Original Article

C- Reactive Protein with Acute Myocardial Infarction

To Determine the Elevated C- Reactive Protein in Patients with Acute Myocardial Infarction

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ABSTRACT

Objective: To assess the frequency of elevated C reactive protein in patients those were admitted in the cardiology department after diagnosis of myocardial infarction.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the Department of Cardiology, Liaquat University Hospital Hyderabad from October 2015 to march 2016.

Materials and Methods: In this study all the patients with diagnosis of MI were selected. Blood samples were drawn and send to the hospital laboratory to assess the CRP levels in all selected cases. On the collection of the reports CRP levels were noted. Data regarding age, gender, types of MI and levels of CRP were recorded in the proforma.

Results: Total 62 cases were incorporated in the study; mean age of the study participants was 46.5±6.24 years. Male gender was found in the majority 74.19%, while female were 26.81%.Typical chest pain was most common presentation in 88.70% of the cases, breathing difficulty was noted in 72.58%, sweeting, nausea/vomiting, palpitation, syncope and others were found with percentage of 56.45%, 45.16%, 24.19%, 19.35% and 32.25% respectively**.** Elevated CRP level was found in 73.58%, while 26.42% cases were with normal CRP level.

Conclusion: In the conclusion of this study elevated CRP level was most frequent in patients with acute MI. This may due to diabetic and hypertensive patients. More research is needed especially in diabetic and hypertensive patients.

key Words: Acute MI, CRP, Clinical presentation

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INTRODUCTION

Acute myocardial infarction (AMI) is the commonest diagnoses in cases during Hospitalization in the industrial countries.[1] Early (30 days) death rate of AMI is 30%. Estimately 37% of cases those experience the coronary attack will die in similar year.[2] Now a days countries like Pakistan, India, Sri Lanka, Bangladesh, and Nepal has big incidence of the coronary heart disease in the global comparison. Furthermore mostly studies contains coronary heart disease have been carried out at Bangladesh, India and Pakistan.[3,4] Etiological factor of the ischemic heart disease and AMI are rising in the Pakistan. Estimately 18% adult population is suffered by hypertension. Tobacco and the smoking consumption markedly increased and obesity alsothe rising.[5] DM reported 16.2% in the men and 11.7% in the women.[6] DM also is the commonest etiological factor CVD and death ratio estimately four times in females and about twofold in the males. Combination of different risk factors additionally enhances the risks.[7] Zia has in his study demonstrated that 30% cases with an episode of MI had type II DM.[8]

In the field comprehensive research has emerged with the multiple newest biomarkers and inflammatory markers of the CHD like as, elevated lipoproteins (a) levels, total plasma homocysteine, increased plasma fibrinogen, plasminogen activating inhibitor (PAI), CRP, several cytokines and the micro albuminuria.[9]

It is stated that baseline CRP level in subgroup of cases having acute MI was significantly more elevated as compare to those were with stable CAD. Elevated level of the CRP can predict the future cardiovascular event individualistically of coronary heart disease's severity and associate with the number of angiographically complex stenosis of the coronary artery in cases having ACS. Consequently elevated levels of the CRP is a marker of atheromatous plaque vulnerability and CAD activity.[10]Cases with unstable angina, serum level of CRP and the coronary atherosclerosis are not associated, but these both independently linked with the worse outcome on the follow-up.[11]CRP is a

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phylogenetically highly conserved plasma protein which participates in systemic response to the inflammation. It is the excellent biomarker of the acute-phase response and has emerged as an the important, strong and the characteristic predictors for the future CVD and metabolic abnormalities in ostensibly healthy male and females.[12,13] Very few data is available in literature regarding it specially in Pakistan. Hence this study had done to assess the frequency of elevated CRP level in patients with acute MI.

MATERIALS AND METHODS

This study was a cross sectional, and was done in cardiology ward of the Liaquat university hospital Hyderabad. Study was carried out between six months from October 2015 to march 2016. In this study all the patients with diagnosis of MI were selected. After admission complete medical history regarding diabetes, hypertension, smoking and family history etc, was carried out. Patients were selected on the basis of ECG and other biomarkers. Patients' blood pressure and glycemic status was assessed. Patients with other severe comorbidities which associated with C reactive protein elevation were not included in the study. After diagnosis all the patients were underwent treatment immediately. When routine laboratory ingestions were done then the blood samples also were drawn and send to the hospital laboratory to assess the CRP levels in all selected cases. On the collection of the reports CRP levels were noted. Data regarding age, gender, types of MI and levels of CRP were recorded in the proforma.

