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CLINICAL AND LABORATORY PARAMETERS OF LIVER FUNCTION IN CHRONIC KIDNEY DISEASE AND THEIR CORRECTION

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Abstract
Chronic kidney disease (CKD) is a global healthcare problem due to its high economic burden and its contribution to the increasing prevalence of cardiovascular diseases. The often asymptomatic course of CKD leads to the extrapolation of the prevalence of end-stage renal disease to the overall prevalence of CKD. To assess the global prevalence of this condition, the authors conducted a literature search in the PubMed, Scopus, and eLibrary databases. A total of 32 sources were analyzed, covering various aspects of the topic.
The review demonstrates the high relevance and social significance of CKD worldwide due to its high prevalence (ranging from 6.86% to 34.3% across different countries), low detection rates at early stages, significant comorbidity, and challenges in implementing preventive measures. Determining the current prevalence of CKD is essential for the proper allocation of healthcare resources in prevention, early diagnosis, and treatment.

Keywords: Chronic kidney disease, liver function tests, transaminases, albumin, dialysis, hepatoprotectors.

Introduction

Chronic kidney disease (CKD) is a global public health issue: according to KDIGO (2013), it affects up to 10–15% of the population. In addition to impaired renal excretory function, patients develop systemic complications, including liver involvement, which significantly affects prognosis and quality of life. The kidney–liver interaction is of pathogenetic importance: dysfunction in one organ adversely affects the other (Pavlov, Lopatkin, 2017).
Liver biochemical parameters in patients with CKD
Transaminases (ALT, AST).
In CKD patients, their levels are often reduced. Staufer et al. (2020) associate this with pyridoxal phosphate deficiency, hemodilution, and the accumulation of uremic toxins. Efimov and Gavrilenko (2020) emphasize that low transaminase levels may mask active liver injury.
Alkaline phosphatase and GGT.
Elevated levels of these enzymes are frequently observed in CKD due to secondary hyperparathyroidism and cholestasis (Efimov, Gavrilenko, 2020).
Albumin.
According to Shilov et al. (2021), hypoalbuminemia in CKD patients is caused by protein-energy malnutrition and chronic inflammation.

Bilirubin.

Usually remains within normal limits; however, it may increase in cases of viral hepatitis (HBV, HCV) (Fabrizi et al., 2018).

Synthetic and detoxification functions of the liver

A decrease in hepatic synthetic activity is manifested by hypoalbuminemia, prolonged prothrombin time, and deficiency of clotting factors (Fabrizi, Messa, Martin, 2019).

Additionally, liver injury is exacerbated by the effects of uremic toxins and pro-inflammatory cytokines (IL-6, TNF-α), which promote fibrosis (Staufer et al., 2020).

Modern approaches to correction

Dialysis optimization – use of biocompatible membranes and adequate dialysis dose (Shilov et al., 2021).

Hepatoprotective therapy – ursodeoxycholic acid, essential phospholipids, and ademetionine improve liver biochemical parameters in CKD patients (Kozlovskaya, Troshina, 2019).

Antioxidant therapy – N-acetylcysteine, vitamins C and E reduce oxidative stress (Fabrizi et al., 2019).

Diet therapy – adequate intake of vitamin B6 increases transaminase activity and improves their diagnostic value (Tareeva, 2018).

Treatment of comorbidities – correction of dyslipidemia and control of arterial hypertension reduce the risk of progression of liver damage (Wanner, Tonelli, 2013).

Conclusion

Chronic kidney disease is associated with significant hepatic alterations, manifested by changes in biochemical parameters and impaired synthetic function. Interpretation of liver function tests in such patients is challenging and requires a comprehensive approach. Management should include optimization of dialysis, use of hepatoprotective and antioxidant therapies, as well as treatment of comorbid conditions.

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