

Positron emission tomography findings in a case of progressive multifocal leukoencephalopathy

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Abstract

A-76-year-old woman with history of liver dysfunction due to chronic hepatitis C presented with left hemispatial neglect and progressive left hemiparesis in one month. She showed progressive white matter lesions and was diagnosed as progressive multifocal leukoencephalopathy (PML) caused by JC virus from PCR of her cerebrospinal fluid. MRI showed multiple white matter lesions with low intensity on T1 weighted image, and high intensity on T2 weighted and FLAIR image in the right hemisphere. Needle biopsy of the right temporal white matter showed demyelination of the corresponding lesion. The compromise factors, such as infection of HIV, hepatocirrhosis or malignancy were not found. As the improvement of her liver dysfunction after the intravenous injection of 80 mg/day of Glycyrrhizin the progression of neurological deficits and white matter lesions were ceased.

The steady-state positron emission tomography (PET) utilizing ¹⁵O showed increase in regional cerebral blood flow (rCBF), decrease in regional oxygen metabolism (rCMRO₂) and oxygen extraction (rOEF) before the treatment showing the luxury perfusion in the lesion. After the treatment, rCBF, rCMRO₂ and rOEF were decreased to reach the matched perfusion. These findings indicate that the detection of luxury perfusion utilizing PET is useful for differentiating PML from other demyelinative diseases.