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Novel Anticancer Drugs and Antibiotics Associated with Acute Kidney Injury

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In the last several decades, advancements in chemotherapy have improved the overall survival of patients with cancer and infection. These agents, however, are associated with adverse effects, including various kidney lesions.

The introduction of novel molecularly targeted therapies in the last 2 decades has significantly improved patient survival compared to standard conventional chemotherapies. However, this improvement has been accompanied by a whole new spectrum of kidney adverse events. Although known as "targeted," many of these agents lack specificity and selectivity, and they have a tendency to inhibit multiple targets including those in the kidneys. Early detection and correct management of kidney toxicities are crucial to preserve kidney functions. The knowledge of these toxicities helps guide the optimal and continued utilization of these potent therapies. The incidence, severity, and pattern of nephrotoxicity may vary depending on the respective target of the drug.

Nephrotoxicity associated with immunotherapy is increasingly being encountered in clinical practice. Drugs that augment the immune system to eradicate cancer are revolutionary in the field of oncology. Older generation immunotherapies such as high-dose interleukin and interferon-alpha are now being replaced with more effective immune checkpoint inhibitors and chimeric ntigen receptor T-cell therapies, which have shown promising results in numerous clinical trials. Unfortunately, these treatments come with a unique suitcase of adverse effects including nephrotoxicity.

Within the extensive group of medications associated with AKI, antibiotics and other antimicrobials are well-recognized triggers of structural and functional renal impairment. Clinical manifestations range from mild forms of tubular injury to significant deterioration of kidney function requiring acute renal replacement therapy. Prevention and early recognition of AKI represent the standard approach to mitigate AKI and avoid morbidity. Here, we review the novel anticancer drugs and antibiotics associated with acute Kidney Injury.