Satralizumab▼ Treatment in Adults With AQP4-IgG–Seropositive Neuromyelitis Optica Spectrum Disorder: A Retrospective Case Series

P1036

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BACKGROUND

- Neuromyelitis optica spectrum disorder (NMOSD) is a rare autoimmune neuroinflammatory disease that primarily affects the optic nerves and spinal cord and can lead to sensory/motor impairment, vision loss and permanent neurological disability[1,2]
- Satralizumab is a humanised monoclonal recycling antibody against the interleukin 6 receptor with demonstrated safety and efficacy in patients with NMOSD in 2 randomized, placebo-controlled Phase III clinical trials (SAkuraSky [NCT02028884] and SAkuraStar [NCT02073279]);[3,4] the safety and efficacy were sustained over the long-term in the open-label extension periods[5,6]
- The US Food and Drug Administration approved satralizumab for use in adults with aquaporin 4 autoantibody–positive (AQP4-IgG+) NMOSD in 2020, but real-world data are limited

OBJECTIVE

- To describe the experience with satralizumab in adults with AQP4-IgG+ NMOSD in clinical practice

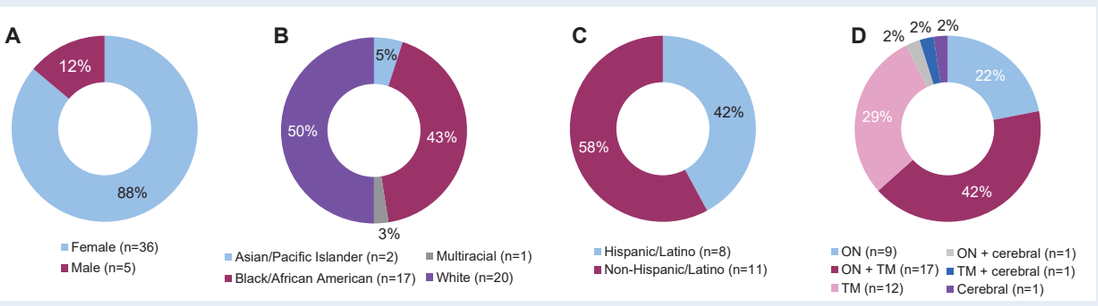
METHODS

- Case information for adults with AQP4-IgG+ NMOSD who had received satralizumab for ≥6 months was obtained from US healthcare providers between April 2022 and August 2023
- A fluorescence-activated cell sorting or enzyme-linked immunosorbent assay was used to detect AQP4 antibodies; inclusion was based on most recent AQP4 test results
- Healthcare professionals were asked to provide information for all patients in their practice who received satralizumab and provided written consent
- All cases (regardless of the clinical outcomes or the patient's experience) that fit the inclusion criteria were included
- Patient characteristics, examination findings, diagnostic test results, treatment response and reported adverse events were recorded

RESULTS

Figure 1. Background demographic and clinical traits of patients with NMOSD who received satralizumab

- A total of 41 patients ranging in age from 19 to 81 years (current age) were included
- Overall, 5% self-identified as Asian, 43% as Black/African American, 3% as multiracial and 50% as White; 42% identified as Hispanic/Latino[a]



NMOSD, neuromyelitis optica spectrum disorder; ON, optic neuritis; TM, transverse myelitis.
[a]Race data available for 40 patients, and ethnicity data available for 19 patients.

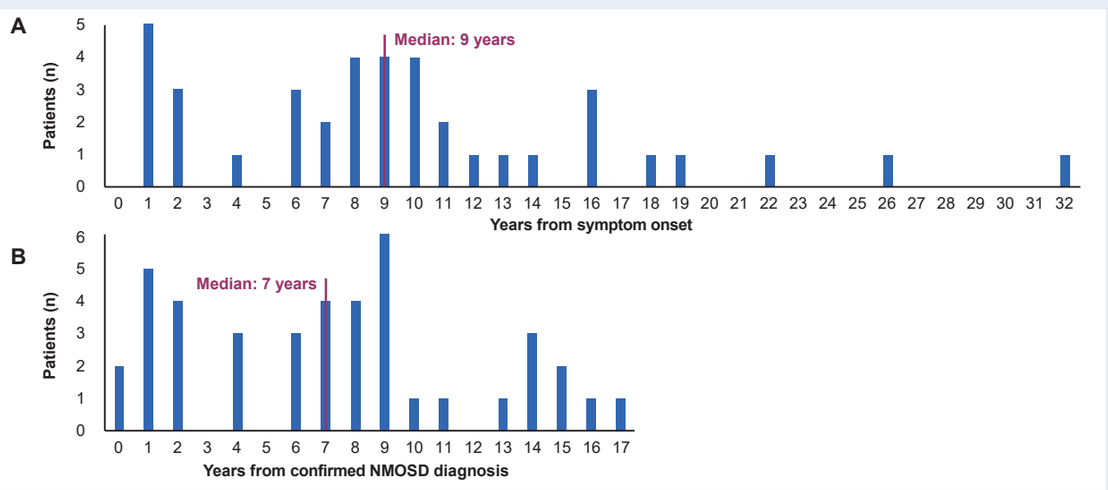
Table 1. Background demographic and clinical traits of patients with NMOSD who received satralizumab

