

The Altered Thrombocytic Count in Patients with Acute Coronary Syndrome with Deformed Habits

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ABSTRACT

Aims: Our study aimed to analyze variation in platelet count in patients with acute coronary syndrome with habits such as smoking, smokeless tobacco and alcoholics.

Materials & Methods: Total 300 adult (18 years above) patients with clinically suspected acute coronary syndrome who attended in cardiac emergency and admitted in acute coronary care unit in the department of Cardiology S. P. Medical College Bikaner were enrolled in this study. Out of them 200 patients had ECG changes (ST-elevation, ST-depression, T-inversion, appearance of Q-wave) with or without elevated troponin I and treated with anti-platelet drugs. Those were considered as acute coronary syndrome patients. The subjects were grouped into three groups according to their habits (smoking, smokeless tobacco and alcoholics).

Results: Comparing the mean of two groups (Present vs. absent) in cases of alcoholics, t test showed significantly ($p < 0.05$) different and higher (PDW) and lower (PCT) while significantly ($p < 0.05$) different in Alcoholics present group compared to alcoholics absent group. Nevertheless, mean of rest parameters not differed ($p > 0.05$) between the two groups

(Present vs. Absent) i.e. found to be statistically not significant.

Conclusion: It was observed that there were statistically significant differences ($p < 0.05$) in all the parameters (PDW and PCT) estimated in drinkers while not in smokers and smokeless tobacco users.

Keywords: Platelet Count, Acute Coronary Syndrome, Smoking, Smokeless Tobacco, Alcoholics.

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INTRODUCTION

Acute coronary syndromes (ACS) happen from acute obstruction of a coronary artery. Complications depend on degree and site of obstruction and range from un-stable angina to non-ST-segment elevation MI (NSTEMI), ST-segment elevation MI (STEMI), and sudden cardiac death. Platelets are blood cells with changeable sizes and densities. The activation of platelets is a hallmark of acute coronary syndrome.¹ It has been revealed that platelets size, when measured as mean platelet volume (MPV), is a marker of platelet function and is positively associated with indicators of platelets activity. An raised MPV, an indicator of larger and more reactive platelets, has been associated with myocardial harm in ACS and has been found to be predictive of an adverse outcome among survivors of AMI.^{1,2} Many factors can cause thrombocytopenia (a low plate-let count). The state can be inherited or acquired. Our study aimed to measure platelet count in patients with acute coronary syndrome with malformed habits such as smoking, tobacco chewing and alcoholics.

MATERIALS AND METHODS

This study was conducted in Department of Cardiology, S. P. Medical College Bikaner. Total 300 adult (18 years above) patients with clinically suspected acute coronary syndrome who attended in cardiac emergency and admitted in acute coronary care unit in the department of Cardiology, of our institution were enrolled in this study.

Among them 200 patients had ECG changes (ST-elevation, ST-depression, T-inversion, appearance of Q-wave) with or without elevated troponin I and treated with anti-platelet drugs. They were considering as cases (group I). The rest 100 Patients had normal ECG findings, usual cardiac troponin I and did not receive anti-platelet therapy. They were measured as controls (group II). Clinical history, medical reports, findings and information were acknowledged in a pre-designed data sheet with informed and written consent. Blood was collected for CBC and MPV with EDTA tube and determined by auto-mated analyzer.

Statistical Analysis

Expressive statistical analyses were performed using SPSS software (version 20, 2008). Data were summarized as Mean±SD. Groups (Present vs absent (controls)) were compared by unpaired or independent Student's t test. A two-tailed $p < 0.05$ was considered statistically significant.

RESULTS

This study was carried out on 200 subjects of ACS with mean age of 58.89 ± 12.17 years. Among them 160 males and 40 were females. The subjects were separated into three groups according to their habits (smoking, tobacco chewing and alcoholics). The lab values of Platelet count, MPV, PCT and PWD of ACS patients of smoking habits (Present v/s Absent) at presentation is summarized in Table 1. Comparing the mean of two groups (Present v/s absent), t test showed mean of all parameters not

differed ($p > 0.05$) between the two groups (Present v/s absent) i.e. found to be statistically not significant. The clinical lab values of Platelet count, MPV, PCT and PWD of ACS patients of tobacco chewing habits (Present v/s Absent) at presentation is summarized in Table 2. Comparing the mean of two groups (Present v/s Absent), t test showed mean of all parameters not differed ($p > 0.05$) between the two groups (Present v/s Absent) i.e. found to be statistically not significant.

