

EDITORIAL

Inflammatory Indices Derived from Hemogram as Prognostic Markers of Cardiovascular Outcome

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Editorial referring to the article: Hemoglobin/Red Cell Distribution Width Ratio Is Associated With Poor Prognosis In Patients With Acute Coronary Syndrome In Long Term Follow-Up

In parallel with the increasing incidence of metabolic disorders, such as obesity and type 2 diabetes mellitus, which increase the incidence of cardiovascular diseases, the incidence of heart conditions is also growing. Many markers are being investigated for the prediction of the prognosis of cardiovascular diseases. In a recent work, Kilic *et al.* have studied the association of the hemoglobin to red cell distribution width (Hb/RDW) ratio with the long-term survival of patients with acute coronary syndrome.¹

Acute coronary syndrome is one of the leading causes of death worldwide. Coronary artery disease is one of the most important causes of mortality and morbidity, responsible for approximately 7 million deaths and morbidity in 129 million people annually.² The highest increases in the cardiac disease incidence worldwide have occurred in Latin America, the Middle East, and, to a lesser extent, in the Far East, but it varies by region.³

Coronary artery disease includes various pathologies related to the coronary arteries, such as unstable angina, and non-ST-segment elevation and ST-segment elevation myocardial infarction.⁴

Many risk factors for coronary artery disease have been identified in epidemiological and clinical studies. As in the Framingham Heart Study, these risk factors determine the future risk of coronary artery disease. As a result, the number of studies aimed at eliminating the risk of coronary artery disease has increased. In the Framingham Heart Study, coronary artery disease was associated with older age, smoking, hypertension, left ventricular

hypertrophy, elevated serum cholesterol, and decreased high-density lipoprotein cholesterol. The general clinical practice usually aims at assessing and controlling the major risk factors, such as diabetes, hypertension, high low-density lipoprotein cholesterol, and smoking.⁵

Inflammation plays an important role in the development and progression of various diseases, including cardiovascular events. Many current studies have shown that systemic inflammation has an effect on coronary artery diseases, independently of traditional risk factors, and the prognostic value of systemic inflammatory markers, especially C-reactive protein, interleukin-6, and white blood cells, has been determined.⁶ Many studies have shown the association between inflammatory conditions and the increase or decrease in various ratios derived from hemogram parameters, such as mean platelet volume, RDW, platelet distribution width, neutrophil/lymphocyte ratio, and Hb/RDW ratio, which are currently used to determine inflammation.⁷

Anisocytosis, size variability of circulating erythrocytes, is determined by RDW. Moreover, RDW has been associated with inflammatory conditions, such as thyroiditis,⁸ vertebral disc pathologies,⁹ autoimmune hepatitis,¹⁰ and gastrointestinal disorders.¹¹ All of these conditions are characterized by high levels of inflammatory markers in the blood. In addition, cardiovascular diseases are associated with an increased burden of inflammation.¹²

Recently RDW has been studied specifically in cardiac conditions. The number of studies revealing the prognostic importance of RDW in inflammation-related cardiovascular diseases, such as atherosclerosis and ischemic heart diseases, has been increasing. In addition,

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Hb is an important marker of inflammation in patients with coronary artery disease, which causes anemia due to chronic inflammation. The Hb/RDW ratio is used as a new inflammation marker in malignancies, such as esophageal, small cell lung and pancreatic cancers, and in systemic diseases, such as acute kidney injury.¹³ Apart from the studies in literature, Kilic *et al.* have investigated the prognostic role of Hb/RDW ratio in patients with acute coronary syndrome and reported its high sensitivity and specificity in predicting those patients' outcome.¹

Blood Hb level refers to the oxygen-carrying capacity of an organism. However, recent works simplify the role of Hb in inflammatory conditions. Authors have suggested an association between Hb and inflammatory burden in patients with Covid-19,¹⁴ which is not surprising because Covid-19 produces a significant amount of inflammatory burden. Moreover, Hb is not

only considered a diagnostic marker in inflammatory conditions but also has prognostic value in certain diseases. Leonardi *et al.* have reported that decreased Hb is a reliable prognostic indicator in patients with acute coronary syndrome.¹⁵ It is obvious that both RDW and Hb have remarkable diagnostic and prognostic values in diseases that produce inflammation. When combined as Hb/RDW ratio, they make a more useful tool in the evaluation of those subjects.

In conclusion, there are studies on inflammation and heart diseases, and the number of studies on parameters derived from the hemogram, which is an easily accessible, cheap, and reliable technique, is increasing. Hemoglobin/RDW ratio is a newly studied hemogram parameter in coronary artery diseases. We believe that the Hb/RDW ratio would be useful in determining the follow-up and prognosis in patients with heart conditions.

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