

## INTERLEUKIN-6 LEVELS ANN UNSTABLE ANGINA

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### ABSTRACT

**Objective:** To determine the frequency of raised Interleukin-6 levels in cases presenting with unstable angina. **Methodology;** In this cross sectional study, carried out at Holly Family Hospital, Rawalpindi during October 2017 to March 2018. In this study the cases with age more than 35 years irrespective of gender were included. Unstable angina was labelled according to presence of pain of 5 or more on visual analogue scale present at the centre of the chest, crushing or pressing in nature and persisting for less than 30 minutes and cardiac enzymes i.e. trop T falling in its normal limit irrespective of ECG changes. Raised value of IL-6 was labeled when it was  $> 5$  ng/ml. **Results;** In this study there were total 100 cases of unstable angina with mean age  $57.34 \pm 8.67$  years with age range of 35 to 79 years. There were 32 (32%) cases with DM and 38 (38%) had HTN. Raised IL-6 levels were noted in 61 (61%) cases. There was no significant difference in terms of gender regarding raised IL-6 with  $p = 0.49$ . IL-6 was significantly high in cases with DM and HTN where they were noted in 24 (75%) and 29 (76.31%) cases with  $p$  values of 0.01 each. **Conclusion;** Raised Interleukin-6 level is seen in every 2 out of 3 cases and it is significantly high in cases of HTN and DM.

**KEYWORDS:** Unstable angina, HTN, DM.

### INTRODUCTION

Ischemic heart disease (IHD) is one of the deadliest emergency in the cardiac pain units as this can not only be directly fatal but can also predispose the body to wide range of arrhythmias that can result in any unwanted incidence. Acute coronary syndrome (ACS) is considered as the recent onset IHD that is characterized by chest pain, nausea with or without vomiting, particular electrocardiographic (ECG) changes and rise in cardiac enzymes.<sup>[1-2]</sup>

ACS can be divided into two major sub-categories that include angina pectoris which can be stable or unstable and Myocardial infarction (MI). Duration of chest pain less than 30 minutes and non rise in the cardiac enzymes are classical demarcations from myocardial infarction.<sup>[3]</sup>

The basic pathophysiology; however is the same and include atherosclerotic changes and further ongoing damage forming a nidus to provide a super added inflammatory process and further plaque formation which can be unstable and further be dislodge in the distal circulation. This led to search of the various inflammatory markers that are key factors for this plaque formation with the intent to control these factors for further management in the atherosclerosis.<sup>[4]</sup>

These factors include, Fibrinogen, FDPs, interleukin-6, plasminogen activator inhibitor-1, factor VII, factor VII, VCAM, von Willebrand factor and C reactive proteins etc.<sup>[5]</sup>

The other risk factors that can add to ACS as well as further damage to the intima of the vessels and confounding these inflammatory marker rise Diabetes Mellitus (DM), Hypertension (HTN), Dyslipidemias and male gender etc.<sup>[5-7]</sup>

### OBJECTIVES

To determine the frequency of raised Interleukin-6 levels in cases presenting with unstable angina.

### MATERIAL AND METHODS

#### Study design

Cross sectional

#### Study Setting

Holly Family Hospital, Rawalpindi.

#### Study duration

October 2017 to March 2018.

#### Sampling technique

Non probability consecutive sampling.

In this study the cases with age more than 35 years irrespective of gender were included. Unstable angina was labelled according to presence of pain of 5 or more on visual analogue scale present at the centre of the chest, crushing or pressing in nature and persisting for less than 30 minutes and cardiac enzymes i.e. troponin T falling in its normal limit irrespective of ECG changes. The cases with history of trauma and electrolyte imbalances were excluded. Raised value of IL-6 was labeled when it was > 5 ng/ml.

### Statistical Analysis

The data was analyzed by the help of SPSS-version 23.0 and post stratification chi square test was used and p value of <0.05 was taken as significant.

