Leukoencephalopathy in an HIV Patient
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Case
A 61-year-old male presented with progressive weakness of left upper and lower limbs, and slurring of speech of 2 months duration. He had focal seizures of right upper limb. He was an IV drug abuser. On examination he was disoriented and inattentive. His talk was irrelevant and psychomotor activity was reduced. He had grade II/V power of left upper and lower limbs. The plantar response was bilaterally extensor. He was tested positive for HIV and HBsAg. The CD4 count was 107/µL. MRI brain showed T1 hypointense and T2 and T2-FLAIR hyperintense asymmetrical lesions in bilateral frontoparietal regions with involvement of ‘U’ fibres, without any edema, mass effect or contrast enhancement. What is the diagnosis?

Answer
Progressive multifocal leukoencephalopathy (PML). He was started on antiretroviral therapy, but his clinical condition rapidly deteriorated and he became bedridden. He was later shifted to a palliative care centre.

Discussion
PML is a subacute demyelinating disease of central nervous system caused by John Cunningham (JC) virus. After primary infection in the childhood, the virus remains latent in the kidneys and lymphoid organs and gets reactivated in the setting of immunosuppression as in HIV infection,
solid organ transplant recipients, lymphoproliferative neoplasms or therapy with natalizumab. \(^1\) Reactivated virus enters the bloodstream and reaches the brain inducing a lytic infection of oligodendrocytes. Patients usually present with weakness, gait ataxia, visual field changes, dysarthria, seizures and progressive cognitive impairment with dementia. \(^2\)

Typical MRI changes involve frontoparietal and occipital lobes, with white matter hyperintensities that are usually asymmetric, with involvement of subcortical ‘U’ fibres. HIV encephalopathy closely mimics PML with involvement of white matter. But the periventricular white matter is involved first and the lesions are more symmetric. Moreover, cerebral atrophy will be a prominent feature in HIV encephalopathy. In advanced stage when the whole of white matter gets affected, lesions of PML and HIV encephalopathy are indistinguishable and a definitive diagnosis of PML relies on detection of JC virus in the CSF by PCR or brain biopsy. There is no specific treatment for the disease other than initiation of antiretroviral therapy in HIV patients, but the disease is progressive and fatal.

**Learning points**
- PML is a progressive and fatal infection caused by reactivation of JC virus.
- It occurs in immunocompromised individuals especially HIV patients.
- It can also occur in Immunocompetent patients especially with natalizumab therapy for multiple sclerosis.
- MRI shows hyperintense lesions in T2-FLAIR image, which are asymmetric, involving subcortical ‘U’ fibres and spreads from periphery to centre, without mass effect or contrast enhancement.

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**REFERENCES:**