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Progressive Multifocal Leukoencephalopathy in a Kidney Transplant Recipient

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To the Editor,

A 67-year-old male kidney transplant recipient (KTR) received a living related donor kidney in 1992 and was treated with cyclosporine, azathioprine, and prednisolone. In 1994, he developed anaplastic seminoma, underwent orchiectomy and carboplatin therapy; azathioprine was stopped. He developed graft failure and returned to dialysis in 2005. Written informed consent for publication of this case report was obtained from the patient's next of kin, as the patient was deceased.

In 2015, he was evaluated for a retransplantation from a living unrelated donor. However, donor-specific antibodies (HLA-B60, DQ4) and a positive B-cell flow crossmatch were detected. He received intravenous immunoglobulin (IVIG), plasma exchange, and rituximab desensitization, then underwent retransplantation. He was maintained on tacrolimus, mycophenolate sodium, and low-dose prednisone. One year post retransplant, biopsy for proteinuria showed focal segmental glomerulosclerosis. Despite renin-angiotensin-aldosterone system inhibition, proteinuria persisted and was treated with plasma exchange and rituximab.

He later presented with memory loss, confusion, and bradykinesia. Human immunodeficiency virus (HIV) was negative. Brain magnetic resonance imaging (MRI) showed a hyperintense lesion from the left frontal lobe to the anterior corpus callosum and insula, with restricted peripheral diffusion and no contrast enhancement. Cerebrospinal fluid (CSF) was acellular (glucose 59 mg/dL; serum glucose 90 mg/dL, protein 55.6 mg/dL). Cultures, acid-fast bacilli, Wright test, neuronal and viral panels, and Hepatitis C virus RNA were negative. The CSF John Cunningham virus (JCV) polymerase chain reaction (PCR) was positive (608 000 copies/mL), confirming progressive multifocal leukoencephalopathy (PML). Mycophenolate was tapered and stopped; tacrolimus withdrawn. Prednisone 10 mg/day was maintained. No clinical or radiological features suggestive of immune reconstitution inflammatory syndrome (IRIS) were observed following immunosuppression reduction. Cidofovir, mirtazapine, IVIG, and levetiracetam were given. He developed impaired consciousness, right hemiplegia, and dysphagia requiring nasogastric feeding. Follow-up MRI revealed disease progression. He died 8 months after diagnosis with stable graft function.

The PML is a rare, often fatal central nervous system (CNS) disease caused by JCV, mainly in immunocompromised patients such as KTRs. Typical manifestations include cognitive decline and focal neurological deficits.[1] With effective antiretroviral therapy, HIV-related PML has declined; however, newer immunosuppressive therapies for multiple sclerosis, hematologic disorders, and transplants have increased PML incidence.[2] Diagnosis relies on CSF JCV PCR with typical MRI and

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clinical findings, or JCV detection in brain tissue.[3] The PML typically shows multifocal, asymmetric subcortical or periventricular white matter lesions on T2/FLAIR, often in the frontal or parieto-occipital lobes, without mass effect or edema. Peripheral diffusion restriction on diffusion-weighted imaging indicates active demyelination, and gadolinium enhancement is usually absent. Besides immunosuppression, viral mutations, host genetics, and immunosuppressant class may also contribute.[2] A 2024 meta-analysis of 103 studies found no PML link with daclizumab, basiliximab, tacrolimus, belimumab, or azathioprine, but a low risk with rituximab.[4] Plasmapheresis is not linked to PML. The main goal is restoring CNS immunity. Mirtazapine, cytarabine, and cidofovir were ineffective. Newer options like adoptive T-cell transfer and checkpoint inhibitors may enhance anti-JCV immunity but risk IRIS.[2] Prognosis in transplant recipients remains poor, and immunosuppression reduction carries a risk of graft loss.[5] In conclusion, PML's rarity and nonspecific symptoms may delay diagnosis. Clinicians should consider it in immunosuppressed patients, especially KTRs. Written informed consent was obtained from the patient's legal representative for publication of this case report.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

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REFERENCES

1. Delbue S, Ferraresso M, Ghio L, et al. A review on JC virus infection in kidney transplant recipients. *Clin Dev Immunol*. 2013;2013:926391. [CrossRef]
2. Cortese I, Reich DS, Nath A. Progressive multifocal leukoencephalopathy and the spectrum of JC virus-related disease. *Nat Rev Neurol*. 2021;17(1):37-51. [CrossRef]
3. Berger JR, Aksamit AJ, Clifford DB, et al. PML diagnostic criteria: consensus statement from the AAN Neuroinfectious Disease Section. *Neurology*. 2013;80(15):1430-1438. [CrossRef]
4. Rindi LV, Zaçe D, Braccialarghe N, et al. Drug-induced progressive multifocal leukoencephalopathy (PML): a systematic review and meta-analysis. *Drug Saf*. 2024;47(4):333-354. [CrossRef]
5. Manfro RC, Vedolin L, Cantarelli M, et al. Progressive multifocal leukoencephalopathy in a kidney transplant recipient after conversion to mycophenolic acid therapy. *Transpl Infect Dis*. 2009;11(2):189-190. [CrossRef]