

Frequency of New Silent MRI lesions in MOGAD and AQP4-NMOSD

New silent lesions and MOGAD and AQP4-NMOSD

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Abstract

Background

In multiple sclerosis (MS) MRI silent lesions activity is a diagnostic hallmark and is used as surrogate biomarker for treatment efficacy. In aquaporin-4 antibody neuromyelitis optica spectrum disorder (AQP4-NMOSD) brain silent lesions outside of relapses are rare. However, their frequency and relevance in adult with myelin oligodendrocyte glycoprotein antibody disease (MOGAD) have not been investigated yet.

Aim

To assess the frequency and the association with relapses of brain and spinal cord new silent lesions on remission clinical MRIs in a large cohort of MOGAD and AQP4-NMOSD.

Methods

In this retrospective cohort study, we collected clinical MRI data of patients with MOGAD and AQP4-NMOSD seen within the Oxford NMO Service. We analysed the frequency of new silent lesions detected by remission-MRIs (performed at least 3 months after last attack). Median time to next relapse in the presence of definite (reference MRI performed at least 4 weeks from last attack onset) and probable (reference MRI performed during last attack) new silent lesions was examined.

Results: We included 182 MOGAD patients (62% female, median age at onset 28 years, median follow-up 52 months) and 222 AQP4-NMOSD patients (85% female, median age at onset 43 years, median follow-up 87.5 months). MOGAD patients had 167 remission-MRI sessions. New remission silent lesions were found in 3% of remission-MRI sessions. Median time to next relapse in the presence of definite or probable new remission lesions was 2 months (IQR=1-6) while in the absence of any new remission lesions was 73 months (IQR=20-104) (HR=23.9, $p<0.0001$, 95%CI=8-76).

AQP4-NMOSD patients had 269 remission-MRI sessions. New remission silent lesions were seen in 2.6% remission-MRI sessions. Median time to next relapse in presence of definite or probable new remission lesions was 5 months (IQR=2-6), while in absence of any new remission lesions was 85 months (IQR=29-167) (HR=21.2, $p<0.0001$, 95%CI=8-55).

Conclusions: In contrast to MS, new remission silent lesions are rare on follow-up scans in MOGAD and AQP4-NMOSD and may indicate a high risk of imminent relapse.

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