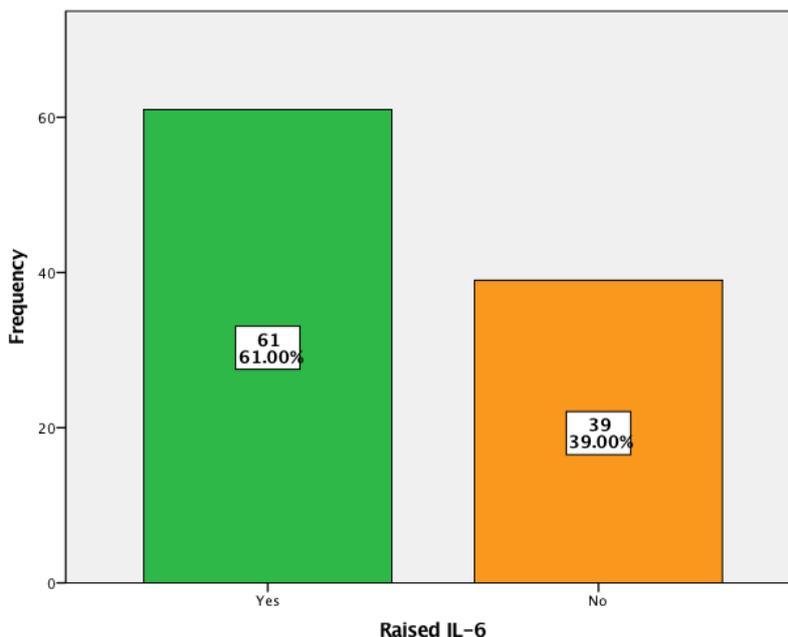
## RESULTS

In this study there were total 100 cases of unstable angina with mean age  $57.34 \pm 8.67$  years with age range of 35 to 79 years (table I). There were 32 (32%) cases with DM and 38 (38%) had HTN. Raised IL-6 levels

were noted in 61 (61%) cases (figure I). There was no significant difference in terms of gender regarding raised IL-6 with  $p = 0.49$ . IL-6 was significantly high in cases with DM and HTN where they were noted in 24 (75%) and 29 (76.31%) cases with p values of 0.01 each as in table II.

**Table I: Demographics.**

	Mean	Range
Age (years)	$57.34 \pm 8.67$	35-79
Duration of unstable angina (mints.)	$21.11 \pm 5.27$	10-25
IL-6 levels	$19.72 \pm 8.67$	2-45



**Figure I: Raised IL-6 level.**

**Table II: Raised IL-6 level and effect-modifiers.**

Effect-modifiers		Raised IL-6		
		Yes	No	
Gender	Male	41 (64.06%)	23 (35.94%)	$p = 0.49$
	Female	20 (55.55%)	16 (44.45%)	
Diabetes Mellitus	Yes	24 (75%)	08 (25%)	$p = 0.01$
	No	37 (54.41%)	31 (45.59%)	
Hypertension	Yes	29 (76.31%)	09 (23.69%)	$p = 0.01$
	No	32 (51.61%)	30 (48.39%)	

## DISCUSSION

Unstable angina pectoris is highly symptomatic condition which might not be fatal but reveal an

immensely complex pathophysiology going on in the intima of the vessel and ongoing damage may lead to a plaque dislodgment and blocking the further circulation

lead to myocardial infarction which has a high degree of morbidity and mortality depending upon the individual circumstances. There are a number of unrevealed markers that need to be exploited for further work and interleukin-6 is gaining popularity regarding this context; though not specific.

In the present study out of 100 cases, raised IL-6 levels were noted in 61 (61%) cases. This finding was similar to the results of the studies conducted in the past and variety of the markers and confounders have been studied. Different studies compared this to either healthy controls or those having MI and it was seen that this IL-6 was seen significantly high in cases of both UA and MI. A study was conducted by Yamashita and Lee et al and they observed the raised IL-6 levels in cases of UA, STEMI and NSTEMI and it was observed that this was significantly high in all the variables i.e.  $p < 0.05$ .<sup>8-9</sup> Moreover, in another study irrespective of the ACS types, they studied the IL-6 levels and then followed these cases with angiography and it was surprising to see that the IL-6 levels were significantly associated with the severity of the disease also i.e. higher the levels of IL-6 and severe was the coronary artery disease.<sup>[10]</sup>

IL-6 was significantly high in cases with DM and HTN where they were noted in 24 (75%) and 29 (76.31%) cases with  $p$  values of 0.01 each. The studies in the past have already established these markers as significantly associated with not only the coronary artery disease but also with the atherosclerotic changes which are in turn associated with these inflammatory markers i.e. IL-6. In a study by Luc G et al, both DM and HTN was associated with significant rise in IL-6 levels and it was also found to be a significant marker of mortality as well.<sup>[11]</sup>

While in a study by Lai et al, this raised was seen in only DM and not with HTN having  $p=0.02$ .<sup>[12]</sup> Further more, the other authors like Orak et al and Mehemuti et al also illustrated significant association of all the types of ACS with IL-6 with  $p$  values of 0.001 and 0.001.<sup>[13-14]</sup>

## CONCLUSION

Raised Interleukin-6 level is seen in every 2 out of 3 cases with unstable angina and it is significantly high in cases of HTN and DM.

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