

Mean platelet volume and coronary artery disease: A secret that cardiologist should be aware of it!

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Introduction: It seems that cardiologists are not aware of the role of platelet count and size in the coronary artery disease either native coronary artery or after angioplasty. Platelets with high hemostatic activity play an important role in the pathophysiology of coronary artery disease (CAD) and mean platelet volume (MPV) has been proposed as an indicator of platelet reactivity. Thus, MPV may emerge as a potential marker of CAD risk. Central to the pathogenesis of occlusive arterial disease is the activation of platelets at sites of vascular injury. Platelets secrete and express a large number of substances that are crucial mediators of coagulation, inflammation, thrombosis, and atherosclerosis. The demonstrated ability of antiplatelet drugs to reduce cardiovascular events has reinforced the major role of platelets in the atherothrombotic process. The aim of this study was to conduct a systematic review and meta-analysis comparing mean difference in MPV between patients with CAD and controls and pooling the odds ratio of CAD in those with high versus low MPV.

Methods: Medline and Scopus databases were searched up to May 2016. All English language observational studies that considered MPV as a study's factor and measured CAD as an outcome were included.

Results: Forty two studies were included in this meta-analysis. The MPV was significantly larger in patients with CAD than controls with the unstandardized mean difference of 0.70 fL (95% CI: 0.55, 0.85). The unstandardized mean difference of MPV in patients with acute coronary event and in patients with chronic stable angina was 0.84 fL (95% CI: 0.63, 1.04) and 0.46 fL (95% CI: 0.11, 0.81) respectively. Patients with larger MPV (≥ 7.3 fL) also had a greater odds of having CAD than patients with smaller MPV with a pooled odds ratio of 2.28 (95% CI: 1.46, 3.58). In three studies that assessment of restenosis after angioplasty were evaluated it was interestingly observed that there was a positive correlation between MPV more than 8 fl and change in minimal luminal diameter between post angioplasty and follow-up angiography, assessed quantitatively, $r = +0.56$, $P = 0.016$. There was no association between clinical or angiographic definitions of restenosis and hemoglobin, red cell count, mean corpuscular volume, white cell count.

Conclusion: Larger MPV was associated with CAD. Thus, it might be helpful in risk stratification, or improvement of risk prediction if combining it with other risk factors in risk prediction models. Platelet size may influence the development of restenosis after successful coronary angioplasty; so patients with high pre-procedural MPV values might benefit from an intensified antiplatelet therapy after coronary interventions.