

**ACUTE AND CHRONIC LIVER FAILURE****Rozimova Etibor Bakhtiyarovna**

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**Abstract.** *Kidney diseases, such as acute and chronic renal failure, are significant medical concerns due to their severe health consequences. The kidneys play a vital role in blood filtration, toxin removal, water-salt balance maintenance, and blood pressure regulation. Dysfunction in these processes leads to various diseases that result in structural changes in kidney tissues and impaired function. This article discusses the pathophysiology, causes, and consequences of acute and chronic kidney failure, emphasizing the importance of timely diagnosis and treatment.*

**Keywords:** *Kidney diseases, chronic renal failure, severe health consequences, blood filtration, water-salt balance maintenance, kidney failure.*

**ОСТРАЯ И ХРОНИЧЕСКАЯ ПЕЧЕНОЧНАЯ НЕДОСТАТОЧНОСТЬ**

**Аннотация.** *Заболевания почек, такие как острая и хроническая почечная недостаточность, являются серьезной медицинской проблемой из-за их серьезных последствий для здоровья. Почки играют жизненно важную роль в фильтрации крови, выведении токсинов, поддержании водно-солевого баланса и регуляции артериального давления. Нарушение этих процессов приводит к различным заболеваниям, которые приводят к структурным изменениям в тканях почек и нарушению функции. В этой статье рассматриваются патофизиология, причины и последствия острой и хронической почечной недостаточности, подчеркивая важность своевременной диагностики и лечения.*

**Ключевые слова:** *Заболевания почек, хроническая почечная недостаточность, серьезные последствия для здоровья, фильтрация крови, поддержание водно-солевого баланса, почечная недостаточность.*

**Introduction.** The kidneys are essential organs responsible for homeostasis, blood filtration, and metabolic waste removal. Their impairment leads to severe systemic disorders, including acute and chronic kidney failure. Acute kidney injury (AKI) is a short-term condition, often reversible if diagnosed early, whereas chronic kidney disease (CKD) progresses over time, resulting in irreversible damage. Understanding the mechanisms of kidney dysfunction is crucial for effective prevention and treatment strategies.

**Methods.** This study is based on a comprehensive analysis of existing literature, including clinical studies, epidemiological data, and experimental research on kidney diseases.

The methodology includes a review of recent publications from peer-reviewed journals, meta-analyses of patient data, and case studies highlighting the impact of acute and chronic kidney diseases. In addition, statistical methods were employed to assess trends in disease progression and treatment effectiveness. Acute Kidney Injury (AKI) is characterized by a sudden decline in kidney function due to circulatory disturbances, infections, or toxic exposure. It commonly arises from shock, blood loss, hypovolemia, or nephrotoxic drugs. The primary mechanism of AKI is tubular cell injury, leading to swelling, destruction, and cell death, which compromise filtration capacity.

Cellular debris obstructs tubules, exacerbating dysfunction through inflammation and further damage. Prerenal causes of AKI involve reduced kidney blood flow, leading to tissue hypoxia. Renal causes include infections and toxic injuries directly affecting kidney tissues.

Postrenal factors, such as urinary obstruction, increase pressure in the urinary tract, causing structural damage. Importantly, timely diagnosis and treatment can reverse AKI, restoring kidney function. Chronic Kidney Disease (CKD) develops gradually and leads to irreversible kidney damage. Major causes include chronic conditions like diabetes, hypertension, glomerulonephritis, and polycystic kidney disease. In early stages, kidney compensation mechanisms maintain function, but structural changes worsen over time. The progression of CKD is driven by glomerulosclerosis and interstitial fibrosis. Glomerulosclerosis replaces normal kidney tissue with scar tissue, impairing filtration efficiency. As a result, toxic metabolites accumulate in the body.

Interstitial fibrosis disrupts metabolic processes, while tubular damage leads to atrophy. CKD is also associated with chronic hypertension and electrolyte imbalances. Vascular changes further complicate CKD. Thickening of blood vessel walls restricts kidney blood supply, promoting ischemia and accelerating disease progression. Conditions such as diabetes and hypertension exacerbate kidney deterioration.

In late-stage CKD, kidneys shrink, become rigid, and develop a rough surface, ultimately leading to total kidney failure, necessitating dialysis or transplantation.

CKD is also associated with metabolic imbalances, anemia, hypertension, and fluid retention, requiring a multidisciplinary treatment approach.

**Discussion.** The clinical consequences of kidney diseases include systemic complications such as cardiovascular disorders, metabolic acidosis, and increased susceptibility to infections. In the case of AKI, acute complications such as fluid overload, hyperkalemia, and uremia can develop rapidly, necessitating urgent medical intervention. For CKD, progressive decline in kidney function leads to long-term complications, including bone mineral disorders, neurological symptoms, and end-stage renal disease (ESRD). Prevention strategies play a crucial role in mitigating kidney diseases. Early detection of risk factors such as hypertension and diabetes is essential for preventing CKD progression. Lifestyle modifications, including dietary adjustments, smoking cessation, and regular physical activity, contribute to kidney health.

Pharmacological approaches, such as angiotensin-converting enzyme (ACE) inhibitors and sodium-glucose cotransporter-2 (SGLT2) inhibitors, have shown efficacy in slowing CKD progression. For AKI, avoiding nephrotoxic medications, maintaining adequate hydration, and prompt management of infections are key preventive measures.

**Conclusion.** Both acute and chronic kidney diseases induce structural alterations in kidney tissues, impairing their function. Timely diagnosis and intervention are critical in preventing disease progression and improving patient outcomes. A comprehensive understanding of kidney pathophysiology aids in the development of effective treatment strategies, ultimately enhancing the quality of life for affected individuals.

## REFERENCES

1. Levey, A. S., Coresh, J. Chronic kidney disease. *The Lancet*, 379(9811), 165-180.
2. Bellomo, R., Kellum, J. A., & Ronco, C. (2012). Acute kidney injury. *The Lancet*, 380(9843), 756-766.
3. Jha, V., Garcia-Garcia, G., Iseki, K., Li, Z., Naicker, S., Plattner, B., Yang, C. W. (2013). Chronic kidney disease: global dimension and perspectives. *The Lancet*, 382(9888), 260-272.
4. Zuk, A., & Bonventre, J. V. (2016). Acute kidney injury. *Annual Review of Medicine*, 67, 293-307.
5. Hostetter, T. H. Hypertension, the kidney, and chronic kidney disease: the silent trilogy. *The American Journal of Medicine*, 116(7), 508-515. 6(7), 508-515.