



CLINICAL CHARACTERISTICS OF ACUTE KIDNEY INJURY

Tuxtamishev Rustam Bultakovich

Samarqand davlat tibbiyot universiteti

Abduvaliyev Zuhridin Eshmurodovich

Samarqand davlat tibbiyot universiteti

Nazarov Dostonjon Komilovich

Samarqand davlat tibbiyot universiteti

Abstract: Acute Kidney Injury (AKI) is a common clinical syndrome characterized by a rapid decline in kidney function, leading to disturbances in fluid, electrolyte, and acid-base balance. AKI is associated with increased morbidity, mortality, prolonged hospital stay, and higher healthcare costs. Early diagnosis and timely management are essential for improving patient outcomes. This study aims to evaluate the clinical features, risk factors, diagnostic approaches, and preventive strategies associated with acute kidney injury. Understanding the mechanisms and consequences of AKI may contribute to better treatment and prognosis in affected patients.

Keywords: Acute Kidney Injury (AKI), renal dysfunction, kidney damage, risk factors, diagnosis, prevention, treatment, renal replacement therapy, morbidity, mortality.

Acute Kidney Injury (AKI) is a significant clinical condition characterized by a sudden decline in renal function occurring within hours to days. It results in the accumulation of metabolic waste products, disturbances in electrolyte balance, and impaired fluid homeostasis. AKI affects millions of patients worldwide and remains a major cause of morbidity and mortality, particularly among hospitalized and critically ill individuals. The etiology of AKI is generally classified into three major categories: prerenal, intrinsic renal, and postrenal causes. Prerenal AKI occurs due to decreased renal perfusion resulting from dehydration, hemorrhage, heart failure, or sepsis. Intrinsic AKI develops from direct damage to kidney tissues, including acute tubular necrosis, glomerulonephritis, and nephrotoxic injury. Postrenal AKI results from urinary tract obstruction caused by kidney stones, tumors, or prostatic enlargement. Early diagnosis is crucial for preventing disease progression and improving patient outcomes. Diagnostic evaluation includes assessment of serum creatinine levels, urine output monitoring, laboratory investigations, and imaging studies when indicated. The Kidney Disease: Improving Global Outcomes (KDIGO) criteria are widely used for the diagnosis and staging of AKI.



Management strategies focus on identifying and treating the underlying cause, maintaining adequate fluid balance, correcting electrolyte abnormalities, and avoiding nephrotoxic medications. In severe cases, renal replacement therapy may be required. Preventive measures, including early recognition of high-risk patients and optimization of hemodynamic status, play a vital role in reducing the incidence and complications of AKI. Recent advances in biomarker research and critical care management have improved the understanding of AKI pathophysiology and opened new opportunities for early detection and targeted therapeutic interventions.

CONCLUSION

Acute Kidney Injury (AKI) is a common and potentially life-threatening condition characterized by a rapid decline in kidney function. Despite significant advances in modern medicine, AKI remains associated with high rates of morbidity, mortality, and prolonged hospitalization. Early identification of risk factors, prompt diagnosis, and timely therapeutic interventions are essential for preventing irreversible kidney damage and improving clinical outcomes. Effective management requires a multidisciplinary approach, including optimization of hemodynamic status, avoidance of nephrotoxic agents, correction of electrolyte disturbances, and, when necessary, renal replacement therapy. Further research into the pathophysiology, biomarkers, and novel treatment strategies of AKI is needed to enhance patient care and reduce the global burden of this condition.

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