CHANGES IN THE BLOOD COAGULATION SYSTEM IN PATIENTS WITH CHRONIC PANCREATITIS

Literature Review
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Relevance

Chronic pancreatitis is a long-term inflammatory and degenerative disease of the pancreas characterized by pancreatic parenchymal fibrosis, exocrine and endocrine insufficiency, and systemic metabolic disturbances. In recent years, chronic pancreatitis has been considered not only as a local inflammatory process but also as a disease capable of affecting the systemic hemostatic balance.

Chronic inflammation, pain syndrome, enzymatic imbalance, protein-energy deficiency, changes associated with the hepatobiliary system, and microcirculatory disorders may lead to various disturbances in the blood coagulation system. In such patients, hypercoagulation, platelet activation, increased fibrinogen levels, and changes in prothrombin time, activated partial thromboplastin time and the international normalized ratio may be observed.

Aim of the Review

The aim of this literature review is to analyze the pathogenetic basis, clinical and laboratory manifestations, and diagnostic significance of changes in the blood coagulation system in patients with chronic pancreatitis.

Literature Review

According to the literature, changes in the blood coagulation system in chronic pancreatitis develop through several mechanisms. First of all, a long-lasting inflammatory process in the pancreas leads to activation of cytokines, proteolytic enzymes, and inflammatory mediators. This condition is accompanied by endothelial dysfunction, impaired capillary circulation, and activation of the hemostatic system.

In chronic pancreatitis, a hypercoagulable state may often develop. It may be manifested by increased fibrinogen levels, elevated D-dimer concentration, enhanced platelet aggregation, and increased activity of the prothrombin system. These changes are associated with inflammatory activity and microcirculatory disorders and may increase the risk of thrombotic complications in patients.

On the other hand, prolonged chronic pancreatitis may impair digestion and absorption. Deficiency of fat-soluble vitamins, especially vitamin K, can reduce the synthesis of prothrombin complex factors. As a result, some patients may develop prolonged

clotting time, decreased prothrombin index, increased INR, and signs of hemorrhagic tendency. Thus, hemostatic changes in chronic pancreatitis may be manifested not only by hypercoagulation but also, in some cases, by hypocoagulable shifts.

Assessment of platelet count and functional activity plays an important role in evaluating the hemostatic system. Under conditions of chronic inflammation, platelets become activated, interact with the endothelium, and create favorable conditions for thrombus formation at the microcirculatory level. These processes are more pronounced in patients with recurrent exacerbations of pancreatitis, pain syndrome, and high inflammatory activity.

Coagulation test parameters are among the main laboratory criteria for identifying hemostatic disorders in patients with chronic pancreatitis. Prothrombin time, prothrombin index, INR, activated partial thromboplastin time, fibrinogen, thrombin time, and D-dimer make it possible to assess different components of the coagulation system. Increased fibrinogen is considered a marker of inflammatory activity and hypercoagulation, whereas changes in activated partial thromboplastin time and INR may indicate deficiency of coagulation factors or disorders associated with the hepatobiliary system.

Therefore, comprehensive assessment of the hemostatic system in patients with chronic pancreatitis is clinically important. It is advisable to analyze complete blood count, platelet count, coagulation parameters, fibrinogen, D-dimer, liver enzymes, bilirubin, total protein, and albumin together. Such an approach makes it possible to detect thrombotic and hemorrhagic risks early, select individualized treatment strategies, and prevent complications.

Conclusion

The analysis of the literature shows that changes in the blood coagulation system in patients with chronic pancreatitis are multifactorial. They develop in association with inflammatory activity, endothelial dysfunction, microcirculatory disorders, enzymatic imbalance, hepatobiliary system status, and vitamin K deficiency. Hemostatic disorders in chronic pancreatitis may include both hypercoagulable and, in some cases, hypocoagulable changes. Fibrinogen, D-dimer, activated partial thromboplastin time, INR, prothrombin time, and platelet parameters are important laboratory markers for detecting these conditions.

Keywords

Chronic pancreatitis, blood coagulation system, hemostasis, coagulation profile, fibrinogen, D-dimer, activated partial thromboplastin time, INR, hypercoagulation, hypocoagulation.