

Letter to the Editor

Mean platelet volume may be related to the degree of coronary collateral circulation

Dear Editor,

We have intentionally read the article "The association between mean platelet volume and coronary collateral circulation" by Islamoglu et al with interest¹. In that well-presented study the authors aimed to investigate the relationship between mean platelet volume (MPV) value and coronary collateral circulation (CCC) in 96 patients with coronary artery disease (CAD). They demonstrated that MPV levels are not related to coronary collateral circulation in patients with CAD.

Coronary collateral circulation (CCC) is an adaptive response to myocardial ischemia. Well-developed collaterals are associated with reduced mortality in patients with stable CAD and reduced infarct size in patients with acute myocardial infarction (2). There are interconnecting vessels between the main arteries which can prevent ischemia despite coronary artery occlusion in many patients. These interconnections of vessels, which can be visualized and graded by angiography, represent the coronary collateral circulation; an alternative route for the myocardial perfusion. In the present study¹ coronary collaterals were scored by visual analyses and were evaluated according to the Rentrop grading system and patients with Rentrop grades 0 and 1 were classified as group 1 (in whom CC development was coded as inadequate) and patients with Rentrop grade 2 and 3 were classified as group 2 (adequate CC development). Then they compared between these two groups. But in some studies like Refiker et al³ the patients were classified into impaired CC development (group 1, Rentrop grades 0-1-2) and adequate CC development (group 2, Rentrop grades 3). And Duran et al accepted Rentrop grade 0 as absence of CC vessels and they accepted Rentrop grade ≥ 1 as presence of CC vessels⁴. So, what are the criteria for the definition of adequate or inadequate CC development? A subgroup analysis of Rentrop grading system according to each four group might affect the results of the study. It would be better, if the authors added subgroup analysis according to Rentrop grading system respectively.

A complete blood count is routine, easy and cheap examination technique that gives information about the patient's formed blood contents; the red and white cells, platelets, the counts and dimensions of subgroups of cells, and parameters like the distribution widths, mean platelet volume. MPV is one of the most widely used laboratory markers to be related the platelet function based on inflammatory condition. MPV also indicates the function of platelet, which is central to processes that are involved in coronary heart disease pathophysiology and endothelial dysfunction⁵. Platelet parameters can be affected by coronary risk factors including age, obesity, smoking, diabetes mellitus, hypertension, hyperlipidemia, metabolic syndrome⁶. Some other recent studies have presented that elevated MPV is linked with peripheral artery disease and stroke, all of which are related to atherosclerosis on the basis of inflammation⁷. It can also be affected by thyroid and rheumatic diseases, hepatic diseases and medications such as anticoagulant therapy, statins. Therefore, if the authors gave information about these factors, the results of the present study may be different and stronger.

Finally, standardized laboratory methods are essential. Blood was collected in potassium-ethylenediaminetetra-acid (EDTA) or sodium-citrate tubes. In present study, blood was collected in EDTA to measure the MPV. The authors analyzed the blood samples after two hours of venipuncture. However, a two-hour delay after blood sampling can lead to abnormal MPV measurement results. As we know, platelets exhibit a time-dependent swelling when blood samples are anticoagulated with EDTA; however, this swelling does not occur in the presence of citrate⁸. For reliable MPV measurements, the potential influence of the anticoagulant must be carefully controlled either by using an alternative anticoagulant, such as citrate, or by standardizing the time delay between sampling and analysis.

In conclusion, MPV may be affected by many factors, the routine clinical usage of these parameters may not be reasonable yet. After that, not only MPV but also neutrophil lymphocyte ratio, red cell distribution width, a gamma-glutamyltransferase and uric acid are easy methods to assess the coronary collateral circulation of the patients⁴. These might be useful in clinical practice⁹. MPV itself alone without other inflammatory markers may not give information to clinicians about the inflammatory condition and prognostic indication of the patient. So, we think that MPV should be evaluated together with other serum inflammatory markers.

References

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