LETTERS TO THE EDITOR

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The relationship between mean platelet volume and sex hormones; Methodological drawbacks

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Dear Editor;

I read the article published by Guducu et al. with a great interest (1). They investigated the relationship among mean platelet volume (MPV) and endogenous sex hormones in postmenopausal women. They couldn't find any relationship between MPV and endogenous sex hormones. I congratulate the authors for their contribution of the present study, which is successfully designed and documented. On the other hand, I want to make minor criticism about this study on methodological aspect.

They examined complete blood counts, biochemical tests and sex hormones in postmenopausal patients retrospectively. However, they didn't mention about MPV measurement technique.

Accurate measurements of platelet count and volume are important for diagnostic, therapeutic, and research purposes. The choice of anticoagulant (ethylenediaminetetraacetic acid (EDTA) or citrate), time interval of measurement, and temperature at which MPV is analyzed are important factors in MPV measurement. The time dependent swelling of platelets in samples anticoagulated with EDTA can result in an artefactual increase of MPV and misinterpretation of prothrombotic changes (2). In actual daily practice, MPV measurements are performed at room temperature and temperature factor can be negligible. However, the choice of anticoagulant and time interval of MPV measurement are important issues. MPV increases over time in EDTA-anticoagulated samples and this increase was shown to be proportional with the delay in time between sample collection and laboratory analysis. With impedance counting, the MPV increases over time as platelets swell in EDTA, with increases of 7.9% within 30 min having been reported and an overall increase of 13.4% over 24 h, although the majority of this increase occurs within the first 6 h (2). Dastjerdi et al. recommended to measure MPV within 1 hour regardless of anticoagulant (3). Lancé et al. reported that an optimal stability was detected in K2-EDTA after 120 minutes. It is widely accepted that platelet swelling in test tubes can be minimized by rapid processing of samples (within less than 1 h) (3). For reliable MPV measurement, the potential influence of EDTA anticoagulant on the MPV must be carefully controlled by standardizing the time delay between sampling and analysis.

Secondly, there are significant associations of MPV with many cardiovascular risk factors like smoking, obesity, hypertension, diabetes mellitus, prediabetes, hyperlipidemia, metabolic syndrome, atrial fibrillation and fatty liver disease (4). They didn't mention about the smoking, metabolic syndrome, rhythm status and fatty liver disease in patients and controls. It has been shown that smoking, metabolic syndrome, atrial fibrillation and fatty liver disease increase MPV values (4). Absolutely, these factors should be considered in MPV assessment. It would have been useful if the authors had provided information about these factors.

MPV is universally available with routine blood counts by automated hemograms. In comparison to smaller ones, larger platelets have more granules, aggregate more rapidly with collagen, have higher thromboxane A2 level and express more glycoprotein Ib and IIb/IIIa receptors (2,4,5). MPV can be affected by main cardiovascular risk factors. Because of that all confounding factors should be to taken into account. In addition, standardized methods must be used in MPV measurement.

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