Kidney Medicine

Late Kidney Graft Dysfunction Related to JC Virus Nephropathy

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A man in his 50s with kidney failure secondary to immunoglobulin A nephropathy received a living donor kidney transplant 5 years before presentation. Induction immunosuppression included thymoglobulin, followed by maintenance immunosuppression with tacrolimus, mycophenolic acid, and glucocorticoids. The patient also received 4 plasma exchange sessions because of preformed donor-specific antibodies (DQ7 mean fluorescent intensity: 3,300). His immediate posttransplant course was uncomplicated, with serum creatinine (Scr) level stable at 1.7 mg/dL for several years after transplant.

Five years later, he presented with Scr level elevated to 2.0 mg/dL in the setting of an elevated tacrolimus trough concentration of 9.0 ng/mL. After dose reduction, the tacrolimus trough was 6.1 ng/mL; however, his creatinine levels increased to 2.1 mg/dL. There was no proteinuria or hematuria, but persistent pretransplant donor-specific antibodies were present (DQ7 mean fluorescent intensity: 2,080). Quantitative polymerase chain reaction (qPCR) results for BK virus in plasma and urine were negative.

Kidney allograft biopsy was consistent with polyomavirus-associated nephropathy (Fig 1) without antibody-mediated rejection. John Cunningham virus (JCV) nephropathy was suspected and confirmed by positive qPCR for JCV in blood (4.6 log) and urine (9 log). Brain magnetic resonance imaging showed no pattern of progressive multifocal leukoencephalopathy. Immunosuppression was reduced. Serum JCV qPCR was performed monthly and remained stable (3.9 log 16 months after presentation), with a decrease in his Scr levels to 1.9 mg/dL.

JCV nephropathy is uncommon, most often manifesting with a decline in kidney function late after transplant.[1-3] JCV nephropathy can occasionally be observed on protocol kidney biopsies.[1] In the setting of negative BK viremia, tubular viral cytopathic changes with SV40 positivity should prompt polymerase chain reaction assay for JCV. Because chronic inflammation within interstitial fibrosis is the most common underlying histological pattern, JCV nephropathy may present as nonspecific interstitial fibrosis with tubular atrophy and may be underdiagnosed.[1] Reduction of immunosuppression remains the cornerstone of therapy for JCV nephropathy, and prognosis depends on the severity of chronic injury.[1]

ARTICLE INFORMATION

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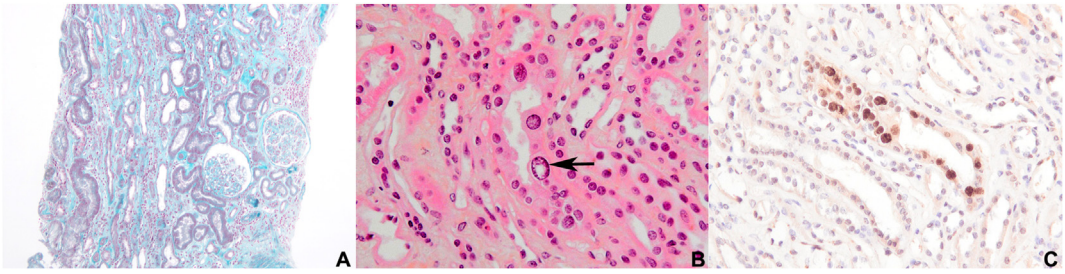

Figure 1. (A) Mild interstitial inflammation within interstitial fibrosis and acute tubular necrosis (Masson's trichrome stain; original magnification, ×100). (B) Rare tubular nuclei in the medulla displayed cytopathic changes with enlargement of nuclei and vesicular chromatin (arrow) (hematein eosin saffron; original magnification, ×200). (C) Anti-SV40 immunohistochemistry with nuclear positivity in tubular epithelial cells, confirming polyomavirus-associated nephropathy (immunohistochemistry for SV40; original magnification, ×400).

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