	All patients N=41
Current age, mean (SD), years	50.2 (17.2)
EDSS[a] score before satralizumab, mean (SD), n/N[b]	4.4 (2.2), 39/41
Any autoimmune comorbidities, n (%)[c]	16 (39)
Autoimmune comorbidities type[d]	
Hypothyroidism	3 (7)
Myasthenia gravis	3 (7)
Sjögren syndrome	3 (7)
SLE	3 (7)
Other[e]	5 (12)

EDSS, Expanded Disability Status Scale; NMOSD, neuromyelitis optica spectrum disorder; SLE, systemic lupus erythematosus.
[a]EDSS or estimated EDSS score provided. [b]n/N indicates sample size. [c]Includes comorbid and previous autoimmune disorders. [d]Not mutually exclusive. [e]Other includes acute disseminated encephalomyelitis, autoimmune lymphocytic colitis, idiopathic thrombocytopenic purpura, Kawasaki disease and rheumatoid arthritis.

Figure 2. (**A**) Time from symptom onset and (**B**) confirmed NMOSD diagnosis

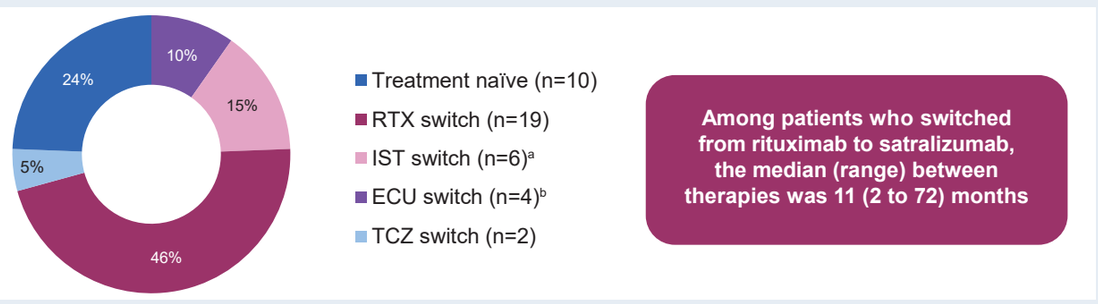
- Median (range) time from symptom onset was 9 (1-32) years and from confirmed NMOSD diagnosis was 7 (<1-17) years



NMOSD, neuromyelitis optica spectrum disorder.

Figure 3. Patient category

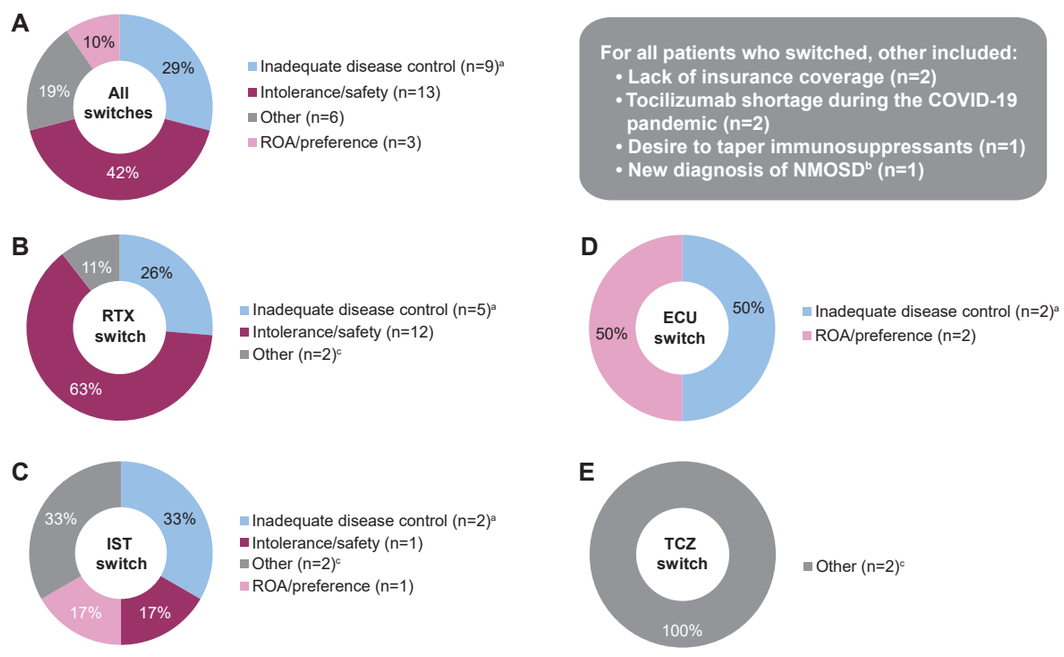
- Over three-quarters of patients received immunosuppressants or disease-modifying therapies as preventative NMOSD treatment before satralizumab



