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Research Article

### A RESEARCH STUDY TO ESTABLISH THE CORRELATION BETWEEN ACS (ACUTE CORONARY SYNDROME) AND HYPERTENSION

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**Abstract:**

**Background:** The self-sustaining factor associated with disorders related to heart is hypertension. For many years, this risk factor is not discussed.

**Objective:** The objective of this study was to assess the connection between acute coronary syndrome (ACS) and high serum uric acid level.

**Subjects & Methods:** The study was organized at Sir Ganga Ram Hospital, Lahore (September 2017 to August 2018). Total enrolled patients were 367. They were grouped into cases and controls. The number of controls was 174 and they do not have the acute coronary syndrome. The cases were 193 in total. The cases were identified with acute coronary syndrome. The identification was carried out by suitable inspections. Age, gender, smoking, cholesterol, hypertension, BMI, CDL, serum uric acid level, HDL, disease status of acute coronary syndrome and triglyceride are the variables considered in this research. All the cases and controls signed the written agreement. The high level of serum uric acid in males was more than seven mg/dl and more than six mg/dl in females. SPSS was used for data entry and assessment.

**Results:** Total patients selected in this research were 367. The mean age of patients of the acute coronary syndrome was (52 ± 11) years; whereas, controls were of (47 ± 15) years. 193 patients were having coronary heart disorder; whereas, 174 controls were not having a coronary heart disorder. The number of males among patients of ACS is 84% and among controls, males were 75%. Among cases and controls, serum uric acid was (6.1 ± 1.2) mg/dl and (5.1 ± 0.3) mg/dl respectively. In cases, LDL was (119 ± 37) mg/dl; whereas, in controls, LDL was (118 ± 32) mg/dl; triglyceride among patients and controls was (172.68 ± 98) md/dl and (168 ± 78) md/dl respectively; in patients of ACS, HDL was (41.92 ± 8) md/dl and (43 v 6) md/dl in controls; whereas, BMI was (27 ± 3) and (25 ± 6) in patients of ACS and controls respectively. As compare to 24% among Non-CHD patients, ACS patients have high serum uric acid (P-Value 0.00).

**Conclusion:** It is concluded that acute coronary syndrome and increased serum uric acid level was significantly interlinked.

**Keywords:** Acute Coronary Syndrome (ACS), Cases, Controls, BMI, Triglyceride, LDL and HDL.

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**INTRODUCTION:**

The results of purine metabolism are uric acid [1]. In patients suffering from CV disorders, insulin resistance, blood pressure and obesity, there exists a high risk of serum uric acid level. The self-sustaining factor associated with the production of disorders related to heart is uric acid. It was demonstrated that decreased urate excretion was caused by vasoconstriction and many CV drugs and insulin. According to the reports of the next studies, prior risk factors related to CV disorders are precisely associated with hyperuricemia. On the other hand, some other studies indicated that antioxidant properties are significantly present in an elevated level of uric acids [2]. Due to dissimilarity in the results of different studies, uric acid is not considered as a cause of CV disorders [3]. With further research about the function of uric acid in cardiorenal disorder [4], this difference is resolved. The advancement of chronic kidney disorder, the establishment of stroke, is indicated by the uric acid concentrations as illustrated by the research studies [5]. It is indicated by the current meta-analysis that occurrence of hypertension, diabetes and metabolic syndrome is linked with uric acid [6 – 8]. However, there still exists confusion in the association of coronary artery with uric acid. A current meta-analysis about the association of uric acid and CHD indicated that CHD is not assessed by the levels of serum uric acid. It was also shown that in the determination of CHD in common population, the role of serum uric acid levels is not significant [9 – 11]. The objective of the current research was to assess the connection between the acute coronary syndrome and high serum uric acid levels.

**SUBJECTS AND METHODS:**

The study was organized at Sir Ganga Ram Hospital, Lahore (September 2017 to August 2018). Total

enrolled patients were 367. They were grouped into cases and controls. The number of controls was 174 and they do not have the acute coronary syndrome. The cases were 193 in total. The cases were identified with the acute coronary syndrome. The identification was carried out by suitable inspections. Age, gender, smoking, cholesterol, hypertension, BMI, CDL, serum uric acid level, HDL, disease status of acute coronary syndrome and triglyceride are the variables considered in this research. All the cases and controls signed the written agreement. The high level of serum uric acid in males was more than seven md/dl and more than six mg/dl in females. SPSS was used for data entry and assessment.

