Prognostic value of mean platelet volume in patients after acute coronary syndrome

The association of increased mean platelet volume (MPV) with myocardial infarction was recognized decades ago (1). Besides acute coronary syndromes, MPV is also associated with increased risk of venous thromboembolism (2), and in patients with a known history of cerebrovascular disease, it is associated with increased risk of stroke (3). MPV is increased in patients with heart failure (4) or diabetes mellitus (5). In these diseases, the association with thrombotic complications is less pronounced but is still an important contributor to the impaired prognosis of patients. The association of MPV with thrombotic events is not surprising, as platelets with increased MPV are rich in proaggregatory substances and adhesive receptors (6).

In recent years, the idea of MPV as a predictor of an unfavorable prognosis in acute coronary syndromes was widely and successfully studied, with promising results (7). If such an idea is valid, MPV might be a smart prognostic tool, as it is routinely examined as a part of the complete blood cell count. Examination of MPV is fast, inexpensive, and widely available for all physicians. Despite the broad evidence mentioned above, MPV examination in clinical practice is burdened by several pitfalls. First, it must be highlighted that of all blood cells, platelets are the most fragile elements. It is known that platelet volume increases after blood withdrawal, especially in EDTA-coated tubes (8). Previous studies also have not provided us with a reliable cut-off value. The threshold value in studies was usually derived ad hoc using ROC curves; less often, it was derived from values in healthy volunteers. According to our knowledge, it varies from 8.9 to 11.5 fL (9, 10). Moreover, there is a lack of evidence in specific populations, like patients later after acute coronary syndrome, where the thrombotic risk is lower than in the acute phase. Only few studies have focused on such populations, and many of them originated in the thrombolytic era (11).

The study of Seyyed-Mohammadzad et al. (12) published in this issue of The Anatolian Journal of Cardiology provides us important data about the relation of MPV to increased incidence of major cardiac adverse events (MACE) in patients with acute coronary syndrome treated by delayed, elective PCI. MACE incidence was increased 2-fold in patients with an MPV above the median value. Of note, the majority of these MACEs (62.1%) was a prolonged coronary care unit stay, so other than thrombotic mechanism may be anticipated. In logistic regression analysis, the MPV was proven to be the only independent predictor of MACE incidence, with an astonishing high odds ratio of 11.36. We would like to highlight the surprising fact that traditional markers of worse mid-term outcomes, like age, left ventricle ejection fraction, or diabetes, did not have any significant impact on MACE incidence. Unfortunately, these findings were not thoroughly analyzed or discussed by the authors; thus, the implication in clinical practice is difficult. If these data will be confirmed in further studies, an intensive search for underlying mechanisms is necessary.

In general, the study of Seyyed-Mohammadzad provides additional evidence about the utility of MPV in risk stratification of patients with coronary artery disease. Despite all controversies, MPV should not be overlooked as a marker of impaired prognosis of patients with vascular disorders.

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