Progressive Multifocal Leukoencephalopathy in a Liver Transplant Recipient with Recurrent Rejection: A Case of Neurologic and Immunologic Ping-Pong

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Introduction

- Progressive Multifocal Leukoencephalopathy (PML) is a rare neurologic complication which may arise in patients after solid organ transplantation. The pathophysiology is associated with lowered immunity.
- We present the case of a middle-aged man with a history of liver transplantation complicated by multiple episodes of transplant rejection and subsequent development of PML.

Case Presentation

- A 56-year old man who underwent orthotopic liver transplantation for hepatitis B and C virus-related cirrhosis and hepatocellular carcinoma presented to the emergency department with a 1-week history of difficulty ambulating and numbness in the left upper extremity.
- **Past Medical History:** Recurrent T-cell mediated rejection treated with steroids and thymoglobulin. Additionally, diagnosed with Posterior Reversible Encephalopathy (PRES) secondary to tacrolimus toxicity following bilateral vision loss and medication replaced with cyclosporine one month prior to presentation.
- **Hospital Course:** On initial evaluation, neurologic examination significant for mild confusion, loss of vision bilaterally, and gait ataxia. MRI of the brain done showed multifocal, asymmetric signal abnormalities in keeping with PML.
- Lumbar puncture was performed and significant for JC virus PCR 668IU/mL with WBC 3 cells/mm^3, glucose 72mg/dL and protein 59.1mg/dL.

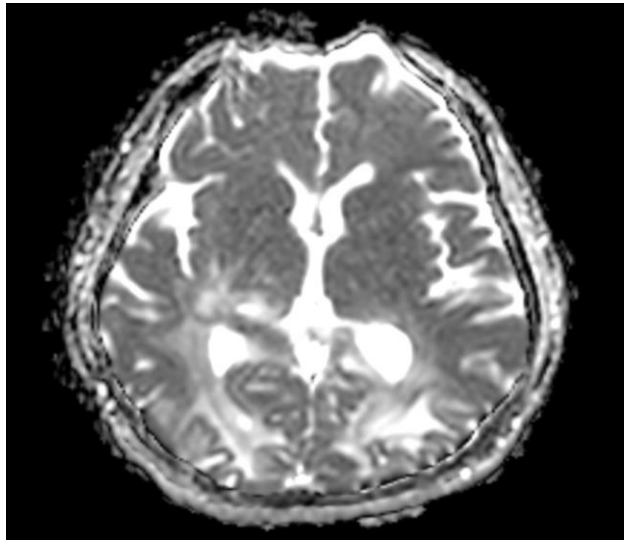

Figure 1. MRI showing T-2 weighted signal abnormalities involving the white matter of the parietal and occipital lobes bilaterally.

- A brain biopsy done to rule out a non-PML lymphoproliferative disorder confirmed PML.
- Cyclosporine and mycophenolic acid was discontinued and patient maintained on prednisone 15mg daily.
- He continued to have deterioration in mental status and rising liver enzymes and bilirubin and a liver biopsy done on day 16 of admission showed severe T-cell mediated rejection.
- Given the poor prognosis, the patient was discharged home with hospice care.

Discussion

- The reported incidence of neurologic disorders after liver transplantation is 13-23%. These conditions range from neurotoxicity associated with immunosuppressive medication such as PRES to opportunistic infections and metabolic encephalopathies.
- Our patient exhibited an uncommon co-occurrence of immunosuppressant-induced neurotoxicity and PML. The previous episodes of recurrent rejection in this patient required sustained high dose immunosuppression, contributing to an environment that allowed for JC virus reactivation.
- PML is a demyelinating neurological disorder caused by the reactivation of JC-polyomavirus, typically occurring in the context of severe, cell-mediated immunity deficiency. Manifestations include aphasia, ataxia, sensory deficits and cognitive abnormalities.
- Currently, there is no effective treatment available for PML with management primarily involving withdrawal of immunosuppressants. The prognosis remains extremely poor in organ transplant patients.
- Our case emphasizes the need for careful monitoring of patients and a delicate balance in managing immunosuppression to minimize both neurotoxic effects and infection risks.

References

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