	71%
	No	35	29%
Diabetes Mellitus	Yes	71	58%
	No	51	42%
Smoking	Yes	41	34%
	No	81	66%
Family History	Yes	38	31%
	No	84	69%
Pericardial Effusion	Yes	29	24%
	No	93	76%

Table 3: Stratification of pericardial effusion with age, gender, hypertension, diabetes mellitus, smoking and history of CAD

Parameter	Sub-division of parameter	Pericardial effusion		P value
		Yes	No	
Age group	30-40 years	3	12	0.9350
	41-50 years	10	31	
	51-60 years	16	50	
Gender	Male	18	11	0.9770
	Female	58	35	
Hypertension	Hypertensive	21	8	0.8805
	Non-hypertensive	66	27	
Diabetes mellitus	Diabetic	17	12	0.9577
	Non-diabetic	54	39	
Smoking	Smoker	10	19	0.9089
	Non smoker	31	62	
History of CAD	Present	9	20	0.1745
	Not present	29	64	

DISCUSSION

After acute myocardial infarction, pericardial effusion is common and usually early complication and its frequency with AMI varies from patient to patient.^{13, 14}

Our research presents that the average age with standard deviation ± 8.99 was 63 years. 62% were male patients whereas 38% were female patients. More over 24% patients had pericardial effusion and 76% patients didn't had pericardial effusion. Galve E et al. found similar results in another research^{14, 15} wherein pericardial effusion was discovered in 28% of AMI patients. 25% of AMI patients, 8% of patients with unstable angina (p < .02) had pericardial effusion on the 3rd day. Prevalence of pericardial effusion at 1, 3, and 10 days and 3 and 6 months was 17%, 25%, 21%, 11%, and 8%, respectively. No evidence of tamponade was found. PE was more common in anterior AMI (p < .02) and patients of heart failure (p < .05) however, it was not linked to initial pericarditis, maximum (creatin kinase) CK-MB, mortality or the anticoagulation level. As a result, PE is a common occurrence in AMI patients (incidence of 28%), however, no special issues arise as a result of this. PE has slow rate of reabsorption and according to our observations Moderate or mild PE does not prevent treatment of heparin.

Pierard LA, et al observed similar results carried out in another study¹⁶ wherein PE was noticed in 17 (26%); PE in 13 patients was small, 3 in moderate and in large was 1 with cardiac tamponade indication. The presence of myocardial rupture was strongly suggested by two-dimensional echocardiography in this patient. The PE observation was not linked with sex, age, atrial fibrillation, treatment with heparin or previous myocardial infarction. The complication of anterior acute infarction was more common than inferior acute infarction. PE patients had higher wall motion score index, peak level of lactic dehydrogenase and creatine kinase.

Rehman et al.¹⁷ Shah et al.¹⁸ also observed similar results in his study 200 patients was included having mean age 56±18 (28 y to 90 y) with acute myocardial infarction (AMI). Among 65.5% were

male and females were 34.5%. On day 0 PE was present in 4.5% patients, on day 2 in 12.5% patients and on day 4 in 15% patients. Failure of left ventricular was reported in 9.5% patients with and in 21% patients without pericardial effusion (p<0.05%).

CONCLUSION

Conclusion of our study states that the frequency of pericardial effusion was 24% after acute anterior wall myocardial infarction.

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