

Letter to the Editor

Mean Platelet Volume may not be a Marker for Prognosis in Patients with Aneurysmal Subarachnoid Hemorrhage

Dear Editor,

We carefully read the retrospective study of Wang *et al.* which claimed that the mean platelet volume (MPV)/platelet count ratio was associated with poor clinical outcome in patients with aneurysmal subarachnoid hemorrhage.¹ We would like to express the existence of various factors that may have changed the results of this research.

Currently, MPV value is routinely reported by many laboratories as part of a complete blood count, but its measurement is still not standardized and therefore, its use as a biomarker for purposes such as diagnosis or prognosis in acquired diseases is not strictly recommended.² There are many factors that negatively affect the MPV measurement standardization, the main ones are the MPV measurement time, the anticoagulant contained in the blood tube, and the blood analyzer with which MPV measurement was performed.²⁻⁷ Platelets begin to swell when they come into contact with ethylenediaminetetraacetic acid (EDTA), the most widely used anticoagulant in blood tubes.^{3,8} Although the swelling in platelets persists longer, most notably up to 120 minutes when EDTA is used, and 60 minutes when citrate is used⁸ and therefore, optimal measuring time should be 60 or 120 minutes after venipuncture compared to the use of citrate or EDTA as the anticoagulant, respectively. Unless it is standardized, the time from blood collection to measurement causes a 2–50% variation in MPV results.^{3,7} Similarly, the difference of the devices used in blood count may cause deviation in MPV results of up to 40%.⁵⁻⁷ In this article, there is no explanation about how MPV measurement was made in the study of Wang *et al.* Furthermore, it is not possible to rule out pre-analytical and analytical phase errors in retrospective studies, and analysis-related errors have been reported to be unacceptable, especially in MPV measurements.⁹ As another issue, there was no healthy control group in this study that could be used to compare patient results, and therefore, it remained unclear whether MPV and associated data obtained in the patient group were indeed pathological. Finally, the mean age difference between two different patient groups, which were determined using the modified Rankin Scale, was statistically significant and it was reported that age difference was also a factor affecting

MPV values.² Due to all these reasons, the reliability of the MPV data obtained in the study of Wang *et al.* was significantly adversely affected.

In conclusion, MPV and MPV / platelet count ratio may not be a marker for poor clinical outcome in patients with aneurysmal subarachnoid hemorrhage.

Declarations of Competing Interest

None.

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References

1. Wang Z, Pei W, Chen L, et al. Mean platelet volume/platelet count ratio is associated with poor clinical outcome after aneurysmal subarachnoid hemorrhage. *J Stroke Cerebrovasc Dis* 2020;29:105208.
2. Noris P, Melazzini F, Balduini CL. New roles for mean platelet volume measurement in the clinical practice? *Platelets* 2016;27:607-612.
3. Jackson SR, Carter JM. Platelet volume: laboratory measurement and clinical application. *Blood Rev* 1993;7:104-113.
4. Lancé MD, Sloep M, Henskens YM, et al. Mean platelet volume as a diagnostic marker for cardiovascular disease: drawbacks of preanalytical conditions and measuring techniques. *Clin Appl Thromb Hemost* 2012;18:561-568.
5. Latger-Cannard V, Hoarau M, Salignac S, et al. Mean platelet volume: comparison of three analysers towards standardization of platelet morphological phenotype. *Int J Lab Hematol* 2012;34:300-310.
6. Lippi G, Pavesi F, Pipitone S. Evaluation of mean platelet volume with four hematological analyzers: harmonization is still an unresolved issue. *Blood Coagul Fibrinol* 2015;26:235-237.
7. Beyan C, Beyan E. Were the measurements standardized sufficiently in published studies about mean platelet volume? *Blood Coagul Fibrinol* 2017;28:234-236.
8. Lancé MD, van Oerle R, Henskens YM, et al. Do we need time adjusted mean platelet volume measurements? *Lab Hematol* 2010;16:28-31.
9. Harrison P, Lordkipanidzé M, Frelinger 3rd AL, et al. Platelet count and disease - editorial policy. *Platelets* 2020;31:969-970.

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