Progressive brain atrophy and white matter changes in MOG encephalomyelitis

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Figure Serial brain MRI findings and clinical course in a patient with myelin oligodendrocyte glycoprotein encephalomyelitis with progressive disease course

Brain MRI showed a T2 high signal intensity (HSI) lesion at the left frontal white matter, and also some multiple lesions involving periventricular white matter (PVWM) and juxtacortical area at first. Longitudinal follow-up brain MRI showed progressive brain atrophy combined with increased PVWM T2 HSI lesions. EDSS = Expanded Disability Status Scale; FAB = frontal assessment battery; FLAIR = fluid-attenuated inversion recovery; FS = functional system score; GAD+ = gadolinium enhancement; IgG = immunoglobulin G; MMSE = Mini-Mental State Examination; OCB = oligoclonal band; ON = optic neuritis; WBC = white blood cell.

A 43-year-old man with a history of 7 repeated optic neuritis episodes since the 1990s developed dysarthria, dysphagia, and gait disturbance in 2015 with T2 high signal intensity (HSI) lesion in the left frontal white matter. He tested positive for myelin oligodendrocyte

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glycoprotein (MOG) antibody using cell-based assay, at a titer of >1:1,280.¹ During follow-up, longitudinal neurologic examinations revealed progressive neurologic deterioration without any acute aggravation of cognitive, cerebellar, motor, or sensory symptoms, despite treatment with corticosteroid, mycophenolate mofetil, and monthly IV immunoglobulin.² His brain MRI revealed progressive brain atrophy combined with increased T2 HSI (figure) without any lesions in the spinal cord MRI. Progressive disease course with brain atrophy can be a manifestation of MOG encephalomyelitis.

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This study was conducted according to the Declaration of Helsinki and was approved by the institutional review board of Seoul National University Hospital (IRB No. H-1902-083-1010). The biospecimens and data used in this study were provided by the Biobank of Seoul National University Hospital, a member of Korea Biobank Network.

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Disclosure

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S.-M. Kim and Seoul National University Hospital have transferred the technology of flow cytometric AQP4-IgG and MOG-IgG assay to EONE Laboratory, Korea. Go to Neurology.org/N for full disclosures.

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Name	Location	Contribution
Young Nam Kwon, MD, MSc	Seoul National University Hospital	Drafting the manuscript, data acquisition and analysis, read and approved the final manuscript
Jae Ho Jung, MD, PhD	Seoul National University Hospital	Data acquisition and analysis, read and approved the final manuscript
Seong-Joon Kim, MD, PhD	Seoul National University Hospital	Critical reading of the manuscript, read and approved the final manuscript
Jung-Joon Sung, MD, PhD	Seoul National University Hospital	Critical reading of the manuscript, read and approved the final manuscript
Sung-Min Kim, MD, PhD	Seoul National University Hospital	Study conception and design, drafting of the manuscript, data acquisition and analysis, critical reading of the manuscript, read and approved the final manuscript

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