Correspondence

Important Details about the Red Cell Distribution Width

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In the recent issue of the Journal of Atherosclerosis and Thrombosis, Wang et al. assessed the relationship between the red cell distribution width (RDW) and acute myocardial infarction (AMI). However, assessing all parameters affecting the RDW, determining the optimum RDW cut-off value for predicting the prognosis of coronary artery disease (CAD), excluding metabolic comorbidities affecting the RDW values and identifying the specific range for the WBC count within the exclusion criteria would provide more reliable results and improve the credibility of the entire article in this study population.


Key words: Red cell distribution width, Acute myocardial infarction, Vascular lesion

Dear Editor,

We read with great interest the recently published article by Wang et al. in which the authors evaluated the clinical profiles of acute ST-segment elevation myocardial infarction (STEMI) patients undergoing primary percutaneous coronary intervention (pPCI) and examined the relationship between the laboratory test results and RDW values so as to provide a new rationale for further elucidating the relationship between the red cell distribution width (RDW) and acute myocardial infarction (AMI)¹. In brief, the patient group with higher RDW values (≥14%) was found to have a heavier burden of intracoronary thrombi. We would like to share our thoughts and experiences with Wang et al.

First, as is known, RDW is an indicator of the degree of variation in the size of red blood cells (RBCs) (anisocytosis) and may be helpful for distinguishing between some types of anemia². In particular, this parameter aids in distinguishing between megaloblastic anemia, such as that involving folic acid or vitamin B₁₂ deficiency anemia (elevated RDW), and other causes of macrocytosis (often a normal RDW)³. However, the authors did not mention factors that may affect the RDW values or subsequently evaluate these parameters in the current study. Therefore, considering the lack of data on the levels of serum iron, folic acid and vitamin B₁₂, which may affect the RDW findings, as stated as a limitation of the original study, assessing the RDW is not sufficient to predict the prognosis of coronary artery disease (CAD).

Second, as seen in Table 1 in the original paper, a cut-off level of 14% was taken as the normal upper limit in this study. This cut-off value was likely determined and used to evaluate the extent of anemia in the laboratory analysis conducted by the authors. However, this use of the RDW is not currently standard practice, and cut-off values for the RDW are instrument-specific and must be known by the ordering clinician⁴. In the present study, the STEMI patients with an RDW of ≥14% had higher levels of high-sensitivity C-reactive protein, indicating that an altered RDW value is correlated with the inflammatory response. We think that the use of the same value (≥14%) in the evaluation of the inflammatory process is not appropriate in the current study and that it
would be more valuable to detect the optimum RDW cut-off value, with the highest sensitivity and specificity according to the receiver operating characteristic curve analysis, for predicting the prognosis of patients with CAD.

Third, as presented in Table 1 in the original study, there is a difference between the RDW ≥ 14% group and the RDW <14% group in terms of the frequency of dyslipidemia. However, as revealed in previous studies, a higher RDW value is associated with an unfavorable lipid profile5). Therefore, in studies evaluating the value of laboratory parameters for predicting the prognosis of a specific disease, it is better to exclude metabolic comorbidities affecting these parameters in order to avoid obtaining misleading results due to the various distributions of comorbidities in the patient groups.

Fourth, although active inflammation was indicated as an exclusion criterion, as shown in Table 2 in the original study, there are patients with elevated white blood cell (WBC) counts in both patient groups (10.44 ± 3.29 in the patients with an RDW of ≥ 14% and 11.38 ± 3.52 in the patients with an RDW of < 14%). As is known, although a high WBC count is not specific to the disease, it may indicate infection, stress, inflammation, trauma, allergies or certain disorders6). Therefore, in studies aiming to identify predictive markers based on laboratory results, it is better to identify a specific range for the WBC count within the exclusion criteria. Determining a specific WBC range as well as clinical conditions likely to affect the WBC count may help to avoid possible bias in patient selection.

Consequently, assessing all parameters affecting the RDW, determining the optimum RDW cut-off value for predicting the prognosis of CAD, excluding metabolic comorbidities affecting the RDW and identifying a specific range for the WBC count within the exclusion criteria would provide more reliable results and improve the credibility of the entire article in this study population.

**Conflicts of Interest**

The authors declare that they have no conflicts of interest regarding the publication of this paper.

**References**


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