

CLINICAL FEATURES OF CHRONIC KIDNEY DISEASE IN YOUNG PATIENTS

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Annotation: Chronic kidney disease in young patients is an increasingly recognized health problem with unique clinical characteristics and challenges. The disease often develops silently, with minimal or no early symptoms, which delays diagnosis and allows progressive kidney damage. Both genetic and congenital factors, as well as lifestyle-related risks such as hypertension, diabetes, and obesity, contribute to disease development. Early identification, regular monitoring, and targeted interventions are essential for slowing disease progression, preventing complications, and improving long-term outcomes. Multidisciplinary care and patient education play a crucial role in managing the condition effectively. Understanding the clinical features and risk factors in young patients supports better prevention strategies, timely treatment, and improved quality of life.

Keywords: Chronic kidney disease; Young patients; Clinical features; Early diagnosis; Risk factors; Disease progression; Kidney function.

Introduction

Chronic kidney disease is an important global health problem that affects the quality of life of patients and increases the risk of cardiovascular complications. Although this condition is usually associated with older adults, it is increasingly observed in young people due to the growing prevalence of risk factors such as high blood pressure, diabetes mellitus, obesity, and congenital or inherited kidney disorders. In young patients, chronic kidney disease often develops slowly without noticeable symptoms, which makes early diagnosis difficult. Even at the initial stages, kidney damage can progress over time and eventually lead to complete loss of kidney function, requiring dialysis treatment or kidney transplantation. Early detection of impaired kidney function, careful monitoring of laboratory indicators, and identification of risk factors that can be modified are essential for preventing rapid progression of the disease.

Studying the clinical features of chronic kidney disease in young patients allows researchers and clinicians to understand the mechanisms of disease progression, develop effective strategies for early diagnosis, and optimize preventive and therapeutic measures. Attention to lifestyle, coexisting conditions, and subtle laboratory changes is critical for improving long-term outcomes in this population.

Main part

Chronic kidney disease among young patients is becoming increasingly recognized as a significant public health concern. Epidemiological studies indicate that although the prevalence is lower than in older adults, the incidence in adolescents and young adults is rising. This trend is associated with lifestyle-related risk factors such as high blood pressure, diabetes mellitus, obesity, poor diet, and smoking. In addition, congenital abnormalities of the kidney and urinary tract, inherited kidney disorders, and exposure to nephrotoxic medications contribute to the development of kidney disease at a young age. Early identification of these risk factors is critical for preventing progression and reducing long-term complications. Research has shown that the presence of comorbidities, including cardiovascular disease and metabolic syndrome, significantly increases the risk of early kidney function decline. Social and environmental factors, including limited access to healthcare and lack of awareness about kidney health, further exacerbate the burden of disease. Screening programs targeting at-risk populations can provide an opportunity for early detection and intervention. Laboratory tests such as serum creatinine, estimated glomerular filtration rate, and urine protein analysis are essential tools for identifying kidney damage. Preventive strategies including lifestyle modification, blood pressure control, and management of metabolic disorders are central to reducing the incidence of chronic kidney disease in young patients. Genetic counseling is also important for families with a history of kidney disorders. The early recognition of high-risk individuals allows clinicians to implement monitoring and treatment strategies to slow disease progression. Longitudinal studies demonstrate that addressing modifiable risk factors at a young age can significantly improve long-term outcomes. Educational initiatives in schools and communities can raise awareness and promote kidney health. The integration of multidisciplinary care teams, including nephrologists, dietitians, and psychologists, can support young patients in managing their condition. Research continues to explore novel biomarkers and predictive models for early identification of at-risk individuals. Public health policies emphasizing prevention and early intervention are essential to reduce the growing burden of chronic kidney disease in young populations. Early intervention has the potential to delay the onset of end-stage kidney disease and improve quality of life.

Understanding epidemiological patterns is crucial for planning healthcare services and allocating resources effectively.

