Optic neuritis at onset discriminates neuromyelitis spectrum disorder from multiple sclerosis

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Introduction:

Multiple sclerosis (MS) and neuromyelitis optica spectrum disorder (NMOSD) are distinct diseases which require early therapeutic approach to avoid disability. In many patients however, prompt differential diagnosis between these two conditions may be challenging. The differential characterization of optic neuritis (ON) at disease presentation may help neurologists to attain an early and correct diagnosis.

Objective:

To compare the characteristics of ON as the presenting symptom of MS and NMOSD.

Methods:

We selected from a cohort of patients with ON as the presenting symptom of DD, a group who met MacDonald's 2017 criteria for diagnosis of MS, and another group who met Wingerchuk's 2015 criteria for diagnosis AQP4-IgG seropositive NMOSD. We compared the demographic, clinical, laboratory and imaging characteristics of the two groups. The visual outcome was evaluated by Kurtzke's Visual Function System Score (KVFSS) and Wingerchuk's Optic Nerve Impairment Score (WONIS).

Results:

The cohort comprised 88 patients with MS (PWMS) and 36 patients with AQP4-IgG NMOSD. As compared with PWMS, patients with NMOSD were older at disease onset (p=0.004), had a higher predominance of females (p=0.004), were non-whites (p<0.001), where associated with area postrema syndrome (p=0.025), and more frequently showed longitudinal extensive MRI lesion in the optic nerve (p=0.051).

On the other hand, specific CSF oligoclonal bands were more frequently identified in PWMS (p<0.001). KVFSS and WONIS medians were higher in patients with NMOSD (p<0.001). Statistically significant differences between the groups were not found regarding association with other demyelinating symptoms, association with systemic autoimmune diseases or serum autoantibodies, family history of autoimmunity, CSF cell count, number of neutrophils or protein content; and frequency of gadolinium-enhanced lesion in the optic nerve and chiasmal involvement.

Conclusions:

ON characteristics at disease onset differentiate NMOSD from MS.

References:

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Table. Differential characteristics between AQP4 IgG NMOSD and MS.

Characterists	MS-ON (n=88)	AQP4 IgG NMOSD-ON (n=36)	P value
Age at onset, median [IQR]	26 [6-62]	34.5 [6-68]	0.004
Female, n (%)	67 (76.1)	35 (97.2)	0.004
Non-whites, n/n total (%)	30/83 (36.1)	27/36 (75)	<0.001
NO associated with APS, n (%)	1 (1.1)	4 (11.1)	0.025
KVFS, median [IQR]	1.5 [0-2]	5 [4-6]	<0.001
WONIS, median [IQR]	1 [0-2]	5 [2-7]	<0.001
Major alteration at Ishihara, n/n total (%)	12/69 (17.4)	29/36 (80.6)	<0.001
OCBs / raise in IgG index, n/n total (%)	37/63 (58.7)	3/21 (14.3)	<0.001
Longitudinally extensive optic nerve lesion, n/n total (%)	3/25 (12)	9/24 (37.5)	0.051