



## Cytokines Interleukin-6 (IL-6) Levels in Mild Ischemic Heart Disease.

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### Abstract:

**Objective:** To find the incidence of enhanced levels of IL-6 in angina pectoris.

**Type of Study:** Cross sectional study.

**Place and Duration of study:** This study was carried out in a duration of 6 months from February 2018 to July 2018 in Punjab Institute of Cardiology Lahore.

**Materials and Methods:** The patients presented with chest pain in PIC were studied and both genders were included in the study. The patients were between the ages of 30 to 70 years and had chest pain of shortness of breath. Only those patients were included in the study who were willing to take part in this study and had raised IL-6 levels. Informed consent was taken from all the patients and carefully designed proforma was used to collect the data of the patient. ECG was performed along with cardiac enzymes levels to rule of acute MI. blood sample was taken from the patients and sent to a reliable laboratory for analysis. Value of >5ng/ml was considered as high value.

**Results:** A total of 100 cases with angina were included in this study which had 59(59%) males and 41(41%) females. The patients were between the ages of 30 to 70 years with the mean age of 50 years. In 69% of the cases enhanced IL-6 levels were seen and gender difference was insignificant. Patients with diabetes and hypertension had increased IL-6 levels and 20 cases of DM had increased levels of IL-6 while 22 cases of HTN has increased levels.

**Conclusion:** Enhanced IL-6 levels are seen in patients with ischemia of cardiac tissues and the levels are higher in patients who have associated comorbidities like hypertension and diabetes mellitus.

**Keywords:** IL-6, Angina, Diabetes, Hypertension

**Introduction:** One of the most lethal and killing disease is ischemia of the cardiac tissues. It is classified as Angina Pectoris (AP) and myocardial infarction (MI). The most common complaint with which the patient presents in emergency is shortness of the breath, chest pain or feeling of a heavy weight on the chest. Despite increasing use of hypertension controlling drugs or lipid

controlling statins, the number of cases presenting with angina are increasing worldwide especially in Asia. Shortness of breath, chest pain and feeling of heavy weight on chest are the main recurring signs and symptoms of angina pectoris. Atherosclerotic changes are the main culprit behind the development of chest pain and are more marked in coronary arteries. Atheroma is formed due to the accumulation of plaques, platelet activation and beginning of the next processes leading to inflammation. In near past a lot of work has been done on the increased inflammatory response in these cases. Older age. Hypertension, smoking, increased weight, male phenotype, diabetes and lipid dysfunction are among the most common causes that lead to angina and myocardial infarction. Malfunctioning endothelium has been reported recently due to numerous hemostatic and inflammatory factors. C-reactive protein, Fibrinogen, von Willebrand factor, factor VII, plasminogen, interleukins and pro-inflammatory cytokines are common factors. Hematopoietin family of inflammatory mediators include IL-6 which is a mediator intracellularly. Numerous cells in the body are involved in the production of IL-6 including monocytes, macrophages, endothelial cells, B and T lymphocytes, fibroblasts and adipose tissues. Pro coagulation state is activated by the IL-6 which activates clotting cascade by stimulating the liver to produce coagulation factors and acute phase reactants. Stimulated macrophages by the IL-6 form protein breaking enzymes, tumor necrosis factor, adhesive molecules and tissue factors. Platelet adhesion and proliferation of the smooth muscles of the vessels is carried out by IL-6.

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**Results:** A total of 100 cases with angina were included in this study which had 59(59%) males and 41(41%) females. The patients were between the ages of 30 to 70 years with the mean age of 50 years. In 69% of the cases enhanced IL-6 levels were seen and gender difference was insignificant. Patients with diabetes and hypertension had increased IL-6 levels and 20 cases of DM had increased levels of IL-6 while 22 cases of HTN has increased levels.

**Discussion:** One of the most lethal and killing disease is ischemia of the cardiac tissues. The most common complaint with which the patient presents is chest pain giving hint about dangerous on going pathology which can be managed accordingly. No other entity except invasive angiography was accurate to diagnose the disease and the need of non-invasive investigation was always present having high accuracy. Recently numerous used investigation is IL-6 level in case of angina which is a marker of inflammation.

In current study high levels of IL-6 was seen in 68% of the cases. No cut of point or value has been used to confirm the diagnosis of angina rather the

levels of IL-6 were used to compare conditions like MI and AP. In all the subtypes of ischemic diseases of the heart an association has been in studies done by Lee et al and Yamashita et al. It has been seen in different studies that enhanced levels of IL-6 are seen in patients in which coronary artery atherosclerotic changes were seen on angiography.

In 69% of the cases enhanced IL-6 levels were seen and patients with diabetes and hypertension had increased IL-6 levels and 20 cases of DM had increased levels of IL-6 while 22 cases of HTN has increased levels. The findings of this study are supported by another study which shows that enhanced levels of IL-6 are involved in rupture of the atheroma and embolization. Enhanced levels of IL-6 were shown as an autonomous marker that is responsible for increased death rate in acute heard diseases.

Malfunctioning endothelium seen in cases of hypertension and diabetes mellitus, there are enhanced chances of atheroma formation and its rupture. Significant association was found by Lias et al in his study which is in accordance with this study showing high association of raised IL-6 with ischemic heart diseases. A notifying correlation with both unstable and stable angina with enhanced levels if IL-6 has been shown by Orak et al and Mehemuti et al.

**Conclusion:** Enhanced IL-6 levels are seen in patients with ischemia of cardiac tissues and the levels are higher in patients who have associated comorbidities like hypertension and diabetes mellitus.

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