**RESULTS:**

Total patients selected in this research were 367. The mean age of patients of the acute coronary syndrome was  $(52 \pm 11)$  years; whereas, controls were of  $(47 \pm 15)$  years. 193 patients were having coronary heart disorder; whereas, 174 controls were not having a coronary heart disorder. The number of males among patients of ACS is 84% and among controls, males were 75%. Among cases and controls, serum uric acid was  $(6.1 \pm 1.2)$  mg/dl and  $(5.1 \pm 0.3)$  mg/dl respectively. In cases, LDL was  $(119 \pm 37)$  mg/dl; whereas, in controls, LDL was  $(118 \pm 32)$  mg/dl; triglyceride among patients and controls was  $(172.68 \pm 98)$  md/dl and  $(168 \pm 78)$  md/dl respectively; in patients of ACS, HDL was  $(41.92 \pm 8)$  md/dl and  $(43 \pm 6)$  md/dl in controls; whereas, BMI was  $(27 \pm 3)$  and  $(25 \pm 6)$  in patients of ACS and controls respectively. As compare to 24% among Non-CHD patients, ACS patients have high serum uric acid (P-Value 0.00).

**Table – I:** Features of patients of ACS in cases and controls

Levels of Serum Uric Acid	Cases (CHD) (+ ve)		Control (CHD) (- ve)		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
High	72	37.3	42	24.1	114	31.1
Normal	121	62.9	132	75.9	253	68.9
Total	193	100	174	100	367	100

