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On the Cover

What's the diagnosis?

We report the case of a 69-year-old man with ESKD secondary to diabetic nephropathy, status post a deceased donor kidney transplant for six years, who presented with generalized weakness, fevers, chills, and gross hematuria. Laboratory work-up revealed a serum creatinine of 2.1 mg/dL (baseline 1.3 mg/dL), hematuria (>1000 RBCs/HPF), and proteinuria (urine protein/creatinine ratio 0.58 g/g). Twelve-hour tacrolimus trough level was 3.0 ng/mL. Adenovirus DNA was detected in the urine by real-time PCR and serum adenovirus viral load was markedly elevated at 1630 copies/mL. Other serologies including BK virus, EBV, Cytomegalovirus, anti-nuclear antibody, antineutrophil cytoplasmic antibodies, and anti-glomerular basement membrane antibody were negative. CT of the abdomen was unremarkable whereas cystoscopy showed clots in the bladder, cystitis, and bloody efflux from the ureteral orifice of the transplanted kidney. An allograft kidney biopsy confirmed the diagnosis of adenovirus nephritis. The patient was treated with intravenous cidofovir 2.5 mg/kg twice a week for 3 weeks. His hematuria resolved and serum creatinine returned to baseline. Serum adenovirus viral load became undetectable following treatment.

Imaging demonstrated diffuse and severe interstitial inflammation with tubulitis and vague granulomas on light microscopy (Figures 1 and 2). Immunostain for adenovirus showed numerous foci of nuclear and cytoplasmic staining of tubular epithelial cells (Figure 3). Adenovirus is an opportunistic infection frequently seen in kidney transplant recipients. Clinical genitourinary manifestations include hemorrhagic cystitis and, rarely, tubulo-interstitial nephritis. A kidney biopsy is necessary for definitive diagnosis of adenovirus nephritis. Treatment includes reduction of immunosuppression and antiviral therapy.

(Images and text provided by Mohamad Hanouneh, MD, Teresa K. Chen, MD, MHS, and Sami Alasfar, MD Division of Nephrology, Department of Medicine, Johns Hopkins University, Baltimore, Maryland)