



10. THE IMPACT OF COVID-19 DISEASE ON PLATELETS AND COAGULATION

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Introduction. Platelets are formed elements of blood that play an important role in blood clotting. As the main mediator of thrombus formation, platelets have become one of the key aspects in the study of SARS-CoV-2. COVID-19 is primarily a respiratory disease. However, critically ill patients may develop systemic symptoms, including coagulopathy. COVID-19 is associated with disseminated intravascular coagulation (DIC), sepsis-induced coagulopathy (SIC), local microthrombi, venous thromboembolism (VTE), arterial thrombotic complications and thrombotic inflammation, as well as other bleeding disorders.

Aim of study. To explore the possible mechanisms of platelets implications in coagulopathy disorders associated with COVID-19.

Methods and materials. We selected and analyzed 30 articles in the PubMed and Google Scholar databases based on the following keywords: COVID-19, coagulopathy, platelets in COVID-19.

Results. Based on the information, approximately 20%-50% of hospitalized patients with COVID-19 have hematologic abnormalities in coagulation tests (elevated D-dimer, prolonged PT, thrombocytopenia, and/or low fibrinogen levels). There are several mechanisms of interaction between platelets and the SARS-CoV-2 virus, the main of which is a dysfunctional and excessive immune response, often referred to as a cytokine storm. Elevated levels of proinflammatory cytokines such as interleukin-6 (IL-6) and tumor necrosis factor-alpha (TNF- α) are associated with coagulopathy. Inflammation can activate the coagulation cascade, increasing the formation of thrombin and fibrin, promoting clot formation. Other possible mechanisms include endothelial dysfunction, when the SARS-CoV-2 virus enters cells by binding to the angiotensin-converting enzyme 2 (ACE2) receptor, which is expressed on the surface of endothelial cells lining blood vessels where the virus enters and spreads replicated, this leads to endothelial dysfunction, which contributes to the procoagulant state and also promotes blood clot formation.

Conclusion. This review underscores the critical importance of comprehending the potential mechanisms of coagulation system involvement in SARS-CoV-2 infection, for the early detection of bleeding disorders and the avoidance of factors that contribute to progression of the disease.