**Title:** Platelet Indices as a predictor for reperfusion outcome in Primary PCI

**Category:** Acute Coronary Syndromes

## ABSTRACT

INTRODUCTION: Despite immense technological advancements, Acute Coronary Syndrome (ACS) is still a challenging issue with high risk of mortality. Systemic inflammation is considered to be the vital element of ACS and platelets are a source of inflammatory mediators. Besides formation of the thrombotic vascular occlusion, platelets participate in microembolization and vasoconstriction, both local and systemic inflammatory reactions that appear to influence decisively the prognosis of ACS. Thus, understanding the role of platelets in ACS may lead to new concepts and development of therapeutic strategies. So in view of its diagnostic importance and prognostic significance, our study aims to emphasize the relationship between the platelet indices and STEMI. The purpose of this study is to understand the various aspects of platelets which may determine the clinical outcome of patients admitted with ACS- STEMI undergoing Primary PCI.

OBJECTIVES: To study the platelet indices - Mean Platelet Volume (MPV), Platelet Distribution Width (PDW) and Mean Platelet volume/Platelet count Ratio (MPV/PC ratio) of patients with STEMI. Primary Objective: To estimate the prognostic accuracy of MPV, PDW and MPV/PC ratio on reperfusion outcome in STEMI patients.

Secondary objectives: To study the factors influencing the prognostic accuracy of the MPV, PDW and MPV/PC ratio in STEMI patients undergoing primary PCI

METHODOLOGY: A prospective descriptive study on the angiographic profile of STEMI patients undergoing primary PCI during the period April 2017 to May 2018. 262 consecutive subjects who were admitted in cardiology ICU and who were eligible were selected. History was taken in accordance with the proforma and 4 ml of EDTA blood was collected and estimation of platelet indices was done using Sysmex automated analyser.

RESULTS: This study showed that the PDW was found to be significantly raised in patients with large thrombus burden [TIMI 4-5] when compared to patients with low thrombus burden [TIMI 1-3]. PDW of more than 13 fL was the best cut off for predicting large thrombus burden with a sensitivity of 67.01% and a specificity of 53.23%. The total in-hospital MACE at the end of 1 week was 20.99% (n = 55 out of 262 pts). The maximum MACE was contributed by Acute Heart failure 12.6%, followed by cardiac death 6.1%, stent thrombosis 1.5%. There was a strong association between increased PDW and occurrence of in hospital MACE, Mortality and Acute heart failure. [p-0.024, p- 0.03, p-0.02 respectively]. There was no significant difference between the means of MPV in large thrombus burden and small thrombus burden. There was no association between MPV and occurrence of in-hospital MACE. The study also revealed a strong association between MPV/PC ratio and ST Resolution in ECG post primary PCI [p 0.002]. Patients with MPV/PC ratio ≤4.38 were found to be at risk of having poor ST resolution (STR < 70%) with a sensitivity of 64.5% and specificity of56.04%.

CONCLUSION: This study emphasizes the use of platelet indices especially PDW as a predictor of poorer reperfusion outcomes in primary PCI as evidenced by higher MACE rates in patients with higher PDW. Hence measurement of platelet volume indices may be of some help in detecting people who are at high risk for coronary events so that these patients could benefit from early initiation of stronger antiplatelets and GpIIb/IIIa antagonist drugs especially in the highest PDW tertile group.