Imaging features of MOG-IgG related disorders: A comparative study with NMOSD

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Background:Over the past few years MOG-IgG related disorders have been recognized as a distinct entity from neuromyelitis optica spectrum disorders (NMOSD). To avoid large unselected testing of patients for MOG-IgG, MRI findings may help select patients to be tested for MOG-IgG, beyond clinical characteristics. Our aim in this study is to compare MRI findings among AQP4-IgG positive, MOG-IgG positive and double seronegative patients.

Methods:Two neuroradiologists, blind for serological data, retrospectively analyzed MRI scans from 86 patients (31 patients MOG-IgG positive; 31 patients NMOSD AQP4-IgG positive, and 24 patients NMOSD double seronegative). The frequency and characteristics of optic neuritis, myelitis and brain lesions were compared. Chi-square for categorical variables and Mann-Whitney test for continuous variables were conducted, $p<.05$ was accepted.

Results:MOG-IgG patients had fewer brain lesions than NMOSD AQP4-IgG positive (31.0%, vs. 77.0% , $p<.001$) and NMOSD AQP4-IgG negative patients (31.0% vs. 71.0% , $p<.009$). Brainstem lesions were more frequent in NMOSD AQP4-IgG and NMOSD seronegative patients than in MOG-IgG patients (54.0%, 47.0% 18.0%), as area postrema lesions (38.0%, 24.0%, 3.7%). MS-like lesions were scarcely found in NMOSD AQP4-IgG negative (18.0%), positive (12.0%) and MOG-IgG (14.0%).

Cervical lesions were more frequent in NMOSD AQP4-IgG patients than in MOG-IgG patients (83.0% vs. 28.0%, $p< .001$). MOG-IgG patients had no bright spotty lesions,opossite to NMOSD AQP4-IgG (0.0% vs. 50.0%, $p<.001$). Considering optic nerve, anterior lesions (retrobulbar) were more common in MOG-IgG (73.0%), whereas posterior lesions, including pre-chiasmal (69.0%) and chiasmal (53.0%), were frequently found in NMOSD AQP4-IgG positive patients. There was no difference in contrast echancing lesions and optic neuritis length among groups.

Conclusion:MOG-IgG related disorders had fewer brain lesions, and the bright spotty lesions were absent in MOG-IgG patients with myelitis when compared to NMOSD. MOG-IgG related optic neuritis frequently spares the optic chiasm. These MRI findings might provide surrogate markers to differentiate NMOSD phenotypes.

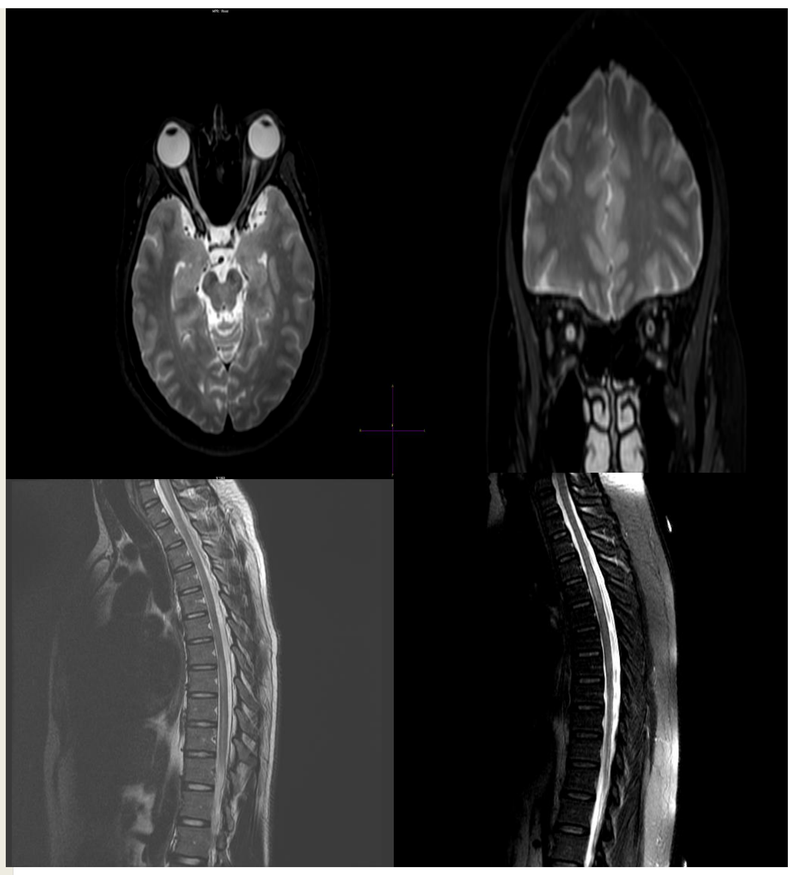

Fig. 1 Orbit MRI showing an extensive anterior optic neuritis in a patient MOG-IgG positive. Ten months later, the patient had a longitudinally extensive thoracolumbar myelitis.

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