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LETTER TO THE EDITOR

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Mean platelet volume values may not be associated with the presence of varicocele

Dear Editor,

We carefully read the meta-analysis study of Zhang et al. which evaluated the relationship between varicocele and platelet indices (Zhang et al., 2020). The researchers claimed that patients with varicocele had higher mean platelet volume (MPV) values, and we think that there are other factors that negatively affect the researchers' comments in this meta-analysis study.

Researchers suggested that MPV reflects the function of platelets, higher MPV values have more platelet function, and this explains the relationship between varicocele pathogenesis and platelets. Today, the gold standard test used in the measurement of platelet functions is turbidimetric-based platelet aggregation, and various studies have shown that there is no correlation between platelet aggregation responses obtained with the usage of this technique and platelet indices such as platelet count, MPV, platelet distribution width (Beyan et al., 2006; De Luca et al., 2013; Ho & Chan, 1995). Essentially, MPV value indicates platelet production rather than platelet function.

Researchers have stated that publications related to MPV have been made in many acquired diseases such as myocardial infarction and venous thromboembolism. Although this observation of the authors is correct, it is still not possible to standardise MPV measurements today, and therefore, its use is not strictly recommended for diagnosis or prognosis purposes in acquired diseases (Noris et al., 2016). After venous blood is taken, when platelets come into contact with an anticoagulant such as ethylenediaminetetraacetic acid (EDTA) in a blood tube, they begin to swell rapidly and deviations between 2%–50% develop in results depending on the difference in the time until MPV measurement (Beyan & Beyan, 2017; Jackson & Carter, 1993; Lancé et al., 2012). In addition, the difference of the devices that cause MPV measurement is also subject to deviations up to 40% (Beyan & Beyan, 2017; Latger-Cannard et al., 2012; Lippi et al., 2015). The features of the nine different studies used in the meta-analysis study related to the MPV measurement method (which anticoagulant was present in the blood tube, how long after the blood was taken for MPV measurement, which blood analyser was used for MPV measurement) are given in Table 1, and it is seen that the measurement methods are not the same; therefore, due to the differences in measurement methods, significant deviations may have occurred in the MPV results of different studies. Moreover, since the data were obtained retrospectively in most of the studies, it was not possible to exclude pre-analytical and analytical errors that negatively affected the research data. It was emphasised that analysis-related errors resulting from retrospective acquisition of data for MPV measurements were particularly unacceptable

TABLE 1 Methodological features of the studies included in the meta-analysis study

Reference	The presence of a healthy control group	How data were provided	Which anticoagulant was used	How long was the measurement time	Which blood analyser was used
Bozkurt et al., 2012	Yes	Unspecified	Unspecified	Unspecified	Unspecified
Camoglio et al., 2015	Yes	Retrospectively	K2-EDTA	Unspecified	Unspecified
Coban, Keles, Biyik, Guzelsoy, Turkoglu, & Ocak, 2015	No	Retrospectively	K-EDTA	Unspecified	Abbott Cell-Dyn 3,700
Coban, Keles, Biyik, Güzelsoy, Türkoğlu, Özgünay et al., 2015	No	Retrospectively	EDTA	Unspecified	Abbott Cell-Dyn 3,700
Demirer et al., 2018	Yes	Prospectively	K-EDTA	Within 2 hr	Sysmex XN-1000
Ghanem et al., 2020	No	Unspecified	Unspecified	Within 2 hr	Unspecified
Mahdavi-Zafarghandi et al., 2014	Yes	Retrospectively	K2-EDTA	Within 60 min	Sysmex K21N
Polat et al., 2014	No	Prospectively	Unspecified	Unspecified	Abbott Cell-Dyn Ruby
Zhang et al., 2019	Yes	Unspecified	Unspecified	Unspecified	Beckman LH 780

Abbreviation: EDTA, ethylenediaminetetraacetic acid.

(Harrison et al., 2020). Finally, it is important to be able to compare the results obtained in such studies with the results of the healthy control group in order to understand whether they are indeed abnormal, and it seems that this was not provided for approximately half of the studies. In another aspect, the difference in MPV value in the studies may be due to the effect on the testicles, not the presence of varicocele. Varicocele with testicular hypotrophy may lead to different MPV values compared to a varicocele without testicular damage, or MPV values may be affected by the clinical grade of the varicocele.

In conclusion, the presence of higher MPV values in patients with varicocele detected in the study of Zhang et al. may be due to the differences in MPV measurement methods in the studies included in the meta-analysis study. In fact, Zhang et al. also emphasised that more studies are needed to understand the potential role of platelets in patients with varicocele.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

KEYWORDS

blood platelets, mean platelet volume, physiopathology, predictive value of tests, varicocele

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