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PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1251146>Available online at: <http://www.iajps.com>**Research Article****INTERLEUKIN-6 LEVELS IN ANGINA PECTORIS****Dr. Hussnain Abid, Dr. Muniba Irfan, Dr. Faiqa Shafiq**
Sheikh Zayed hospital, Rahim Yar Khan**Abstract:**

Objective; To determine the frequency of raised Interleukin-6 level in cases presenting with angina pectoris.

Methodology; This cross sectional study was conducted at Sheikh Zayed Hospital, Lahore during January to August 2017. In this study the cases with age range of 30 years or more of both genders were included. Angina pectoris was labelled as yes when there was typical central chest pain lasting for less than 30 minutes with or without ST-T changes on ECG and normal cardiac enzymes. The cases end stage liver or renal diseases were excluded. Then the blood of these cases was sent for IL-6 level. The value > 5 ng/ml was labelled as raised.

Results; In this study 200 cases of angina pectoris were included having, 112 (56%) males and 88 (44%) females. The mean age of the cases was 52.78 ± 6.82 years and mean IL-6 levels were 25.58 ± 8.18 . Raised IL-6 levels were observed in 120 (60%) cases. There was no significant difference regarding age groups with $p = 0.71$. Raised IL-6 levels were seen in 32 (80%) of cases with $p = 0.001$ and similarly in cases with DM affecting 36 (66.67%) cases with $p = 0.04$.

Conclusion; Raised Interleukin-6 level are not uncommon in angina pectoris and it is significantly high in cases of DM, HTN.

Key words; Angina Pectoris, IL-6 levels, HTN, DM

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INTRODUCTION:

Ischemic heart disease is one of the fatal and deadliest disease whose number is rising in the developing countries and is already at high numbers in developed ones. It is characterized by angina pectoris (AP) and Myocardia infarction (MI).¹

Ischemic heart disease is defined by decreased myocardial perfusion presenting with typical central chest pain, particular electrocardiographic (ECG) changes in the form of ST segment elevation, depression and T wave inversion and raised cardiac enzymes. Angina pectoris can be defined as chest pain and tightness lasting less than 30 minutes with or without ECG changes but normal cardiac enzymes as compared to myocardial infarction.²⁻³

Angina shares the same pathophysiological changes of atherosclerosis and coronary artery spasms that can be transient as are seen in cases of myocardial infarction. There is atherosclerosis formation and then that vulnerable plaques serves as a nidus for the deposition of the platelets and plug formation that releases various inflammatory markers in the form of interleukin-6 (IL-6), Fibrin degradation factors, Fibrinogen, plasminogen activator inhibitor-1, von Willebrand factor, factor VII, C-reactive protein, pro-inflammatory cytokines and interleukins are among these factors VCAM etc. These markers denote the vulnerability or instability of the atherosclerotic plaque.⁴

There are various risk factors that lead to atherosclerosis formation and hence raised levels of these inflammatory marker and these included high age, male sex, Diabetes Mellitus, Hypertension, and deranged lipid profiles.⁵⁻⁶

IL-6, an intercellular mediator, belongs to hematopoietin family of cytokines. It is produced by a variety of cells in the body including T and B-lymphocytes, monocytes/macrophages, fibroblasts, endothelial cells and adipose tissue. Its role can be defining in the patients to label with angina pectoris without undergoing an invasive procedure like angiography.⁶⁻⁷

Objectives

To determine the frequency of raised Interleukin-6 level in cases presenting with angina pectoris.

MATERIAL AND METHODS:**Study design;**

Cross sectional study

Study Setting;

Medicine and Emergency department, Sheikh Zayed Hospital, Lahore

Duration;

January 2017 to August 2017

Sampling technique;

Non probability consecutive sampling

In this study the cases with age range of 30 years or more of both genders were included. Angina pectoris was labelled as yes when there was typical central chest pain lasting for less than 30 minutes with or without ST-T changes on ECG and normal cardiac enzymes.

