POSTER #: RWD14

Patient Characteristics, Treatment Patterns and Healthcare Resource Utilization in Neuromyelitis Optica Spectrum Disorder (NMOSD) patients in the Netherlands

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BACKGROUND

- Neuromyelitis Optica Spectrum Disorder (NMOSD) is a rare, inflammatory, autoimmune condition that primarily affects the optic nerves and spinal cord, often leading to severe disability.[1]
- Real-world evidence on the disease burden of patients with NMOSD in the Netherlands is limited.

OBJECTIVES

Primary

- To describe demographics and clinical characteristics of patients with NMOSD.

Secondary

- To describe treatment patterns among patients with NMOSD.
- To describe all-cause and NMOSD-related healthcare resource utilization (HCRU) and associated costs among patients with NMOSD.

Exploratory

- To estimate incidence of NMOSD including number of incident cases.

METHODS

- This observational, retrospective study used linked longitudinal real-world outpatient pharmacy and hospital data from the Dutch **PHARMO Data Network**.
- Patients were included if, between 01 January 2017 and 31 December 2023, they had either
  - ≥1 NMOSD diagnosis and used ≥1 NMOSD-related medication;
  - ≥1 transverse myelitis (TM) diagnosis and ≥1 optic neuritis (ON) diagnosis and used ≥1 NMOSD-related medication;
  - ≥2 NMOSD diagnoses ≥90 days apart.
- The index date was defined as the first qualifying event of the ones listed above.
- Patients with sarcoidosis, multiple sclerosis (MS) or use of MS-related medications or immune checkpoint inhibitors, were excluded. A 12-month baseline and 6-month follow up period were required for inclusion.
- Demographic and clinical characteristics, treatment patterns, all-cause and NMOSD-related HCRU were described.
- Lines of treatment were built in sequential fashion beginning with the earliest NMOSD treatment observed from the index date. The earliest dispensing (Anatomical Therapeutic Chemical [ATC] code) after the index date for pre-defined NMOSD treatments was defined as the initiation of the earliest line treatment (1L) recorded.

Table 1: NMOSD patient attrition

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All patients in the PHARMO Data Network with outpatient pharmacy data and hospital data available between January 1, 2017 and December 31, 2023	7,304,802
Presence of ≥ 1 NMOSD diagnosis and ≥ 1 NMOSD medication	53
Presence of ≥ 1 TM diagnosis and ≥ 1 ON diagnosis and ≥ 1 NMOSD medication	0
Presence of ≥ 2 NMOSD diagnoses ≥ 90 days apart	69
Patients having at least 1 NMOSD inclusion criterion	72
Excluded: patients having < 12 months of continuous data available in all used data sources preceding the index date	6
Excluded: patients having < 6 months of continuous data available in PHARMO Data Network following the index date	3
Excluded: patients aged < 18 years on the index date	3
Excluded: patients with presence of ≥ 1 MS diagnosis or MS-specific disease modifying treatment before or after the last NMOSD diagnosis or NMOSD medication	14
Excluded: patients with presence of ≥ 1 sarcoidosis diagnosis before or after the last NMOSD diagnosis	1
Excluded: patients with presence of ≥ 1 immune checkpoint inhibitor medication before or after the last NMOSD diagnosis	0
Total excluded:	24
All eligible NMOSD patients during the study period:	**48**

Abbreviations: MS = multiple sclerosis; NMOSD = neuromyelitis optica spectrum disorder; ON = optic neuritis; TM = transverse myelitis.

RESULTS

- After applying the inclusion and exclusion criteria, **48** patients were included (**Table 1**)
- This corresponds to a prevalence of 0.66 per 100,000 persons.
- Mean (standard deviation [SD]) age was 46 (16) years, and 73% were female
- The most common comorbidities in the year before index were:
  - Autoimmune encephalitis (15%)
  - Neuropathic pain (8%)
  - Systemic lupus erythematosus (6%)
- Treatment patterns were consistent with the Dutch protocol for the treatment of NMOSD[2]
  - 32 patients received first-line treatment (1L), most commonly azathioprine and rituximab (**Figure 1**)
  - 17 patients received second-line treatment (2L), most commonly azathioprine, rituximab and mycophenolate mofetil (**Figure 1**)
- The median (interquartile range [IQR]) duration of treatment was
  - 403 days (257-828) for 1L
  - 181 days (85-388) for 2L
- All patients had at least 1 specialist visit during their follow up
  - 32 (67%) patients had a hospitalization during their follow-up, including 20 (42%) with at least one NMOSD-related hospitalization
- The mean (SD) length of all-cause hospitalization was 12.7 (17.7) days per patient-year, including 7.4 (9.2) NMOSD-related days.
- The mean (SD) number of medications dispensed was 15.0 (13.6) per patient-year, including 5.5 (6.7) NMOSD-related medications.
- Overall, NMOSD incidence was 0.12 per 100.000 person-years (95% confidence interval: 0.09 – 0.16), -consistent with published literature[3,4]