ECU, eculizumab; IST, immunosuppressant therapy; NMOSD, neuromyelitis optica spectrum disorder; RTX, rituximab; TCZ, tocilizumab.
[a]ISTs included azathioprine or mycophenolate mofetil. [b]All patients switched from the FDA-approved therapy eculizumab and none from inebilizumab.

Figure 4. Primary reason for switching to satralizumab

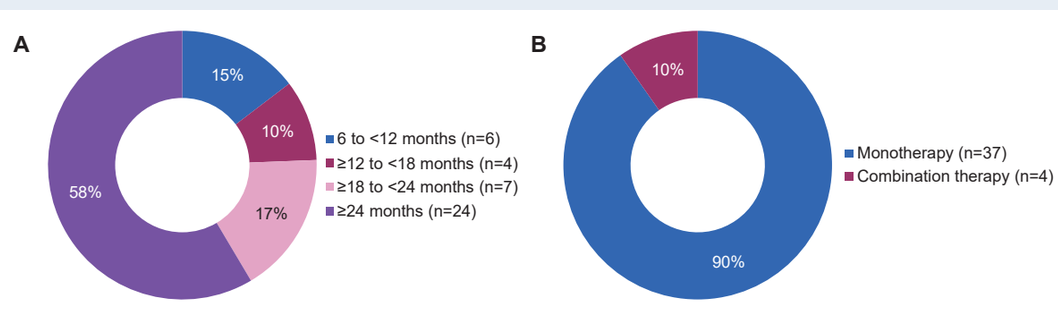
- The most common reasons or switch to satralizumab included intolerance/safety and inadequate disease control



IST, immunosuppressant; ROA, route of administration; RTX, rituximab; TCZ, tocilizumab.
[a]Inadequate disease control defined as radiographically confirmed relapses and patient reported outcomes. [b]The patient previously received ISTs for multiple sclerosis before diagnosis of NMOSD. [c]For RTX switch, other was lack of insurance coverage (n=2); for IST switch, other was desire to taper immunosuppressants (n=1) and new diagnosis of NMOSD (n=1); for TCZ switch, other was shortage of TCZ during the COVID-19 pandemic (n=2).

Figure 5. (**A**) Duration of treatment and (**B**) type of therapy with satralizumab

- As of August 2023, individuals had received satralizumab for 6 to 92 months, either as monotherapy or in combination with immunosuppressants[a]



[a]Immunosuppressants included azathioprine and mycophenolate mofetil.

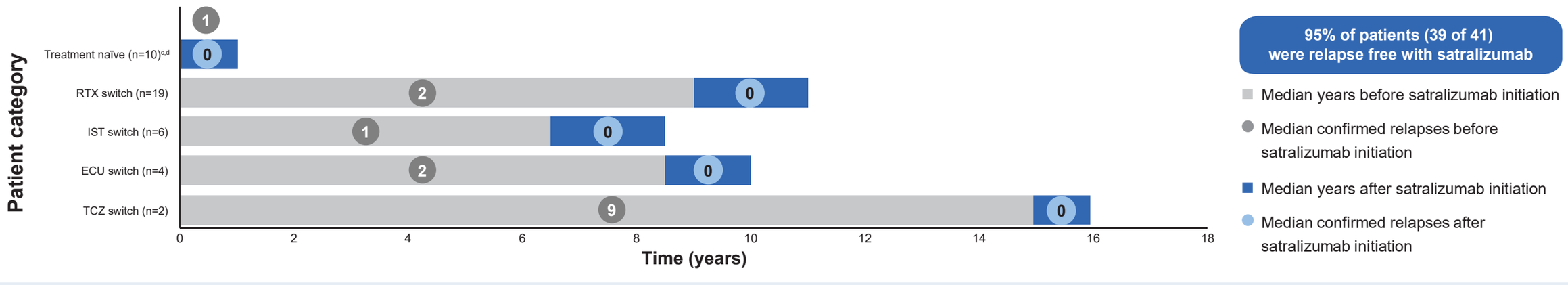
Table 2. Safety data for satralizumab in NMOSD