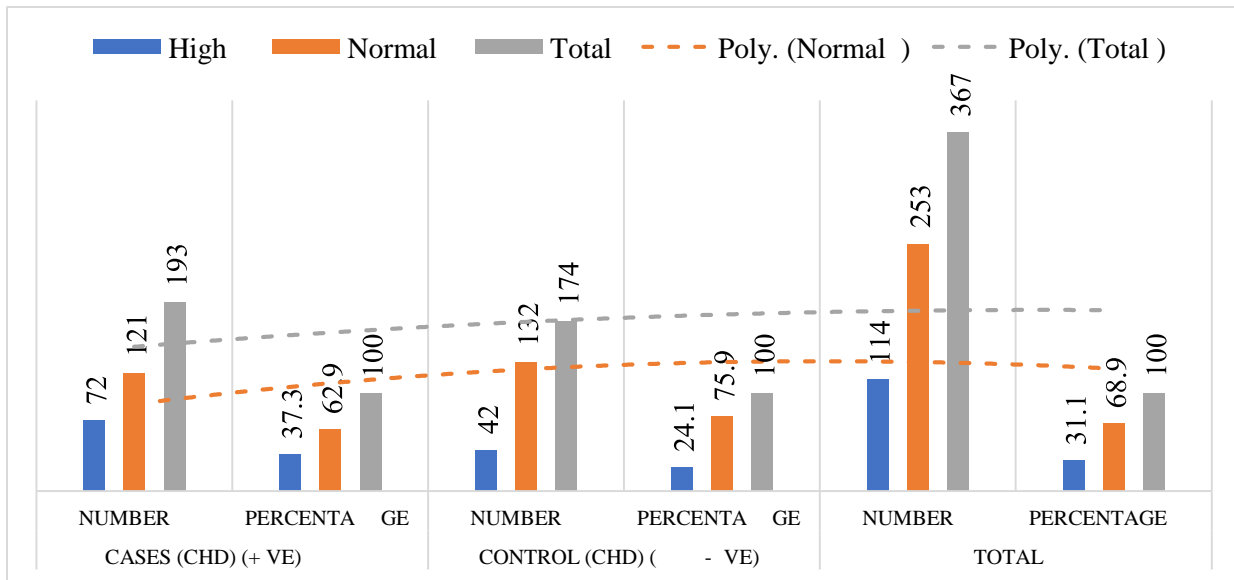
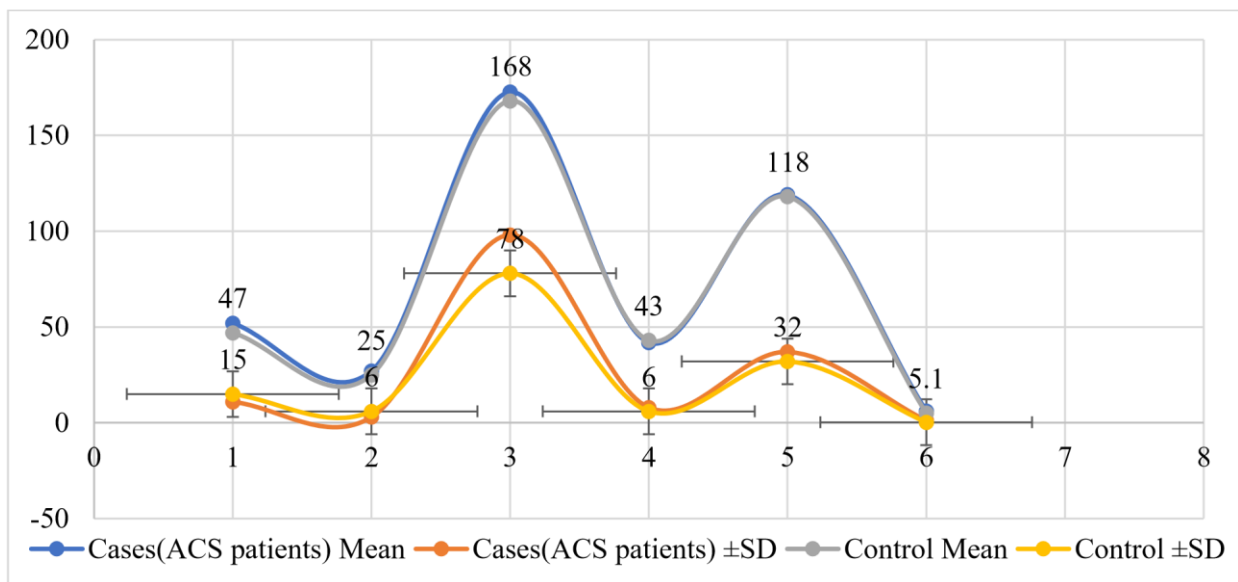


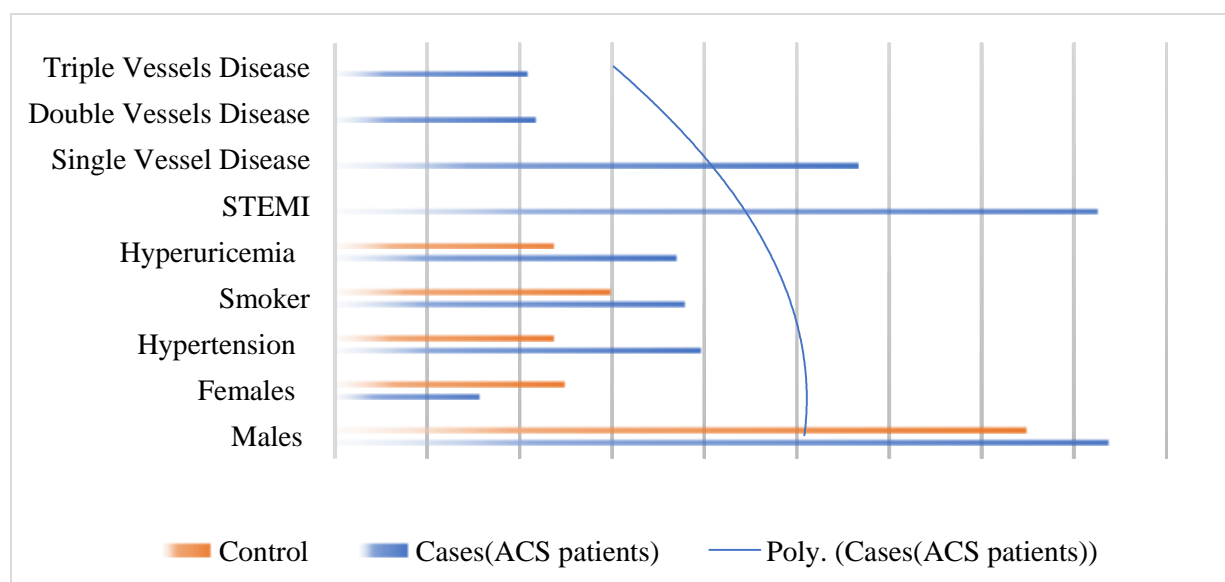
Table – II: Hyperuricemia association with coronary heart disease (Mean and SD)