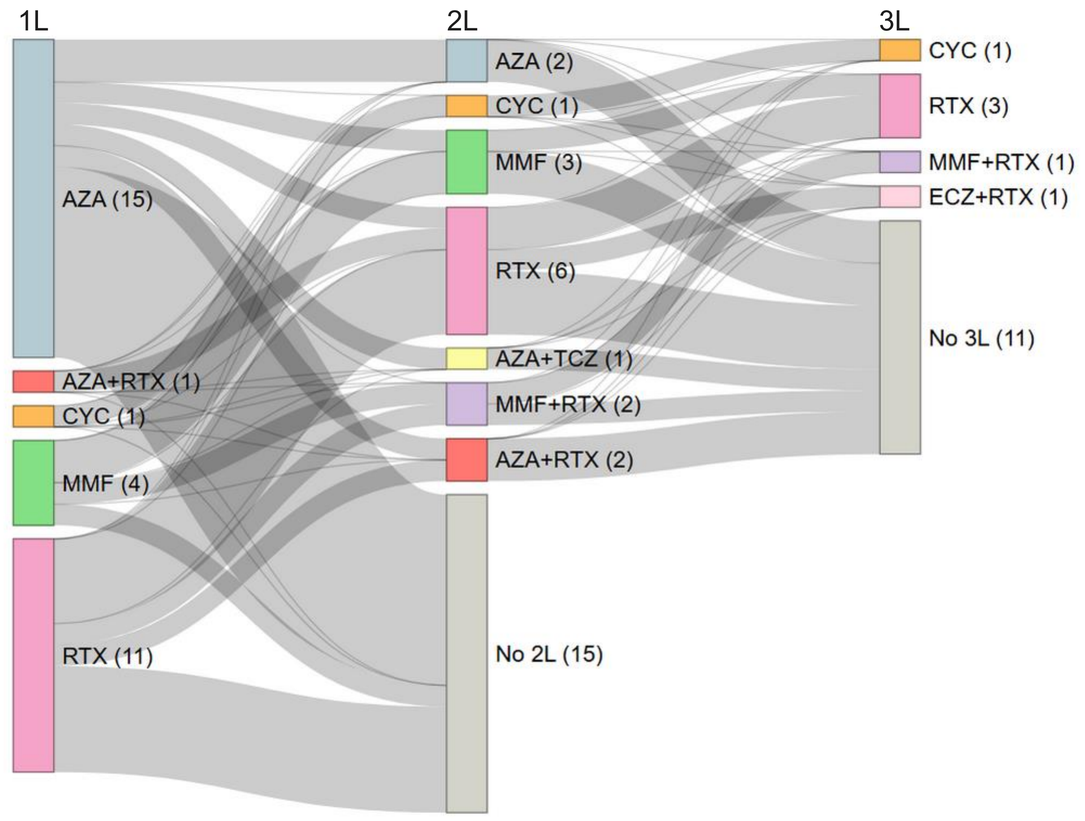

Figure 1: Treatment sequences across lines of therapy in NMOSD

Abbreviations: AZA = azathioprine; CYC = cyclophosphamide; ECZ = eculizumab; MMF = mycophenolate mofetil; RTX = rituximab; TCZ = tocilizumab.
Note: Flow widths represent the number of patients.

CONCLUSIONS

- In this real-world cohort, patients with NMOSD in the Netherlands experienced considerable healthcare resource utilization, including frequent hospitalizations and ongoing pharmacologic treatment.
- Treatment patterns were generally consistent with the Dutch treatment protocol, with considerable variation in treatment sequences across lines of therapy.
- These findings provide real-world evidence on the treatment patterns and HCRU associated with NMOSD in the Netherlands and underscore the need for optimized disease management strategies.

REFERENCES

1: Ofash et al., (2025) (DOI: 10.7759/cureus.95461)
2: Behandeling van AQP4-IgG positieve NMOSD patiënten (Wokke, van Oosten, 2021)
3: van Pelt et al., 2016 (DOI: 10.1177/2055217315625652)
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