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Renal Cell Carcinoma in a Pediatric Kidney Transplant Recipient: A Case Report

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Case Study : Renal cell carcinoma (RCC) is a heterogeneous malignancy arising from renal tubular epithelial cells. While RCC is the most common renal tumor in adults, it is rare in children. Established risk factors for adult RCC include smoking, obesity, hypertension, acquired cystic kidney disease, and chronic kidney disease (CKD). Kidney transplant (KT) recipients are at increased risk of RCC in the native kidney. However, the epidemiological and histological characteristics of pediatric RCC differ from those in adults. Childhood exposure to cytotoxic chemotherapy has been associated with a higher risk of RCC in adulthood. Among pediatric patients, cytotoxic chemotherapy for malignancies, autoimmune disorders, and bone marrow transplantation may contribute to the development of translocation RCC. The incidence and risk factors for RCC in pediatric CKD and KT recipients remain unclear. We report a case of a 13-year-old male KT recipient diagnosed with RCC. At 23 months of age, he presented with nephrotic syndrome (NS) that was refractory to treatment. A kidney biopsy revealed focal segmental glomerulosclerosis, cellular variant. Genetic testing for hereditary nephropathy was negative. Despite treatment with immunosuppressive agents—including corticosteroids, cyclosporine, cyclophosphamide, and rituximab—his NS frequently relapsed and progressed to CKD. He developed end-stage renal disease (ESRD) two years after diagnosis of NS and underwent peritoneal dialysis for approximately two years before receiving a deceased donor KT, which was uneventful. Seven years post-transplant, the patient presented with gross hematuria. Imaging revealed an approximately 8 cm, well-defined, round, complex cystic/necrotic mass in the right retroperitoneum. A right nephrectomy was performed, and histopathological analysis confirmed the diagnosis of papillary RCC. Although RCC is rare in pediatric patients, those with a history of cytotoxic chemotherapy, CKD, or KT should be closely monitored, as RCC can remain asymptomatic until advanced stages. Further research is needed to establish screening guidelines for at-risk pediatric populations.