COVID-19 and C-Reactive Protein albumin ratio as a predictor

COVID-19 ve bir prediktör olarak C-Reaktif Protein albumin oranı

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Dear Editor,

New information comes out every day about the COVID-19 disease, which emerged towards the end of 2019 and affected the whole world in the following periods, causing it to be declared a pandemic. However, the necessity of closer monitoring of the patients during the clinical follow-up and treatment phase of the disease or the determination of which patient group is at higher risk for severe disease becomes more important when the burden on the health system increases during peak periods. It is necessary to make the right triage and bring the right resources to the right patients in situations such as pandemics that affect very large masses and make it difficult to manage resources appropriately in health care delivery (1).

There is no specific clinical feature that definitively distinguishes COVID-19 from other respiratory infections. In general, clinical findings are similar to other respiratory tract infections. This explains the fact that previous experience from other respiratory tract infections helps in the management of the pandemic (1,2).

When the death rates due to COVID-19 are examined, it is seen that there are differences from country to country. The reason for this can be considered as the implementation of different treatment options in each country since the health service delivery capacities of the countries are different and there is no definite treatment protocol. In addition, the indications for hospitalization differ according to the treatment protocol of each country and this can also be considered as the reason for the different rates. This situation reveals that markers to be recommended for global use should be easily accessible, cheap, and simple (2).

CRP and albumin are acute phase reactant proteins that are studied at admission in the vast majority of hospitalized patients. Compared to peripheral blood cytokines, these laboratory tests are ideal parameters as they are simple, easily accessible, and inexpensive. CRP is produced in the liver in response to stimulation of various proinflammatory cytokines, primarily IL-6, and then enters the circulation. In acute inflammation, CRP levels increase rapidly in proportion to the severity of the disease and begin to decrease when the inflammation regresses. This is an important feature of CRP that allows it to be used in the follow-up of treatment response. CRP is also an indicator of poor prognosis in various acute or chronic diseases such as cancer, trauma, surgical procedure, autoimmune diseases, and sepsis (3). Like many inflammatory parameters, the level of CRP increases during the cytokine storm in COVID-19 patients. Therefore, increased CRP in COVID-19 has been associated with disease severity, mortality, severity of CT findings and respiratory failure (4). Albumin, an acute phase protein synthesized in the liver, plays a role in the maintenance of oncotic pressure, transport of intravascular molecules, inflammation and is used as a biomarker to show nutritional status. Hypoalbuminemia is a poor prognostic biomarker in chronic inflammatory disease, sepsis and many other diseases and in patients undergoing surgical intervention (3). Many studies have been conducted in the literature with the hypothesis that the CRP-Albumin Ratio (CAR), formed by the combination of these two biomarkers, may be a stronger marker (4-7).
In a retrospective study on 90 inpatients, 60 of whom were mild and 30 of whom were severe, a positive correlation was found between CAR and the severity of COVID-19, and the cut-off value was found to be 0.296, with a sensitivity of 76.7% and a specificity of 80.4% for the prediction of severe disease. (5). In another retrospective study evaluating 197 inpatients, 113 of whom were non-severe and 84 of whom were severe, the cut-off value of CAO, which was assessed at the time of admission to the hospital, was determined as 0.9 for the discrimination of severe disease in COVID-19. (AUC: 0.718, sensitivity: 69.1%, specificity: 70.8%) (6). In the study conducted by Özdemir and Algin on 103 patients in the emergency department, the odds ratio for 30-day mortality of CAR values above 0.18 was reported as 13.8 (95% confidence interval: 1.4-130.07) (7). In conclusion,

CAO is a biomarker that can be used in the management of COVID-19 patients because it is easily accessible, inexpensive and simple.

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