Phenotypic changes of blood cells in Covid-19 patients

Covid-19 infection can cause significant damage to different types of blood cells, altering them in size, number, rigidity, and distribution width. Lower levels of hemoglobin and anemia have been reported in several studies, and an alteration in the concentration of antioxidant enzymes has been shown to promote a dangerous state of oxidative stress in red blood cells. These changes can provide important information about disease severity and progression (1). In addition, changes in the biomechanical properties of red and white blood cells may contribute to the condition known as long COVID (2).

Analysis of hematologic outcomes of good and poor outcome patient groups has shown that red cell distribution width (RDW-SD) is the most appropriate single parameter for predicting prognosis of severe disease (3,4). When combined with lymphocytes (LYM and RDW-CV respectively LYM and RDW-SD) the prediction of severe COVID-19 cases can be further improved.

Hemoglobin is also significantly reduced in poor outcome groups. In combination with reduced lymphocytes, this may also serve to predict severe disease progression (5).

Therefore, monitoring hematologic changes in patients with COVID-19 may play an important role in the management of the disease and prevent the risk of a severe disease progression.

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