The cases end stage liver or renal disease were excluded. Then the blood of these cases was sent for IL-6 level. The value > 5 ng/ml was labelled as raised.

Statistical Analysis;

The data was analyzed with the help of SPSS version 23.0. The data was stratified in terms of confounding variables and the values <0.05 was considered as significant.

RESULTS;

In this study 200 cases of angina pectoris were included having, 112 (56%) males and 88 (44%) females. The mean age of the cases was 52.78 ± 6.82 years and mean IL-6 levels were 25.58 ± 8.18 as in table 1. Raised IL-6 levels was observed in 120 (60%) cases. There was no significant difference regarding age groups with $p=0.71$. Raised IL-6 levels were seen in 32 (80%) of cases with $p=0.001$ and similarly in cases with DM affecting 36 (66.67%) cases with $p=0.04$ as in table 2.

Table 01: Study Variables

	Mean	Range
Age	52.78±6.82	30-77 years
Duration of angina (mints)	21.34±5.46	15-25 minutes
IL-6 levels	25.58±8.18	3-38

Table 02: Raised IL-6 levels vs effect modifiers (n=200)

Effect Modifiers		Raised IL-6 level		
		Yes	No	
Age (years)	50 or less	44 (57.89%)	32 (42.11%)	p= 0.71
	>50	76 (61.29%)	48 (48.71%)	
HTN	Yes	32 (80%)	0 (0%)	p= 0.001
	No	88 (55%)	72 (45%)	
DM	Yes	36 (66.67%)	18 (33.33%)	p= 0.04
	No	84 (57.53%)	62 (42.47%)	

DISCUSSION:

Chest pain presentation is very common in emergencies and ECG is the 1st investigation to be undergone. The cases with ECG changes but normal cardiac enzymes are either normal or suffer from angina pectoris and this is the step to label such cases that either send home without any cardiac workup or on the other hand need an invasive workup in the form of coronary angiography.

In the present study the raised IL-6 level were observed in 120 (60%) of the cases. This was similar to the previous studies that the cases with angina pectoris have shown increased levels of IL-6; although they did not use any such cut off values rather they used the mean IL-6 levels in cases of angina or without angina pectoris. Lee et al and Yamashita et al, in their study shown significant association with all the subtypes of ischemic heart disease like STEMI, NSTEMI and angina pectoris as compared to healthy control with p values less than 0.05.8-9 Moreover, they also build a correlation and it was surprisingly seen that the raised IL-6 levels were significantly correlated with severity of the coronary artery disease assessed on angiography later on.10

In this study Raised IL-6 were significantly high in all the well studies effect modifiers i.e. DM and HTN except for higher age affecting 32 (80%) cases with HTN and 36 (66.67%) cases having p values of 0.001 and 0.04 respectively. Multiple studies have shown and built this association with these confounding variables. According to a study by Luc G et al they found that co morbid conditions as mentioned above not only associated with high levels of IL-6 but also showed a strong and independent marker of increased mortality in acute coronary events [11].

Lai S et al in their study shown that raised IL-6 levels were significantly high in cases of DM with a p value of 0.02.12 In other studies by Orak et al and Mehemuti et al revealed significant association in all the ACS subtypes with these markers with p values of 0.001 and 0.001.13-14 In contrast to all above studies in a study conducted by Kosmala W et al, no such significant association was seen with p=0.23.15

CONCLUSION:

; In this study 200 cases of angina pectoris were included having, 112 (56%) males and 88 (44%) females. The mean age of the cases was 52.78±6.82years and mean IL-6 levels were 25.58±8.18. Raised IL-6 levels was observed in 120 (60%) cases. There was no significant difference regarding age groups with p= 0.71. Raised IL-6 levels were seen in 32 (80%) of cases with p= 0.001 and similarly in cases with DM affecting 36 (66.67%) cases with p= 0.04. Raised Interleukin-6 level are not uncommon in angina pectoris and it is significantly high in cases of DM, HTN.

