

Med Princ Pract 2015;24:584–585
DOI: 10.1159/000437355

Red Cell Distribution Width in Myocardial Infarction

Sevket Balta, Sait Demirkol, Mustafa Aparci, Zekeriya Arslan,
Cengiz Ozturk

Department of Cardiology, Gulhane Medical Academy,
Ankara, Turkey

Dear Editor,

We read the article ‘Association of red blood cell distribution width levels with severity of coronary artery disease in patients with non-ST elevation myocardial infarction’ by Sahin et al. [1] with interest. They aimed to evaluate the association of the levels of red blood cell distribution width (RDW) with the severity of atherosclerosis and to determine whether or not the RDW level on admission was an independent predictor of all-cause mortality in patients with non-ST elevation myocardial infarction (NSTEMI). They concluded that RDW levels were independently associated with high Sxscore, but were not associated with long-term mortality in NSTEMI patients. This study gives important information on this clinically relevant condition. The ready availability of RDW at no additional cost may encourage its wider use in clinical practice in the future. Thanks to the authors for their contribution.

RDW represents the variability in the red blood cell volume distribution and can be considered an index of heterogeneity in the size of circulating erythrocytes. This parameter is easily measured by automated hematology analyzers and reported as a component of a complete blood count. Though the authors excluded some conditions, the RDW levels could also reflect neurohumoral activation, thyroid disease, nutritional deficiencies of folate, vitamin B₁₂, and iron, bone marrow dysfunction, and some medications [2, 3]. Patients with these conditions were mostly excluded from the study, hence the study was able to show the prognostic and predictor value of the RDW.

The correlation with bilirubin could also be due to liver damage and excessive alcohol intake, resulting in macrocytosis and in-

creased RDW [4]. RDW is effectively a ‘free’ test because it is reported alongside a full blood count at no extra cost with good prognostic value even when compared with relatively expensive markers [4]. RDW is a novel marker of inflammation. The RDW value was higher in patients with chronic obstructive pulmonary disease compared with those of the control group [5]. Therefore, if the authors had given information about hepatic function tests and respiratory condition, the results of the present study might have been different and stronger.

Additionally, not only RDW but also mean platelet volume, neutrophil lymphocyte ratio, C-reactive protein and uric acid are easy methods to evaluate the cardiovascular disease of the patients and could be useful in clinical practice [5]. Finally, it would be better if the authors had reported how long it took them to measure RDW levels, because delayed blood sampling can cause abnormal results in RDW measurements [5].

In conclusion, we believe that the findings obtained from the current study could lead to further studies examining the relationship between RDW and NSTEMI. However, one should keep in mind that RDW alone without other inflammatory indicators might not give exact information to clinicians about the inflammatory status and the prognosis of the patients. Hence, RDW should be evaluated with other serum inflammatory markers.

References

- 1 Sahin O, Akpek M, Sarli B, et al: Association of red blood cell distribution width levels with severity of coronary artery disease in patients with non-ST elevation myocardial infarction. *Med Princ Pract* 2015;24:178–183.
- 2 Fici F, Celik T, Balta S, et al: Comparative effects of nebivolol and metoprolol on red cell distribution width and neutrophil/lymphocyte ratio in patients with newly diagnosed essential hypertension. *J Cardiovasc Pharmacol* 2013;62:388–393.
- 3 Demirkol S, Balta S, Cakar M, et al: Red cell distribution width: a novel inflammatory marker in clinical practice. *Cardiol J* 2013;20:209.
- 4 Balta S, Demirkol S, Cakar M, et al: Red cell distribution width: a novel and simple predictor of mortality in acute pancreatitis. *Am J Emerg Med* 2013;31:991–992.
- 5 Balta S, Aydogan M, Kurt O, et al: Red cell distribution width as a novel, simple, inexpensive predictor of mortality in patients with chronic heart failure. *Int J Cardiol* 2013;168:3049–3050.

Reply

Omer Sahin^a, Goktug Savas^b, Mahmut Akpek^a, Ahmet Oguz Baktir^a, Bahadir Sarli^a

^aDepartment of Cardiology, Kayseri Education and Research Hospital, and ^bDepartment of Cardiology, Erciyes University School of Medicine, Kayseri, Turkey

Dear Editor,

We appreciate the comments made by Balta et al. regarding our paper that evaluated the association of red blood cell distribution width (RDW) levels with the severity of coronary artery disease (CAD) in patients with non-ST elevation myocardial infarction [1]. We had shown a significant association between RDW and high SYNTAX score while RDW levels were not associated with long-term mortality in patients with non-ST elevation myocardial infarction. Balta et al. raised the possibility that issues such as thyroid disease, vitamin deficiency and some drugs could affect the RDW levels. We agree that these issues influence RDW levels and therefore emphasized them in the limitations of the study. Further, Balta et al. also remarked that excessive alcohol intake, liver damage and chronic obstructive pulmonary disease could have an effect on RDW levels. However, none of our patients had a history of excessive alcohol intake before admission and none of them had elevated liver enzymes 3 times the upper limit of normal (except mild increase due to acute myocardial infarction). Additionally, patients with chronic obstructive pulmonary disease were not excluded in the present study.

Balta et al. also requested more information on laboratory measurements. We have an air-operated system, which transports blood samples to the laboratory in about 1–2 min. Thus, we did not experience any delay in transportation.

Accumulating evidence suggests that inflammation plays a key role in the development of atherosclerotic plaques, plaque rupture and thrombus formation [2]. Previously, it had been reported that neutrophil lymphocyte ratio was associated with the severity of CAD [3] and that also this ratio could predict the prognosis in patients with acute myocardial infarction [4]. In a previous study

about the clinical relevance of RDW, Dabbah et al. [5] reported that RDW levels were associated with clinical outcomes in patients with acute myocardial infarction. However, there were no data regarding the association between RDW levels and the severity of CAD whereas we reported a significant correlation between RDW and high SYNTAX score in our study [1]. Therefore, RDW seems to be a novel marker of inflammation which is easily measured and predicts the severity of CAD.

References

- 1 Sahin O, Akpek M, Sarli B, et al: Association of red blood cell distribution width levels with severity of coronary artery disease in patients with non-ST elevation myocardial infarction. *Med Princ Pract* 2015;24:178–183.
- 2 Tomey MI, Narula J, Kovacic JC: Advances in the understanding of plaque composition and treatment options: year in review. *J Am Coll Cardiol* 2014;63:1604–1616.
- 3 Kalay N, Dogdu O, Koc F, et al: Hematologic parameters and angiographic progression of coronary atherosclerosis. *Angiology* 2012;63:213–217.
- 4 He J, Li J, Wang Y, et al: Neutrophil-to-lymphocyte ratio (NLR) predicts mortality and adverse-outcomes after ST-segment elevation myocardial infarction in Chinese people. *Int J Clin Exp Pathol* 2014;7:4045–4056.
- 5 Dabbah S, Hammerman H, Markiewicz W, et al: Relation between red cell distribution width and clinical outcomes after acute myocardial infarction. *Am J Cardiol* 2010;105:312–317.

Omer Sahin, MD
Department of Cardiology
Kayseri Education and Research Hospital
TR–38039 Kayseri (Turkey)
E-Mail dr.osahin@yahoo.com