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Optimizing Management of Immune Checkpoint Inhibitor-Induced Renal Events: The Role of Kidney Biopsies

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Objectives : This study aimed to investigate renal adverse events (AEs), such as acute kidney injury (AKI) and proteinuria, in patients treated with immune checkpoint inhibitors (ICIs), examining clinical characteristics and kidney biopsy findings using the Catholic Medical Center-Clinical Data Warehouse (CMC-CDW).

Methods : Clinical, laboratory data and kidney biopsy results from 70 patients across 8 university hospitals, who underwent kidney biopsies between January 1, 2012, and October 23, 2022, after ICI therapy, were analyzed.

Results : Of these, 7 patients experienced ICI-related renal AEs, with 5 undergoing biopsies for AKI (1 for Grade 2 toxicity and 4 for Grade 3 toxicity as defined by the American Society of Clinical Oncology practice guidelines) and 2 for nephrotic range proteinuria. The ICIs used included Pembrolizumab (4 patients), Blinatumomab, Ramucirumab, and Afatinib. The average time to biopsy post-therapy initiation was 8.3 months. Biopsy results showed acute tubulointerstitial nephritis in 5 patients (one with concurrent IgM nephropathy), mild acute tubular necrosis, and membranous glomerulonephritis. Treatment involved steroids (oral prednisolone 30mg to intravenous methylprednisolone 125mg) and cessation of the causative ICI for patients with AKI. Those with proteinuria received oral prednisolone or angiotensin receptor blockers, without discontinuing ICI therapy. All patients showed good responses, returning to baseline kidney function or proteinuria levels.

Conclusions : The study concludes that ICI-related renal AEs, notably severe AKI, can necessitate halting or ending immunotherapy, impacting treatment options and outcomes. Therefore, quick and accurate diagnosis, guided by kidney biopsy, is crucial for managing these AEs and determining the continuation or adjustment of cancer treatments for patients with limited alternatives.