RESULTS

Total 62 cases were incorporated in the study; mean age of the study participants was 46.5±6.24 years, and majority of the cases 35 (56.45%) were found with age group of 41 – 50 years. Table 1

Table No.1: Age distribution of patients n = 62

Age and Gender	Frequency (%)
AGE	
Mean±SD	46.5±6.24 years
Age groups	
30 – 40 years	04 (6.45%)
41 – 50 years	35 (56.45%)
51 – 60 years	18 (29.04%)
> 60 years	05(08.06%)

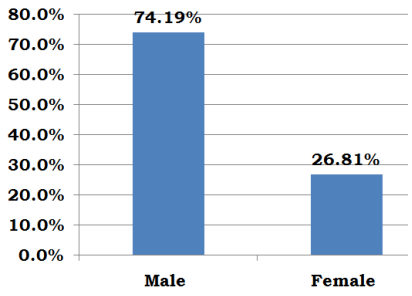

Figure No.1: Gender distribution of patients n = 62

In this study male gender was found in the majority 74.19%, while female were 26.81%. Figure 1. According to the clinical presentation typical chest pain was in 88.70% of the cases, breathing difficulty was noted in 72.58%, sweeting, nausea/vomiting, palpitation, syncope and others were found with percentage of 56.45%, 45.16%, 24.19%, 19.35% and 32.25% respectively**.** Figure 2.

In this study elevated CRP level was found in 73.58%, while 26.42% cases were with normal CRP level. Figure 3.

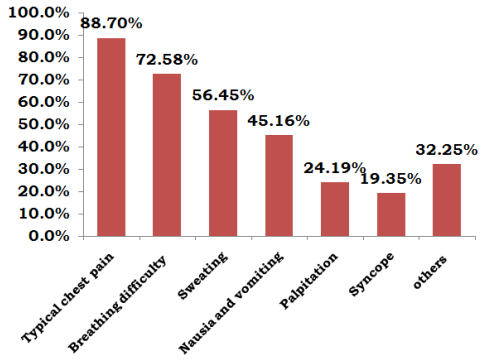

Figure No.2: Clinical presentation of patients (n=62)

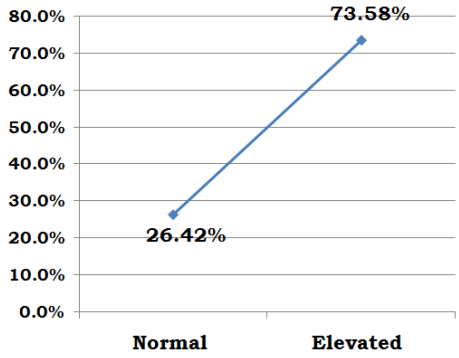

Figure No.3: Patients distribution according CRP level (n=62)

DISCUSSION

This study was carried out to assess the frequency of elevated CRP level in patients with acute MI, in other words we can say that elevated CRP level is used in this study as diagnostic marker of acute myocardial infarction. In our series mean age of the study participants was 46.5±6.24 years, and majority of the cases 35 (56.45%) were found with age group of 41 – 50 years. Similarly Jaffery MH et al[14] demonstrated that male in majority 77 and 23 females out of 100 cases, and mean age was according to gender as 54.78 ± 8.82 years of male and 53.64 ±10.82 years of females. As well as In this study male gender was found in the majority 74.19%, while female were 26.81%.

According to the clinical presentation typical chest pain was in 88.70% of the cases, breathing difficulty was noted in 72.58%, sweeting, nausea/vomiting,

palpitation, syncope and others were found with percentage of 56.45%, 45.16%, 24.19%, 19.35% and 32.25% respectively**.** Bruyninckx R et al[15] reported that similar findings. On other hand Chowta KN et al [16] reported that 80% cases had chest pain, following by dyspnea in the 28.3%, sweating in the 21.7% patients, and vomiting was in 13.3% cases. Epigastric pain had 10% of the cases. 3 patients had syncopal and 3 had palpitation.

In this study elevated CRP level was found in 73.58%, while 26.42% cases were with normal CRP level. Çlelik Ş et al[17] reported that CRP levels was significantly high in patients with LV thrombus as compare to those were without it. p= 0.001). Psychari SN et al[18] reported that there were an inverse association between inflammatory marker CRP, rate of the heart and HRV indices which expressed mainly sympathetic tone, after the acute MI. In a previous study reported that CRP strongly linked with the atherosclerosis and as measured at different site of arterial tree.[19] Many mechanisms had reported that CRP and other mediators of the inflammation may be hardly implicated in atherogenesis.[20] C- reactive protein produced through the cells of smooth muscle of atherosclerotic lesion,[21] and produced CRP locally could straightly contribute in the atherogenesis and cardiovascular complications development. In a large reports of the basic science had reported that circulating CRP is associated to prognosis in the cases having atherosclerotic illness as myocarditis, heart failure and atrial fibrillation.[22]

CONCLUSION

In the conclusion of this study elevated CRP is the good diagnostic marker for acute MI, because it was most frequent in patients with acute MI. This may due to diabetic and hypertensive patients because CRP elevation was also associated with hypertension, smoking and diabetes in the literature therefore our results are not finalized. More big sample size research is needed especially in diabetic, smokers and hypertensive patients.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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