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Effects of newer anti-cancer agents on the kidney

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The past few years have seen several important successes in the management of cancer patients with the approval of molecularly targeted agents and immune checkpoint inhibitors for a variety of malignancies. Further, in 2017, we saw the advent of a new form of immunotherapy known as CAR-T cell therapy being developed for hematological malignancies. Despite these advances, our scientists, clinicians, and patients need to be aware that only a small percentage of patients actually benefit from such treatments. Even though the side effect profile of these newer drugs is much better than that seen with the conventional cytotoxic chemotherapy, we cannot overlook the unique, potentially life-altering harmful side-effects associated with these agents. These renal side-effects evolve from the augmentation of the immune system-mediated recognition and targeting of tumor cells. Vascular endothelial growth factor (VEGF) inhibiting agents, such as the monoclonal antibody bevacizumab, and anti-VEGF receptor (VEGFR) tyrosine kinase inhibitors (TKIs) have the potential to cause elevated blood pressure and proteinuria leading to long-term chronic kidney disease. In addition, there can be off-target effects of these therapies which can range from electrolyte disorders to acute kidney injury. Some others like rituximab, an anti-CD20 monoclonal antibody, and everolimus, a mammalian target of rapamycin (mTOR) inhibitor, can also cause acute kidney injury. Severe acute kidney injury related to cytokine release syndrome, seen with immunotherapy, including CAR-T cells, need aggressive treatment with crystalloid intravenous fluid resuscitation and even renal replacement with dialysis may be indicated. Acute interstitial nephritis is a most common form of renal toxicity with immune checkpoint inhibitors, so far with minimal change, IgA and membranous nephropathy being rarer complications. With increasing options for treating patients with a history of a kidney transplant and cancer, post-kidney transplant rejection can also be an important decision for patients who fear the thought of returning to dialysis. So decision-making regarding stopping or modifying cancer therapy for the overall benefit, despite renal toxicity, continues to remain a challenge. In clinical practice, kidney biopsy to get a tissue diagnosis may be the answer to facilitate management plans in such situations..

Biography

Ketki Tendulkar, MBBS is an assistant professor with the Division of Nephrology at the University of Nebraska Medical Center. She has completed her medical school in 1990 from University of Mumbai, India. Thereafter, she came to the United States for further training and completed her residency and fellowship in Nephrology in 2010. After starting as Internal Medicine- Nephrology faculty at the University of Nebraska Medical Center she has published in the emerging field of Onco-nephrology. Her research interests have led to the publications outlined above in this field which deals with cancer-related acute and chronic kidney problems. She is also actively involved in the kidney donor evaluation at the University hospital.

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