REFERENCES:

1. Okrainec K, Banerjee DK, Eisenberg MJ. Coronary artery disease in the developing world. *Am Heart J.* 2004;148:7-15.
2. Gibbons RJ, Abrams J, Chatterjee K, Daley J, Deedwania PC, Douglas JS et al. ACC/AHA 2002 Guideline Update for the Management of Patients With Chronic Stable Angina—Summary Article. *JACC.* 2003;41:159-168.
3. Gibler WB, Cannon CP, Blomkalns AL, Char DM, Drew BJ, Hollander JE et al. AHA Scientific Statement. Practical Implementation of the Guidelines for Unstable Angina /Non-ST-Segment Elevation Myocardial Infarction in the Emergency Department. *Circulation.* 2005;111:2699-2710.

4. Tousoulis D, Davies G, Stefanadis C, Toutouzas P, Ambrose JA. Inflammatory and thrombotic mechanisms in coronary atherosclerosis (Re). *Heart*. 2003;89:993-97.
5. Tracy RP. Thrombin, Inflammation, and cardiovascular disease. *Chest*. 2003;124:49-59.
6. Hackam DG, Anand SS. Emerging risk factors for atherosclerotic vascular disease. *JAMA*. 2003;290:932-940.
7. Nijm J, Wikby A, Tompa A, Olsson AG, Jonasson L. Circulating levels of proinflammatory cytokines and neutrophil-platelet aggregates in patients with coronary artery disease. *Am J Cardiol*. 2005;95:452-56.
8. Yamashita H, Shimada K, Seki E, Mokuno H, Daida H. Concentrations of interleukins, interferons, and CRP in stable and unstable angina pectoris. *Am J Cardiol*. 2003;91:133-36.
9. Lee KW, Lip GYH, Tayebjee M, Foster W and Blann AD. Circulating endothelial cells, von Willebrand factor, interleukin-6, and prognosis in patients with acute coronary syndromes. *Blood*. 2005;105:526-32.
10. Ridker PM, Rifai N, Stampfer MJ, Hennekens CH. Plasma concentration of interleukin-6 and the risk of future myocardial infarction among apparently healthy men. *Circulation*. 2000;101:1767-72.
11. Luc G, Bard JM, Vague JI, Ferrieres J, Evans A, Amouyel P et al. CRP, Interleukin-6, and fibrinogen as predictors of coronary heart disease. The PRIME study. *Arterioscler Thromb Vasc Biol*. 2003;23:1255-61.
12. [Lai S](#), [Elliot K](#), [Fishman G](#), [Lai h](#), Ph.D, [Pannu H](#). Serum IL-6 Levels are Associated with Significant Coronary Stenosis in Cardiovascularly Asymptomatic Inner-City Black Adults in the US. *Inflamm Res*, 2009;58(1):15–21.
13. Orak M, Ustundag M, Gulog C, Alyan O, Sayhan MB. The Role of Serum D-dimer Level in the Diagnosis of Patients Admitted to the Emergency Department Complaining of Chest Pain. *J Int Med Research*. 2010;38:1772-79.
14. Mahemuti A, Abudureheman K, Schiele F, Ecarnot F, Abudureyimu S, Tang B, et al. Association Between Inflammatory Markers, Hemostatic Markers, And Traditional Risk Factors On Coronary Artery Spasm In Patients With Normal Coronary Angiography. *J Interv Cardiol*. 2014;27(1):29-35.
15. Kosmala W, Derzhko R, Przewlocka-Kosmala M, Orda A, Mazurek W. Plasma levels of TNF-alpha, IL-6, and IL-10 and their relationship with left ventricular diastolic function in patients with stable angina pectoris and preserved left ventricular systolic performance. *Coron Artery Dis*, 2008;19(6):375-82.