The clinical manifestations of chronic kidney disease in young patients often differ from those in older adults. In the early stages, the disease is frequently asymptomatic, which delays diagnosis and allows kidney damage to progress unnoticed. Common early signs include fatigue, mild swelling of the lower extremities, changes in urine volume, and subtle alterations in blood pressure. Laboratory abnormalities may appear before clinical symptoms, highlighting the importance of regular screening in high-risk populations. As the disease advances, young patients may develop more noticeable symptoms such as persistent edema, hypertension, proteinuria, and electrolyte imbalances. The progression of kidney damage can be accelerated by uncontrolled risk factors, including high blood pressure, diabetes, and obesity. Early intervention can slow the rate of decline in kidney function and prevent complications affecting the cardiovascular system and bone metabolism. Disease progression in young patients is also influenced by genetic predisposition, which can determine the rate of glomerular and tubular injury. Monitoring tools such as imaging studies and repeated laboratory tests are essential for assessing disease progression and guiding treatment decisions. Multidisciplinary management, including nephrology care, dietary guidance, and psychological support, is vital to maintain health and prevent rapid deterioration. Timely treatment strategies, including pharmacological interventions and lifestyle modification, can improve prognosis and reduce the risk of end-stage renal disease. Studies indicate that younger patients who receive early and comprehensive care have better long-term outcomes compared to those diagnosed at a later stage. Awareness of subtle clinical signs allows for prompt action, minimizing irreversible kidney injury. Regular follow-up is essential to monitor disease trajectory and adjust therapy as needed. Collaboration between healthcare providers, patients, and families ensures adherence to treatment and healthy lifestyle choices. Research emphasizes that individualized care plans are most effective in managing disease progression in young populations. Preventive strategies should focus on both medical management and education about disease risks and lifestyle factors. Understanding the natural history of chronic kidney disease in young patients helps clinicians anticipate complications and tailor interventions.

Early diagnosis of chronic kidney disease in young patients is critical to prevent rapid progression and long-term complications. Comprehensive evaluation includes a detailed medical history, physical examination, and assessment of risk factors such as family history, comorbidities, and lifestyle influences. Laboratory tests are central to diagnosis, including measurement of serum creatinine, estimated glomerular filtration

rate, urine protein analysis, and electrolyte levels. Imaging studies such as ultrasound, magnetic resonance imaging, or computed tomography may be used to detect structural abnormalities and guide treatment planning. Genetic testing can be considered in cases with suspected hereditary kidney disorders. Management strategies combine lifestyle modification, pharmacological therapy, and monitoring of disease progression. Controlling blood pressure, maintaining healthy body weight, managing diabetes, and limiting exposure to nephrotoxic substances are fundamental preventive measures. Pharmacological interventions, including angiotensin-converting enzyme inhibitors or angiotensin receptor blockers, may help reduce proteinuria and slow kidney damage. Regular follow-up visits are essential to monitor laboratory parameters, detect complications, and adjust therapy. Patient education regarding diet, physical activity, and medication adherence is crucial for successful long-term management. Multidisciplinary care involving nephrologists, dietitians, social workers, and psychologists can provide holistic support. Early referral to specialized centers may improve access to advanced therapies and transplantation when needed. Preventive strategies should be tailored to the individual patient, considering age, comorbidities, and genetic factors. Research into novel biomarkers and therapeutic approaches continues to enhance early detection and optimize treatment outcomes. Encouraging healthy lifestyle habits from childhood can reduce the future burden of chronic kidney disease. Public health initiatives focusing on awareness, screening, and early intervention are essential for improving prognosis in young populations. Understanding the most effective diagnostic and management strategies is key to reducing morbidity, preventing end-stage kidney disease, and improving quality of life in young patients with chronic kidney disease.

Conclusion

Chronic kidney disease in young patients often progresses silently, making early diagnosis difficult. Genetic factors, congenital abnormalities, and lifestyle-related risks contribute to kidney damage. Early detection, regular monitoring, and targeted interventions are essential to slow disease progression. Multidisciplinary care, lifestyle modification, and patient education improve outcomes and quality of life. Understanding the unique clinical features of this population helps clinicians provide effective management and reduce the long-term burden of the disease.

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