

AQP4-IgG Dynamics and Exploratory Assessment of SERA-3 in Neuromyelitis

Optica Spectrum Disorder Treated with Satralizumab

Miaoxin Yu^{1#}, MD; Xiang Li^{2#}, MD; Lei Cui¹, MD; Jinsong Jiao¹, MD; Qing Sun¹, MD; Yeqiong Zhang¹, MD; Renbin Wang¹, MD; Dantao Peng^{1*}, MD; Yang He^{3*}, MD; Yujuan Jiao^{2*}, MD; Weihe Zhang^{1*}, MD

Affiliations:

¹ Department of Neurology, China-Japan Friendship Hospital, Beijing, 100029, China;

² Department of Neurology, The first hospital of Tsinghua University, Beijing, 100016, China;

³ Department of Neurology, Peking University People's Hospital, Beijing, 100044, China.

These authors contributed equally to this work.

***Corresponding Authors:**

- Dr. Dantao Peng, Department of Neurology, China-Japan Friendship Hospital, 2 Yinghua Dongjie, Hepingli, Beijing, 100029, China. Tel: +86-010-84205295; Fax: +86-01084205442; Email: pengdantao2000@163.com

- Dr. Yang He, Department of Neurology, Peking University People's Hospital,
No. 11 Xizhimen South Street, Xicheng District, Beijing, 100044, China. Tel:
+86-010-88326800; Email: heyang0404@163.com
- Dr. Yajuan Jiao, Department of Neurology, The first hospital of Tsinghua
University, No.6, Jiuxianqiao, Chaoyang District, Beijing, 100016, China. Tel:
+86-010-64308545; Fax: +86-10-64361322; Email: spqjiao@126.com
- Dr. Weihe Zhang, Department of Neurology, China-Japan Friendship Hospital,
2 Yinghua Dongjie, Hepingli, Beijing, 100029, China. Tel: +86-010-
84205259; Fax: +86-01084205442; Email: z_weihe@163.com

Table S1. Clinical characteristics of patients who experienced relapse during satralizumab treatment

Case	Age of onset (years)	Age at SAT (years)	Sex	Disease Duration pre-SAT (years)	AQP4-IgG dynamics	Concomitant Therapy	Time to Relapse (months)	Relapse Type	Severe relapse*	Attack therapy for relapse	Possible Contributing Factors
7	50	55	F	5.75	Stable	GC+MMF	14	TM	No	IVMP+PLEX	Unknown (on regular treatment)
10	68	73	F	5.05	NA	GC	1	TM	No	PLEX	Incomplete loading dose (only one of three doses received)
14	18	40	F	23.1	NA	GC+MMF	2	ON	Yes	IVMP+IA	Overly rapid tapering of concomitant MMF
24	50	63	F	13.25	Increase	MMF	18	TM	Yes	IVMP+PLEX	Unknown (on regular treatment)

Abbreviations: IA, immunoadsorption; IVMP, intravenous methylprednisolone; GC, oral low dose glucocorticoid; MMF, mycophenolate mofetil; NA, not available; ON, optic neuritis; PLEX, plasma exchange; SAT, satralizumab; TM, transverse myelitis.

* Severe relapse was defined as EDSS ≥ 6 (for TM) or visual acuity ≤ 0.1 on a LogMAR chart (for ON).

Table S2. Baseline characteristics of patients with complete serological follow-up (n=22) versus those without complete serological follow-up (n=12)

	All participants (n=34)	Completed 12-month serological follow-up (n=22)	Did not complete 12-month serological follow-up (n=12)	<i>P</i> value
Demographics				
Sex, Female, n (%)	32 (94.12)	20 (90.91)	12 (100.0)	0.529
Sex, Male, n (%)	2 (5.88)	2 (9.09)	0 (0)	-
Age of onset, y (mean±SD)	49.03 ± 18.18	50.41 ± 17.75	46.5 ± 19.47	0.557
Age at SAT, y (mean±SD)	55.06 ± 16.31	56 ± 16.38	53.33 ± 16.77	0.656
BMI, kg/m ² (mean±SD)	24.22 ± 3.86	25.06 ± 4.04	22.54 ± 2.99	0.093
Disease History				
Comorbid autoimmune diseases, n (%)	11 (32.35)	7 (31.82)	4 (33.33)	0.999
Clinical course pre- SAT, y (median [IQR])	4.61 (1.7-9.63)	3.09 (1.2- 9.63)	5.23 (3.09- 9.27)	0.627
No. of attacks pre- SAT, n (median [IQR])	4 (2-7)	3.5 (2-5)	4 (2-8)	0.572
ARR pre-SAT	0.92 (0.56-1.59)	0.92 (0.66- 1.59)	0.86 (0.47- 1.79)	0.787
Symptoms at first attack				0.220
ON	11 (32.35)	8 (36.36)	3 (25.0)	
TM	12 (35.29)	8 (36.36)	4 (33.33)	
APS	5 (14.71)	3 (13.64)	2 (16.67)	
BS	2 (5.88)	2 (9.09)	0 (0.0)	
Combined	4 (11.76)	1 (4.55)	3 (25.0)	
Baseline EDSS pre- SAT	2 (0-6)	2 (0-6)	0.5 (0-6)	0.632
Time from last attack to SAT, mons	2 (1-11)	1.5 (0.53- 11)	3.8 (1-16)	0.211
Treatment				
Any ISTs pre-SAT, n (%)	26 (76.47)	15 (68.18)	11 (91.67)	0.210

Duration of ISTs pre-SAT, mons	55.1 (14.17-92.8)	36.5 (12-92.8)	62.3 (30.15-110.2)	0.639
Concomitant any ISTs, n (%)	27 (79.41)	17 (77.27)	10 (83.33)	0.999
Circulating CD19 ⁺ B-cell count (pre-SAT), cell/ μ L	89.5 (33-231.5)	89 (14-245)	102 (52-224)	0.970
Serum IgG level (pre-SAT), mg/dL	883 (708-1110)	755.5 (655-1035)	933.5 (890-1120)	0.086

Abbreviations: APS, area postrema syndrome; BS, brainstem syndrome; BMI, body mass index; EDSS, Expanded Disability Status Scale; IQR, interquartile range; IST, immunosuppressive therapy; ON, optic neuritis; SAT, Satralizumab; TM, transverse myelitis.