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We need more data to help guide the care of patients with cancer who develop kidney related problems

Healthcare staff caring for patients with cancer must have access to high quality and generalizable data regarding the toxicities and repercussions of cancer treatments

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Onconephrology, the intersection between oncology and nephrology, is a rapidly evolving field that has gained considerable interest over the past 15 years. Cancer treatments are often highly effective at targeting cancer cells but can lead to unexpected side effects, including acute kidney injury, hypertension, and electrolyte abnormalities. These kidney related toxicities can lead to temporary or permanent discontinuation of potentially lifesaving cancer treatments. Additionally, patients with cancer are living longer and could develop chronic kidney disease after bouts of acute kidney injury, thereby jeopardizing their eligibility for future treatments, in addition to placing them at increased risk of cardiovascular disease and death.[1] It is therefore essential that nephrologists, oncologists, and other providers caring for patients with cancer have access to high quality and generalizable data regarding these toxicities and their repercussions.

Despite some progress toward characterizing and understanding the kidney related toxicities associated with cancer treatments, much onconephrology literature has historically consisted of isolated case reports, single center case series, and review articles. We have attempted to fill this key unmet need by developing multicenter consortiums examining the nephrotoxic effects of different cancer treatments. For example, in an unfunded, grassroots effort, we enlisted the help of collaborators from across the globe to examine the epidemiology of acute kidney injury resulting from immune checkpoint inhibitors, including its incidence, risk factors, clinical features, outcomes, and treatments.[2,3] The field of onconephrology is open to other multicenter collaborations, but these are often hampered by lack of funding and logistical challenges with data sharing across institutions.

One of the most important unmet needs in onconephrology is the development of a greater understanding of cisplatin nephrotoxicity. Cisplatin is a chemotherapeutic agent that has been used for over 50 years and has remained a cornerstone of treatment of many cancers. Despite its well known potential to cause nephrotoxicity—so well established, in fact, that it is often used to induce acute kidney injury in animal models—it remains commonly used today for a variety of cancers. In our own practice as onconephrologists, we have cared for patients who developed cisplatin associated-acute kidney injury (CP-AKI), witnessing firsthand how this complication can lead to considerable morbidity and mortality. Although the link between cisplatin and kidney injury is well known, previous efforts to characterize risk factors for CP-AKI were hampered by small sample size, limitations regarding generalizability (owing to being single center), lack of external validation, and use of liberal definitions of CP-AKI that were of unclear immediate consequence to patients.

We worked with nephrologists and oncologists at six major cancer centers across the US over the course of four years to conduct another multicenter collaboration, ultimately collecting data on >24 000 adult patients treated with intravenous cisplatin.[4] We were able to identify key risk factors for CP-AKI based on readily available data in a patient's medical record, and we developed a risk calculator that can easily be accessed online and used by oncologists, nephrologists, and the patients themselves, to characterize an individual patient's risk of CP-AKI. This work required the efforts of doctors, medical students, data programmers, biostatisticians, and research coordinators. Given that cisplatin continues to be a cornerstone of cancer treatment globally, we hope that our findings can lead to the closer monitoring of high risk patients, and risk-benefit discussions between patients and their doctors before receiving intravenous cisplatin.

While this project is an important step for the field of onconephrology, there is more to be done. Future studies should focus on potential therapeutic targets for CP-AKI prevention. For example, we found that a lower serum magnesium level before cisplatin use is a key risk factor for CP-AKI, which also has a mechanistic basis in animal studies of CP-AKI.[5,6] We are currently testing whether the use of high doses of intravenous magnesium reduces the risk of CP-AKI in a randomized clinical trial of patient with mesothelioma receiving heated chemotherapy with cisplatin during the surgical debulking of their tumor.[7]

Onconephrology as a field will continue to become more important as both older and newer cancer treatments lead to kidney related side effects. The American Society of Onconephrology was formed in 2021 with the express purpose of furthering research in this emerging field.[8] We hope that the publication of our studies is the first step toward raising awareness of kidney related problems in patients with cancer.

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