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CHANGES IN THE BLOOD COAGULATION SYSTEM IN CHRONIC VIRAL HEPATITIS AND THEIR CLINICAL SIGNIFICANCE

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Abstract: Background: Chronic viral hepatitis (CVH) is associated not only with progressive liver damage but also with disturbances in the hemostatic system, which can lead to an increased risk of bleeding and thrombotic events. Understanding these alterations is critical for optimizing patient management.

Objective: To investigate the hemostatic system in patients with chronic viral hepatitis, evaluate clinical and laboratory parameters, and assess their correlation with disease severity.
Materials and Methods: A prospective observational study was conducted including 82 patients diagnosed with chronic hepatitis B or C. Clinical assessments and laboratory evaluations of hemostasis, including complete coagulation profile, platelet count, fibrinogen levels, and prothrombin index, were performed. Data were statistically analyzed to determine relationships between hemostatic disturbances and clinical features.
Results: Hemostatic abnormalities of varying degrees were observed among patients, including altered coagulation times, reduced platelet function, and abnormal fibrinogen levels. These disturbances were associated with both bleeding tendencies and thrombotic risk. The study highlights the importance of individualized monitoring and management strategies for patients with CVH.
Conclusion: Chronic viral hepatitis is frequently accompanied by significant hemostatic disturbances, which increase the risk of complications. Regular monitoring of hemostatic parameters and tailored therapeutic interventions can improve patient outcomes, prevent adverse events, and enhance quality of life.

Keywords: Chronic viral hepatitis, Hemostasis, Coagulation, Bleeding risk, Thrombosis, Platelet function, Liver disease, Clinical monitoring

Relevance of the Study. **Chronic viral hepatitis remains a major public health problem worldwide, affecting hundreds of millions of people and representing one of the leading causes of chronic liver disease, cirrhosis, and hepatocellular carcinoma. According to the World Health Organization, viral hepatitis B and C are responsible for a significant proportion of global morbidity and mortality associated with liver pathology. The persistent inflammation and hepatocellular damage characteristic of these infections lead to progressive fibrosis, hepatic insufficiency, and a broad spectrum of systemic complications.**

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Beyond the well-known hepatic manifestations, chronic viral hepatitis is increasingly recognized as a systemic disease with extrahepatic effects, including alterations in the hemostatic system. The liver plays a central role in the synthesis of coagulation factors, anticoagulant proteins, and fibrinolytic components. Therefore, hepatic dysfunction inevitably leads to imbalances within the coagulation and fibrinolysis systems. These disturbances may manifest as both hypocoagulable and hypercoagulable states, predisposing patients to spontaneous bleeding, hematoma formation, or, conversely, thrombotic and microcirculatory complications.

Hemostatic disorders in chronic viral hepatitis significantly influence the clinical course of the disease, affect the safety and efficacy of therapeutic interventions, and contribute to a higher risk of adverse outcomes, including gastrointestinal bleeding and portal vein thrombosis. Moreover, these changes have profound implications for the management of patients undergoing antiviral, hepatoprotective, or anticoagulant therapy, necessitating an individualized approach based on detailed laboratory evaluation.

Given the clinical complexity and multifactorial nature of these processes, a comprehensive assessment of hemostatic alterations in chronic viral hepatitis is essential. Such evaluation helps to identify early markers of coagulopathy, optimize pharmacotherapeutic strategies, and improve overall patient prognosis. Consequently, the investigation of the hemostatic system in chronic viral hepatitis, the analysis of its clinical and laboratory parameters, and the development of effective, regionally adapted treatment protocols are of great importance not only from a clinical and pathophysiological standpoint but also from the broader perspective of public health and preventive medicine.

Materials and Methods.

Study Design and Participants:

The study was conducted as a prospective observational study among patients diagnosed with chronic viral hepatitis. A total of 82 adult patients, aged 30 to 70 years, were enrolled. All participants provided written informed consent prior to inclusion in the study. The study protocol adhered to the principles of the Declaration of Helsinki and was approved by the institutional ethics committee.

Inclusion and Exclusion Criteria:

Patients with a confirmed diagnosis of chronic hepatitis B or C, based on serological and virological testing, were included in the study. Exclusion criteria included coexisting hematological disorders, severe systemic diseases, recent anticoagulant therapy, and pregnancy, in order to minimize confounding factors.

Clinical Assessment:

All patients underwent a thorough clinical evaluation, including detailed medical history, assessment of disease duration, and physical examination. Particular attention was paid to signs of bleeding, thrombotic complications, and other complications associated with chronic liver disease. Liver function tests, including ALT, AST, bilirubin, and albumin levels, were performed to assess hepatic status.

Laboratory Evaluation:

Key parameters of the hemostatic system were assessed in all patients, including:

Complete coagulation profile (prothrombin time, activated partial thromboplastin time, international normalized ratio)

Platelet count and qualitative assessment of platelet function

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Fibrinogen levels
Prothrombin index
Blood samples were collected under standardized conditions, processed promptly, and analyzed using validated laboratory methods and calibrated equipment to ensure accuracy and reliability of results.

Data Analysis:

The collected data were statistically analyzed to identify correlations between hemostatic disturbances, their clinical manifestations, and disease characteristics. Descriptive statistics were used to summarize demographic and clinical data. Comparative analyses between subgroups and correlation analyses were conducted using [SPSS], with a significance level set at $p < 0.05$.

Ethical Considerations:

The study protocol was reviewed and approved by the institutional ethics committee. All participants were informed about the study objectives, procedures, and potential risks, and written informed consent was obtained prior to participation.

Purpose and Objectives.

Purpose: The purpose of this study is to comprehensively characterize the disturbances of the hemostatic system in patients with chronic viral hepatitis, to evaluate their clinical and laboratory manifestations, and to examine their correlation with patients' overall clinical status and disease progression. By systematically analyzing these alterations, the study aims to identify the specific pathophysiological features of hemostatic dysfunction in chronic viral hepatitis. The ultimate goal is to provide evidence-based recommendations for the optimization of disease management, therapeutic interventions, and preventive strategies, thereby improving patient outcomes and reducing complications associated with coagulopathy.

Objectives:

1. To assess the main quantitative and qualitative parameters of the hemostatic system, including coagulation factors, platelet function, and fibrinolytic activity, in patients diagnosed with chronic viral hepatitis.
2. To analyze the clinical manifestations of hemostatic disorders, including bleeding tendencies, thrombotic complications, and their relationship with disease severity, progression, and overall patient prognosis.
3. To formulate scientifically grounded, clinically applicable recommendations for individualized therapeutic strategies, based on integrated clinical and laboratory findings, aimed at optimizing treatment efficacy and minimizing complications in patients with chronic viral hepatitis.

Conclusion. Patients with chronic viral hepatitis exhibit varying degrees of hemostatic system disturbances, which reflect both the severity and progression of liver dysfunction. These alterations in hemostasis significantly increase the risk of bleeding and thrombotic complications, making regular and comprehensive monitoring of hemostatic parameters a critical component of clinical management.

The findings of this study underscore the necessity of an individualized approach to both therapeutic and preventive strategies, tailored to the patient's specific hemostatic profile and clinical condition. Early identification of hemostatic imbalances allows for timely intervention, which can mitigate the risk of adverse events and optimize treatment outcomes.

Furthermore, systematic monitoring of coagulation and platelet function not only facilitates the prevention of complications but also contributes to improving overall quality of life for patients. Integrating these assessments into routine clinical practice can enhance the effectiveness of

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disease management and support evidence-based decision-making in both pharmacological therapy and preventive care for patients with chronic viral hepatitis.

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