Letter to the Editor

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Red Cell Distribution Width and Coronary Artery Calcification

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To the Editor:

We have read the article entitled, "Association between Red Blood Cell Distribution Width (RDW) and Coronary Artery Calcification in Patients Undergoing 64-Multidetector Computed Tomography" by Gürel et al.[1] They aimed to determine whether the RDW measures are associated with the coronary artery calcification score (CACS) in patients who did not present with obvious coronary artery disease (CAD). They concluded that the RDW is an independent predictor of the CACS, suggesting that it might be a useful marker for predicting CAD. This study provides important information on this clinically relevant condition.

Inflammation is a significant feature of the arteriosclerotic process, and some novel inflammatory indicators have been shown in any stage of the arteriosclerotic process.[2] Complete blood count has several routinely available markers that can indicate inflammatory status. At present, many studies concluded that parameters like neutrophil-lymphocyte ratio, RDW, mean platelet volume levels were higher in patients with inflammatory diseases compared with controls.[2-4] RDW indicates the variability in the size of circulating erythrocytes and is expressed as the coefficient of variation of the erythrocyte volume. Recently, a number of studies have reported that RDW levels, which may be related to subclinical inflammation, are increased in many inflammatory diseases.[5] Furthermore, some studies reported that RDW levels were independently associated with mortality in both the general population and in patients with certain diseases. However, some conditions should be considered when RDW levels are evaluated. RDW can reflect ethnicity, neurohumoral activation, renal dysfunction, thyroid disease, nutritional deficiencies (i.e. iron, vitamin B_{12}, and folic acid), bone marrow dysfunction, inflammatory diseases, chronic or acute systemic inflammation[6] and use of some drugs.[7] The correlation with bilirubin could also be due to hepatic dysfunction and excessive alcohol intake, resulting in macrocytosis and increased RDW. Also, it would be better if the authors might define how much time they specified on measuring RDW levels, because delaying blood sampling can lead to abnormal results in RDW assessments.[8]

In conclusion, we strongly believe that the findings obtained from the current study will lead to further studies assessing the relationship between RDW and CAD. Finally, not only RDW but also mean platelet volume, neutrophil lymphocyte ratio, platelet distribution width, RDW- lymphocyte ratio are easy methods for predicting cardiovascular disease in patients.[9] These markers might be useful in clinical practice.[10]

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• The authors have no financial conflicts of interest.

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Response

Author's Reply to Sevket Balta, et al

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First of all, my gratitude for your interest in our work published in the Korean Circulation Journal, 2015 September . We are grateful to the authors' interest in the subject and for their critiques.

The pathogenesis of atherosclerosis is complex and has not been completely elucidated. The most accepted theory is that everthing starts with inflammation and endothelial dysfunction.

In particular the diagnosis of atherosclerosis without clinical signs should be an important target for clinicians. Several studies have been designed with hematologic parameters to recognize early atherosclerosis and to show the seriousness of atherosclerosis.[1)2)] The relationship between coronary artery calcification (CAC) with haematological parameters, such as neutrophil, lymphocyte, neutrophil-to-lymphocyte ratio, and monocytes is shown. Even haematological parameters were evaluated in patient different CAC scores.[3)]

The red cell distribution width (RDW) is utilized in the differential diagnoses of anemia, but otherwise has received little attention .The RDW, an automated measure of red blood cell size heterogeneity (e.g. anisocytosis) that is largely overlooked, is a newly recognized risk marker in patients with established cardiovascular disease. RDW is not only high in atherosclerosis, it is high in many areas related to inflammation, e.g., septic shock,[4)] and contrast-induced nephropathy.[5)] Higher RDW levels predicted cardiovascular, cancer, and chronic lower respiratory disease mortality. Additionally, there have been cross-sectional associations of RDW with chronic lung disease and cancer.[6)]

In our study, we aimed to demonstrate the relationship between coronary calcification and RDW from blood parameters . Haematological indices were measured using an automated blood cell counter by standard methods. An examination of blood parameters are easily accessible nowadays; many tests, exemplarily, galectin-3,[7)] lipocalin-2/neutrophil gelatinase-B-associated lipocalin,[8)] N-terminal propeptide of type III procollagen,[9)] which are associated with atherosclerosis and inflammation are both expensive and difficult to reach.

As a result, we believed that haematological parameters and especially RDW may be used in many diseases associated with atherosclerosis and inflammation.

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