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On the Cover

What's the diagnosis?

We report the case of a 59 year old woman with end-stage renal disease secondary to diabetic nephropathy, status post a deceased donor kidney transplant. One year after transplant, she presented with generalized weakness. Laboratory work-up revealed a serum creatinine of 9.3 mg/dL (baseline 1.4 mg/dL), with mild hematuria. Urine protein/creatinine ratio was 0.05 g/g. Twelve-hour tacrolimus trough level was 7.2 ng/mL. Serology workup including BK virus, adenovirus, EBV, Cytomegalovirus, antinuclear antibody, antineutrophil cytoplasmic antibodies, and anti-glomerular basement membrane antibody were negative. CT of the abdomen and brain were unremarkable. An allograft kidney biopsy confirmed the diagnosis of polyomavirus-associated nephropathy. Given her undetectable BK, serum JC viral load was checked and noticed markedly elevated at 22,900 copies/ml. Mycophenolate Mofetil dose was reduced to 250 mg twice a day from 1000 mg twice a day and her Tacrolimus dose was also reduced to Tacrolimus goal of 3-5 ng/ml. Her JC virus became undetected and serum creatinine returned to 1.6 mg/dl and remained stable at that range.

Imaging demonstrated diffuse interstitial inflammation along with enlarged tubules' nuclei which consist of viral cytopathic changes (left and right panel). Immunostain for polyomavirus (SV40 large-T antigen) showed numerous tubular cell nuclei with positive staining (central panel).

JC virus is one of the polyomavirus family. It is an uncommon opportunistic infection seen in kidney transplant recipients. Clinical manifestations can include neurologic symptoms (progressive multifocal leukoencephalopathy) and/or allograft kidney dysfunction. A kidney biopsy along with serology are necessary for definitive diagnosis. Treatment is a reduction of immunosuppression.

(Images and text provided by Mohamad Hanouneh, MD, Nada Alachkar, MD, and Sami Alasfar, MD, Johns Hopkins University, Department of Medicine, Division of Nephrology, Baltimore, Maryland)