

# Mean platelet volume may not be a risk factor in patients with cerebral venous thrombosis

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Dear Editor,

We read with a great interest the article of Bolayır et al. about the role of mean platelet volume (MPV), platelet distribution width (PDW) and platelet / lymphocyte ratio in development of cerebral venous thrombosis (CVST)<sup>1</sup>. They suggested that MPV and PDW values were new independent risk factors for CVST development. We would like to comment on the results of this study.

Firstly, the authors claimed that MPV and PDW were indicators of platelet function. It is a critical issue that the platelet parameters including MPV and PDW are not accepted as the tests of platelet function. The gold standard test for platelet function is the turbidimetric platelet aggregometry and the relationship between platelet parameters including MPV and PDW and the platelet aggregation results usage of turbidimetric platelet aggregometry were not shown in various studies<sup>2</sup>. Actually, these parameters are related with platelet production not platelet function.

Up to now, the measurement of MPV has not been yet standardized<sup>3</sup>. The timing is very important issue for measurement of the MPV. Jackson and Carter reported the effect of ethylenediaminetetraacetic acid (EDTA) as an anticoagulant on platelet counting<sup>4</sup>. The MPV increases with EDTA depending on the measurement time after venipuncture. This increment generally occurs up to 30% within first 5 minutes of exposure to EDTA and then proceeds with extra 10-15% over the following 2 hours. A meta-analysis study that was performed in published MPV studies indexed PubMed showed that the measurement times between 15 minutes

and 2 hours was significantly different from the measurement times of shorter than 15 minutes and longer than 2 hours<sup>5</sup>. The MPV measurements varied up to 12.5% in these studies and this difference was specified as 2-50% by the review of Jackson and Carter<sup>4,5</sup>. Briefly, the results might be affected considerably due to the measurement time after venipuncture as an important preanalytic variable in this retrospective study. Therefore, the reliability of MPV results of this study was questionable.

Also, the various techniques of different instruments for measuring the complete blood count lead to variable MPV results. MPV discrepancies up to 40% were reported with comparison of the instruments. The MPV measurements varied up to 17.8% by the instrument and maximum deviation together with the difference of instruments used plus MPV measurement times was up to 27.7% in meta-analysis study<sup>5</sup>. The authors specified that Mindray BC-6800 device was used for analysis of the blood samples in their study included the data between January 2008 and September 2016. Because the license year of this automated blood counter was 2013, it must be used other instrument/s in the study, too.

As a result, higher MPV might be originated from the standardization errors of measurement technique rather than the occurrence of CVST.

**Key words:** Intracranial sinus thrombosis, mean platelet volume, predictive value of tests, venous thrombosis

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