Variable	Cases (ACS patients)		Control		P-Value
	Mean	±SD	Mean	±SD	
Age (Years)	52	11	47	15	0.12
BMI	27	3	25	6	0.21
Triglyceride (mg/dl)	172.68	98	168	78	0.19
HDL (mg/dl)	41.9	8	43	6	0.35
LDL (mg/dl)	119	37	118	32	0.4
Serum Uric Acid (mg/dl)	6.1	1	5.1	0.3	0.1



**Table – III:** Hyperuricemia association with coronary heart disease (Percentage)

Variable (Percentage)	Cases (ACS patients)	Control	P-Value
Males	84.0	75.0	0.2
Females	16.0	25.0	-
Hypertension	40.0	24.0	0.1
Smoker	38.0	30.0	0.1
Hyperuricemia	37.3	24.1	0
STEMI	83.0	0.0	-
Single Vessel Disease	57.0	0.0	-
Double Vessels Disease	22.0	0.0	-
Triple Vessels Disease	21.0	0.0	-

**DISCUSSION:**

The research was organized to assess the connection between acute coronary syndrome and hyperemia. Total patients selected for this study were 367. The mean age of patients of the acute coronary syndrome was  $(52 \pm 11)$  years; whereas, controls were of  $(47 \pm 15)$  years. 193 patients were having coronary heart disorder; whereas, 174 controls were not having a coronary heart disorder. The number of males among patients of ACS is 84% and among controls, males were 75%. Among cases and controls, serum uric acid was  $(6.1 \pm 1.2)$  mg/dl and  $(5.1 \pm 0.3)$  mg/dl respectively. In cases, LDL was  $(119 \pm 37)$  mg/dl; whereas, in controls, LDL was  $(118 \pm 32)$  mg/dl; triglyceride among patients and controls was  $(172.68$

$\pm 98)$  md/dl and  $(168 \pm 78)$  md/dl respectively; in patients of ACS, HDL was  $(41.92 \pm 8)$  md/dl and  $(43 \pm 6)$  md/dl in controls; whereas, BMI was  $(27 \pm 3)$  and  $(25 \pm 6)$  in patients of ACS and controls respectively. As compare to 24% among Non-CHD patients, ACS patients have high serum uric acid. The results of elevated serum uric acid are poor. The elevated levels of serum uric mark the indication of cardiovascular disease. The pathway through which uric acid could be directly hazardous to cardiovascular working and endothelium [11]. An important relationship between serum uric acid and CV morbidity and mortality [12 – 14]. Older research studies demonstrated that irrespective of variables frequently connected with gout or the metabolic syndrome, cardiovascular

disease death rate in healthy middle-aged men is shortly indicated by elevated serum uric acid levels [15]. These results are similar to the results of a recent research study. However, the discussion is incomplete until conflicting information has explained that CV events could be identified by uric acid. These events include stroke, myocardial infarction, death and heart failure [16]. Cardiovascular disease was not independently predicted by serum uric acid according to another study. It is illustrated by these outcomes that all the causes that lead to death in females are independently predicted by serum uric acid [17]. These results are because of other factors or maybe because of the protective effects of serum uric acid. The results of our research are different from these outcomes.

### CONCLUSION:

The results concluded that the relationship between the acute coronary syndrome and high serum uric acid level was statistically important. This relationship supports the fact that in hyperuricemic patients, the incidence of acute coronary syndrome becomes greater.

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