The clinical lab values of Platelet count, MPV, PCT and PWD of ACS patients of Alcoholic (Present v/s absent) at presentation is summarized in Table 3.

Comparing the mean of two groups (Present v/s Absent), t test showed significantly ($p < 0.05$) result in case of PDW and PCT. However, mean of rest parameters not differed ($p > 0.05$) between the two groups (Present v/s Absent) i.e. found to be statistically not significant.

Table 1: Mean and standard deviation (Mean ± SD) values of platelets count and platelet indices in the ACS (acute coronary syndrome) patients of smoking history present and absent (control) groups

Parameters	History of Smoking				P value
	Present (N=140)		Absent (N=60)		
	Mean	SD	Mean	SD	
Platelet count in lakhs	3.05	1.57	2.8	1.25	0.262
MPV (Mean Platelet volume)	8.59	1.37	8.51	0.47	0.672
PCT (Platelet crit)	0.36	0.28	0.33	0.25	0.394
PDW (Platelet distribution width)	9.61	3.37	9.58	2.61	0.959

Table 2: Mean and standard deviation (Mean ± SD) values of platelets count and platelet indices in the ACS (acute coronary syndrome) patients of Tobacco chewing history present and absent (control) groups

Parameters	History of Tobacco Chewing				P value
	Present (N=39)		Absent (N=161)		
	Mean	SD	Mean	SD	
Platelet count in lakhs	3.23	1.77	2.91	1.41	0.237
MPV (Mean Platelet volume)	8.87	0.56	8.49	1.28	0.078
PCT (Platelet crit)	0.35	0.23	0.35	0.29	0.900
PDW (Platelet distribution width)	9.83	4.05	9.54	2.93	0.616

Table 3: Mean and standard deviation (Mean ± SD) values of platelets count and platelet indices in the ACS (acute coronary syndrome) patients of Alcoholics history present and absent (control) groups

Parameters	History of Alcoholics				P value
	Present (N=39)		Absent (N=161)		
	Mean	SD	Mean	SD	
Platelet count in lakhs	2.25	1.15	3.01	1.50	0.115
MPV (Mean Platelet volume)	8.84	0.32	8.55	1.21	0.455
PCT (Platelet crit)	0.17	0.10	0.36	0.28	0.030*
PDW (Platelet distribution width)	11.83	0.46	9.48	3.21	0.022*

DISCUSSION

One of the most staid socioeconomic troubles world-wide is alcoholism. It poses a major health risk to human health because it is toxic to almost all the organs in the body and hence affects all the metabolic processes of the body.

Alcohol has antiaggregatory effect on platelet suggestive of the advantageous effect of alcohol in preventing coronary heart disease but when addicted moderately. It was also establish that alcohol decreases both platelet aggregation and the circulating fibrinogen level.³

Alcohol consumption has considerably affect platelet count in acute coronary syndrome patients. Similarly to this study, Hard and Ballard⁴ said, apart from acquired immune deficiency syndrome (AIDS), alcoholism most likely is the leading cause of thrombocytopenia. Moreover, alcohol-related thrombocytopenia usually is transient and platelet counts usually return to normal within one week of abstinence. Alcohol affects not only platelet production but also platelet function. Thus, patients who drink excessive amounts of alcohol can exhibit a wide spectrum of platelet abnormalities. These abnormalities comprise impaired platelet aggregation, decreased secretion or activity of platelet-derived proteins involved in blood clotting and prolongation of bleeding in the absence of thrombocytopenia.

While the other risk habits such as smokeless tobacco chewing and smoking doesn't seem a significant change on platelet count similar to other studies. Suwansaksri J et al.⁵ observed that the platelet counts and platelet parameters of the subjects were not significantly different between smokers and non-smokers. Butkiewicz AM et al.⁶ noted that women are more sensitive to smoking than men. Platelets in male smokers are less sensitive to smoking--the study showed no noteworthy changes in the parameters. Snuff use did not lead to an increased interaction of platelets and vessel walls or cause platelet activation.⁷

In conclusion, alcohol consumption has a little beneficial effect if it is consumed occasionally, but the immorality effect to body is more than its benefit.

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