Progressive multifocal leukoencephalopathy unmasked by antiretroviral therapy for HIV

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A 51-year-old man with chronic HIV presented to the emergency department with right-hand monoparesis. After years of nonadherence with medication, he had restarted antiretroviral therapy two months before, with successful achievement of viral suppression and an increase in CD4 count from 50 to 84 cells × 10^6/L. Magnetic resonance imaging (MRI) of the patient's brain showed T_2 hyperintensity in the left precentral gyrus white matter (Figure 1A). His cerebrospinal fluid was normal biochemically. Results from testing for bacteria, fungi, syphilis and mycobacteria, as well as polymerase chain reaction (PCR) for herpesviruses and John Cunningham (JC) polyomavirus, were negative.

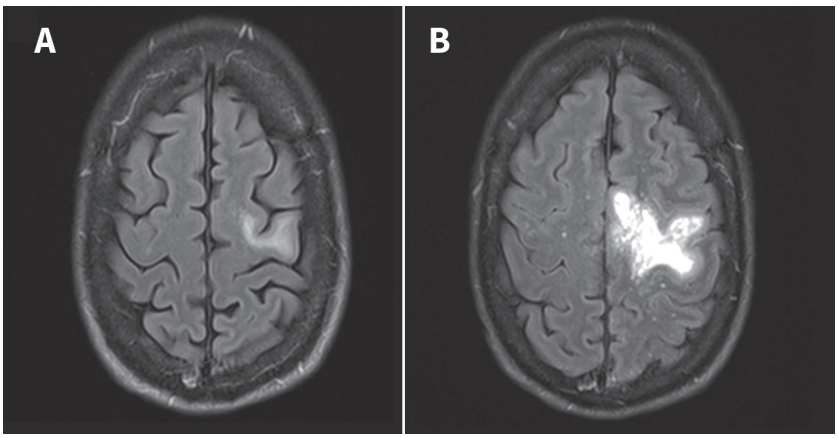

Figure 1: Sequential magnetic resonance images (MRIs) of the brain of a 51-year-old man with HIV and neurologic symptoms after restarting antiretroviral therapy, showing progressive T_2 fluid-attenuated inversion recovery hyperintensities. (A) At presentation to the emergency department. (B) Repeat MRI after one month with gadolinium enhancement.

Over the next month, the weakness progressed to flaccid paralysis of the right arm and the patient had a seizure. Repeat MRIs showed progression of confluent hyperintense white-matter lesions throughout the left hemisphere, with marked gadolinium enhancement (Figure 1B; a video [Appendix 1] is available at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.180433/-/DC1). Given this deterioration, we requested a repeat lumbar puncture. Repeat PCR testing for JC polyomavirus was positive; we diagnosed progressive multifocal leukoencephalopathy with immune reconstitution inflammatory syndrome. The weakness progressed to dense right-sided hemiplegia; we then started treatment with intravenous methylprednisolone followed by oral prednisone, with subsequent tapering over six weeks. The patient's strength and function gradually improved.

John Cunningham polyomavirus, a prevalent latent infection, can reactivate in people who are immunocompromised, causing progressive multifocal leukoencephalopathy, a central demyelinating disease.[1] Neurologic presentations can be diverse, with typical findings on MRI (Figure 1). Diagnosis is microbiologically confirmed by virus PCR of cerebrospinal fluid or brain tissue. There is no proven specific therapy, and most who recover have substantial neurologic sequelae.[2] Paradoxically, some patients with HIV receiving antiretroviral therapy may have worsening inflammation after restoration of specific immune responses, known as immune reconstitution inflammatory syndrome.[2] For this group with severe manifestations, corticosteroid therapy may be considered, despite limited evidence.[2,3]

References

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A video of magnetic resonance imaging showing progressive multifocal leukoencephalopathy with immune reconstitution inflammatory syndrome is available in Appendix 1, at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.180433/-/DC1