# Efficacy of Disease Modifying Therapies in Double Seronegative Neuromyelitis Optica Spectrum Disorder

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## BACKGROUND

DS-NMOSD is characterized by demyelinating attacks that resemble those in seropositive patients, but display persistent negative serum anti-AQP4 and anti-MOG cell-based assays. These patients currently lack FDA-approved DMTs. Moreover, data that explores their response to distinct DMTs is largely observational and pre-dates the publication of MOGAD diagnostic criteria.

## METHODS

Deidentified data was collected retrospectively from electronic health records at each study site, using REDCap, from inception until July 2024. Appropriate institutional board review approval was obtained at each institution.

Inclusion criteria

1. Diagnosis of NMOSD according to the IPND-2015 diagnostic criteria in the absence of anti-AQP4 antibodies (2 core clinical syndromes and at least one supporting MRI-criteria)

2. At least one negative serum CBA for anti-MOG and anti-AQP4

Exclusion criteria

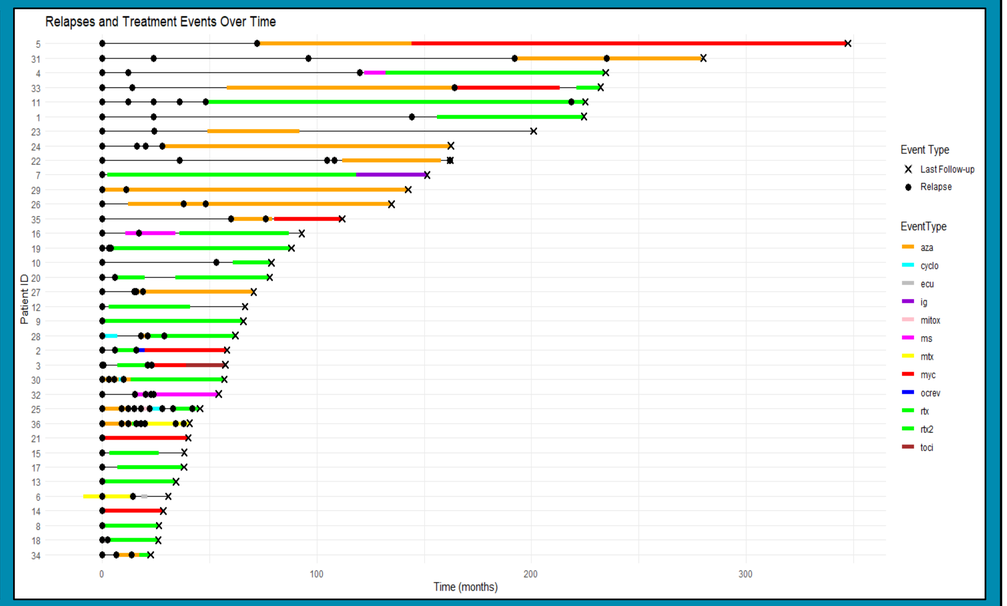
1. No DMT received

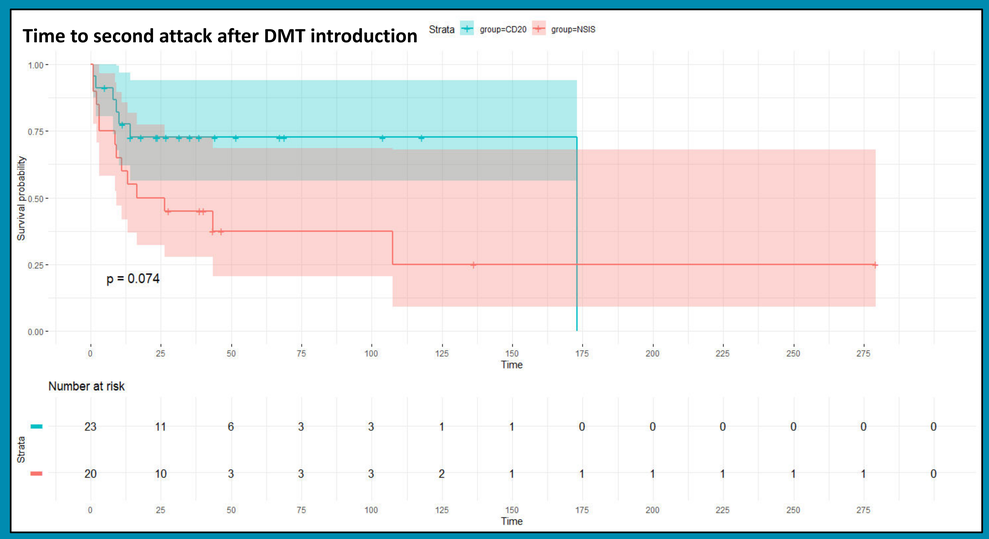
## RESULTS

Thirty-six patients were included. 69% were female, 61% were Caucasians, and 58% were Latino/Hispanics. The mean age at onset was 31 (SD 19.7), and the mean disease duration was 8.8 (SD 6.9) years. Twenty-seven patients (75%) experienced a relapsing course. The most common clinical presentations at onset were transverse myelitis (61%) and optic neuritis (56%). Simultaneous transverse myelitis and optic neuritis at onset occurred in 7 patients (19%).

**Table 1. Patient demographics**

| | All patients (n = 36) | MGB cohort (n = 20) | USP cohort (n = 16) |
|---|---|---|---|
| **Median age (range), y** | 48 (19 - 66) | 49 (26 - 66) | 42 (19 - 62) |
| **Female sex, n (%)** | 25 (69%) | 14 (70%) | 11 (69%) |
| **Race, n (%)** | | | |
| ***Caucasian*** | 22 (61%) | 16 (80%) | 6 (38%) |
| ***Non-Caucasian*** | 14 (39%) | 4 (20%) | 10 (63%) |
| **Ethnicity, n (%)** | | | |
| ***Latino*** | 21 (58%) | 5 (25%) | 16 (100%) |
| ***Non-Latino*** | 15 (42%) | 15 (75%) | 0 (0%) |
| **Mean age at onset, y (SD)** | 31.1 (19.7) | 33.0 (25) | 28.7 (9.1) |
| **Mean disease duration, y (SD)** | 8.8 (6.9) | 8.29 (7.3) | 9.4 (6.2) |
| **Mean follow-up duration, mo** | 89.7 (73.8) | 103.4 (87.8) | 72.6 (45.5) |
| **Relapsing course, n (%)** | 27 (75%) | 12 (60%) | 15 (94%) |
| **Initial presentation** | | | |
| ***ON*** | 18 (56%) | 12 (60%) | 6 (38%) |
| ***TM*** | 22 (61%) | 13 (65%) | 9 (56%) |
| ***ON+TM*** | 7 (19%) | 6 (30%) | 1 (6%) |
| ***ADEM*** | 4 (11%) | 3 (15%) | 1 (6%) |
| ***BS/APS*** | 5 (14%) | 1 (5%) | 4 (25%) |




**Univariate Cox-Proportional-Hazards comparison yielded a non-significant p-value based on the a priori definition of significance (HR 2.26, 95CI 0.90-5.69, p=0.074).**

## DISCUSSION

Our study constructed a well-characterized cohort of double-seronegative IPND-2015 fulfilling NMOSD patients. Survival analysis revealed a potential for better relapse prevention with the use of anti-CD20 drugs in this population, however, sample size likely limited quantitative analysis.

## Acknowledgements

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