	All patients N=41
Any adverse event, n (%)[a,b]	14 (34)
Adverse events	
Elevated liver function tests (ALT, AST)	2 (5)
Hyperlipidaemia	5 (12)
Leucopenia	3 (7)
Neutropenia	3 (7)
Other[c]	7 (17)
Adverse events leading to discontinuations, n (%)[d]	2 (5)

ALT, alanine aminotransferase; AST, aspartate aminotransferase; NMOSD, neuromyelitis optica spectrum disorder.
[a]Adverse events thought to be related to satralizumab. [b]All AEs were reported to US Drug Safety as required. [c]Other includes nasal congestion and sore throat (n=1), contact dermatitis and postinflammatory hypopigmentation of the foot (n=1), right sided weakness (n=1), thrombocytopenia (n=2), lymphopenia (n=1) and transient abdominal bloating after injection (n=1). [d]One patient permanently discontinued satralizumab due to asymptomatic neutropenia (which transiently resolved after discontinuation of satralizumab but then recurred) and 1 patient permanently discontinued due to right-sided weakness (no objective documentation and not considered a relapse).

- Overall, all patients maintained disease control with satralizumab, with few adverse events reported
  - One patient temporarily paused satralizumab for 1 dose due to transient neutropenia
  - One patient permanently discontinued satralizumab due to asymptomatic neutropenia
  - One patient permanently discontinued satralizumab due to right-sided weakness (no objective documentation and not considered a relapse)

Figure 6. Median confirmed relapses[a] by patient category over time[b]



ECU, eculizumab; IST, immunosuppressants; TCZ, tocilizumab; RTX, rituximab.
[a]Only relapses after initial attack are shown in this figure. Min-max of median relapses as follows (before satralizumab; after satralizumab): treatment naïve, 0-2; 0-1; RTX switch, 0-5; 0; IST switch, 0-2; 0; ECU switch, 1-2; 0; TCZ switch, 5-13; 0. [b]As of August 2023, 2 patients have permanently discontinued satralizumab due to adverse events. [c]One patient presented with optic neuritis in 1997 but received no preventative treatment and was symptom free until February 2021. [d]For treatment naïve patients, median years before satralizumab initiation was 0.

LIMITATIONS

- The limitations of this presentation are those inherent to case reports, including the small number of patients, partially missing data and the retrospective design
- The duration of treatment with satralizumab was shorter than the duration of previous NMOSD treatments in most patients; thus, comparison of the number of relapses with each treatment should be evaluated with caution
- Despite these limitations, this case series provides valuable real-world data on patients with AQP4-IgG+ NMOSD who received satralizumab as their initial preventative treatment and after previous treatment with biologics, including long-term rituximab, and conventional ISTs. Future studies of a larger number of patients will help to further elucidate the clinical response to satralizumab in patients with NMOSD

CONCLUSIONS

- In this ongoing retrospective case series, satralizumab was effective and well tolerated in patients with NMOSD, including those with concomitant autoimmune comorbidities and those who switched from their previous treatment due to inadequate disease control and/or intolerance
- As of August 2023, almost all patients were relapse free with satralizumab
  - Of the patient relapses reported, 2 were confirmed radiographically and 1 was unconfirmed; none led to treatment discontinuation
- No major safety events were reported in any of the patients after initiation or switch to satralizumab, and 95% of patients (39 of 41) continue to receive satralizumab
  - Two patients permanently discontinued satralizumab: 1 due to asymptomatic neutropenia and 1 due to right-sided weakness (no objective documentation and not considered a relapse)
- These outcomes align with the long-term safety and efficacy outcomes with satralizumab in the Phase III SAkura clinical trials

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DISCLOSURES

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