

Afebrile appendicitis in a patient with AQP4+NMOSD under satralizumab treatment

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Backgrounds

Satralizumab is a biological drug used for relapse prevention of anti-aquaporin-4 antibody-positive NMOSD (AQP4+NMOSD). It exerts biological effects through interleukin-6 (IL-6)/IL-6 receptor blockage that inhibits producing acute phase proteins.

Objective

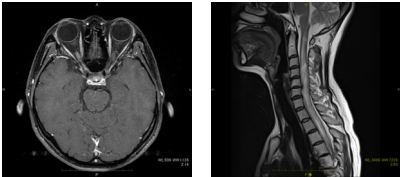
To illustrate clinical and laboratory findings of a patient with AQP4+NMOSD who developed acute appendicitis under satralizumab treatment.

Methods: A case report.

Case presentation

A 42-year-old female developed rt optic neuritis and myelitis. She was found to be positive for serum anti-AQP4-antibody; was diagnosed as having AQP4+NMOSD. She was treated with intravenous methylprednisolone and subsequent plasma exchange as acute treatments. She was treated with oral prednisolone and immunosuppressants to prevent relapse, but immunosuppressants were discontinued because of adverse effects.

Figure 1. Brain and spinal MRI at the initial presentation



Rt optic neuritis and long myelitis

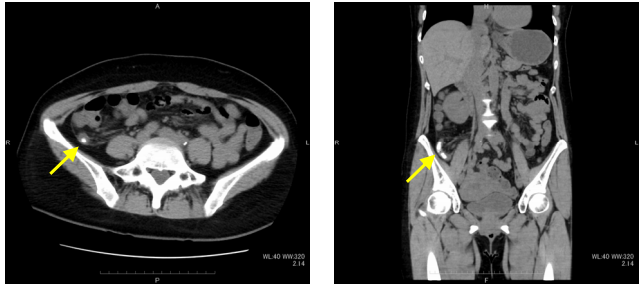
She started to undergo satralizumab treatment at the age of 44. After starting satralizumab, prednisolone was tapered off in one year. At the age of 47, two weeks after the 32nd injection of satralizumab, she felt lower abdominal pain and nausea. On outpatient visit, she was afebrile but presented with right lower abdominal pain and rebound tenderness.

Vital signs: BT 35.5 degrees C, HR 42 /min, BP 147/80 mmHg, SpO₂ 99% (room air)

Table 1. Laboratory data

	value	Reference value		value	Reference value
WBC	6,530 /μL	3,300–8,600	AST	44 U/L	11–35
Neutrophil	88.5%	38.5–80.5	ALT	53 U/L	6–39
Hb	13.1 g/dL	11.2–15.2	BUN	14.9 mg/dL	8–23
Plt	21.3x10 ⁴ /mm ³	14–37.9	Cr	46 mg/dL	0.47–0.79
CRP	< 0.03 mg/dL	< 0.3	Na	143 mEq/L	135–147
D-dimer	< 0.5 μg/mL	< 1.0	K	3.8 mEq/L	3.5–5
			Cl	107 mEq/L	98–108
			Ca	9.5 mg/dL	8.4–10.2

Figure 2. Abdominal CT scan



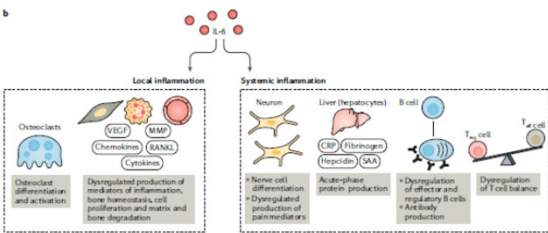
Axial Coronal
Arrows indicate fecal pellet.

She was diagnosed as having acute appendicitis; was treated with intravenous antibiotics; subsequently underwent laparoscopic appendectomy. She showed favorable postoperative course; was discharged from hospital 6 days after surgery. She restarted satralizumab treatment within allowance of dosing interval.

Discussion

- Adverse effects under biological drug treatment
- Initial adverse effects
 - Infusion reactions
 - Long-term adverse effects
 - Infections
 - Tuberculosis, HBV
 - Other infections (bacteria, virus, etc)
 - PML risk: lower than that in DMT for MS
 - Laboratory abnormality
 - Hamatological
 - liver function

Effects of IL-6 on local & systemic inflammation (Choi EH et al. Nat Rev Rheumatol. 16:335-345, 2020)



Infections under satralizumab treatment

- (Fujita R et al. Intern Med 62: 3317-3320, 2023)
- Comparison of sepsis between AQP4+NMOSD patients under satralizumab treatment (AQP4-satralizumab) with RA patients under tocilizumab treatment (RA-tocilizumab)
 - Urosepsis: NMOSD-satralizumab > RA-tocilizumab
 - Conclusions: Risk factor assessment and management of UTI are important for safe use of satralizumab

Conclusions

AQP4+NMOSD patients under satralizumab treatment may develop infections with normal body temperature and CRP level. In such conditions, relative neutrophilia may be a clue of infection, and it is important to work-up for avoiding missed diagnoses. Moreover, pretreatment screening for risk factors of intra-abdominal infection may be taken into consideration.

COI

Presenter: Hiroshi Kuroda received speaker honoraria from Alexion Pharma, Chugai Pharmaceutical, Novartis Pharma, and Otsuka Pharmaceutical.