

# Newly Diagnosed Anti-Myelin Oligodendrocyte Glycoprotein Syndromes in the Inpatient Setting: Six-month experience at a Tertiary Pediatric Center

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UT Southwestern  
O'Donnell Brain Institute

Cynthia Wang MD<sup>1,2</sup>, Benjamin Greenberg, MD MHS<sup>1,2</sup>

<sup>1</sup>Department of Neurology and Neurotherapeutics, University of Texas Southwestern Medical Center, Dallas, TX

<sup>2</sup>Children's Medical Center Dallas, Dallas, TX

## Background / Objectives

- The identification of anti-myelin oligodendrocyte glycoprotein (MOG) syndromes has been accelerated by the recent commercial availability of a MOG antibody cell-based assay.
- These children have significant clinical overlap with other pediatric neuroimmunological syndromes such as multiple sclerosis (MS), neuromyelitis optica spectrum disorder (NMOSD), acute disseminated encephalomyelitis (ADEM), and autoimmune encephalitis (AE).
- However, the diversity and severity of anti-MOG presentations in the tertiary pediatric inpatient setting, and the absolute and relative frequency these syndromes compared to other neuroimmunological diseases at these centers are unknown.
- To report the frequency and characteristics of patients identified as MOG antibody positive at UT Southwestern. We also report on the number of children diagnosed with MS, NMOSD, and AE in the same clinical context.

## Methods

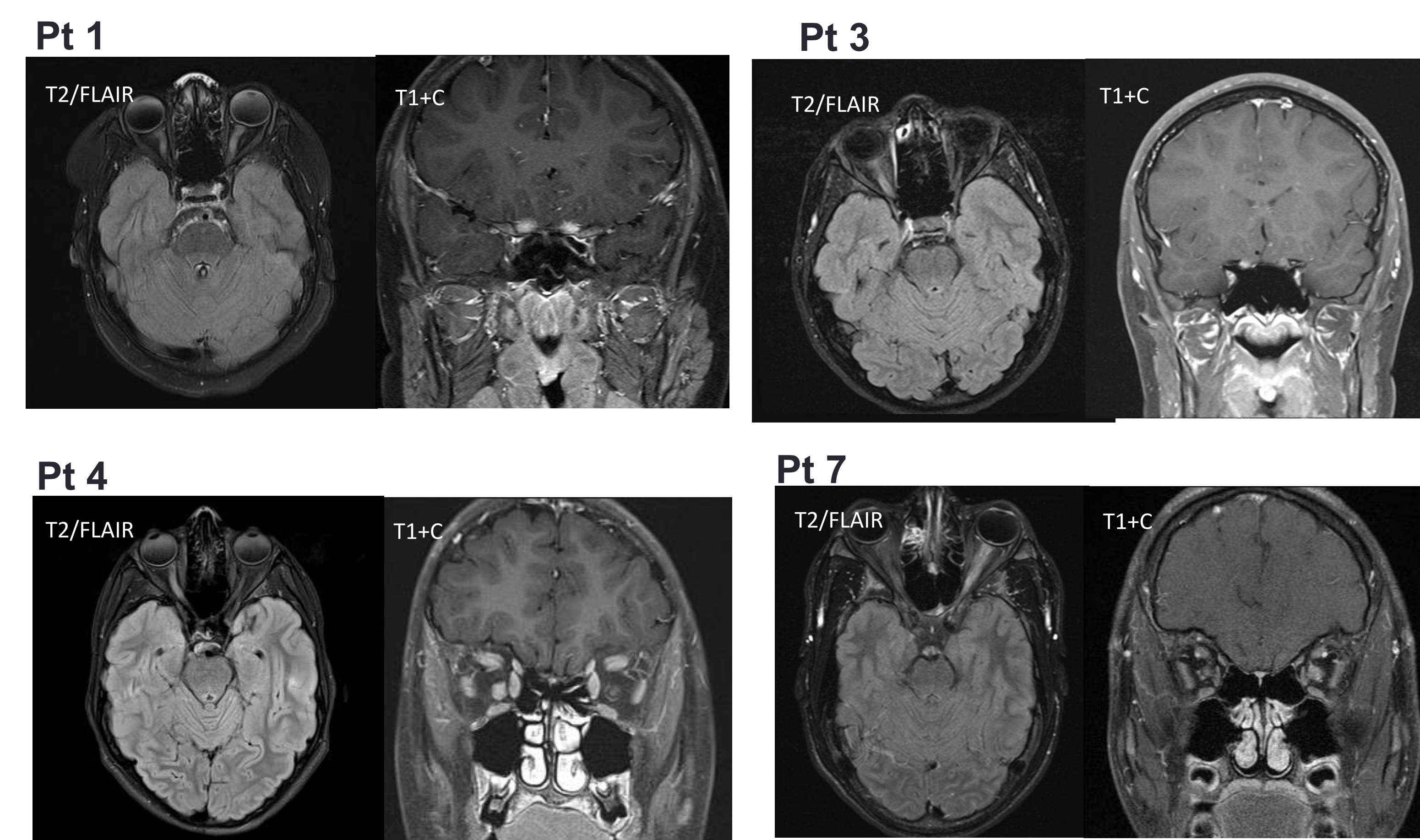
- Patients who underwent anti-MOG antibody testing were identified from October 2017 to April 2018. The demographic, clinical, and treatment characteristics of the MOG positive patients are described. The number of inpatients who were diagnosed with MS, NMOSD, and NMDA AE during the same period of time are also reported.
- Chart review and data extraction were completed under protocols approved by the UT Southwestern institutional Review Board (STU-022011-211, STU-112016-017).

## Results

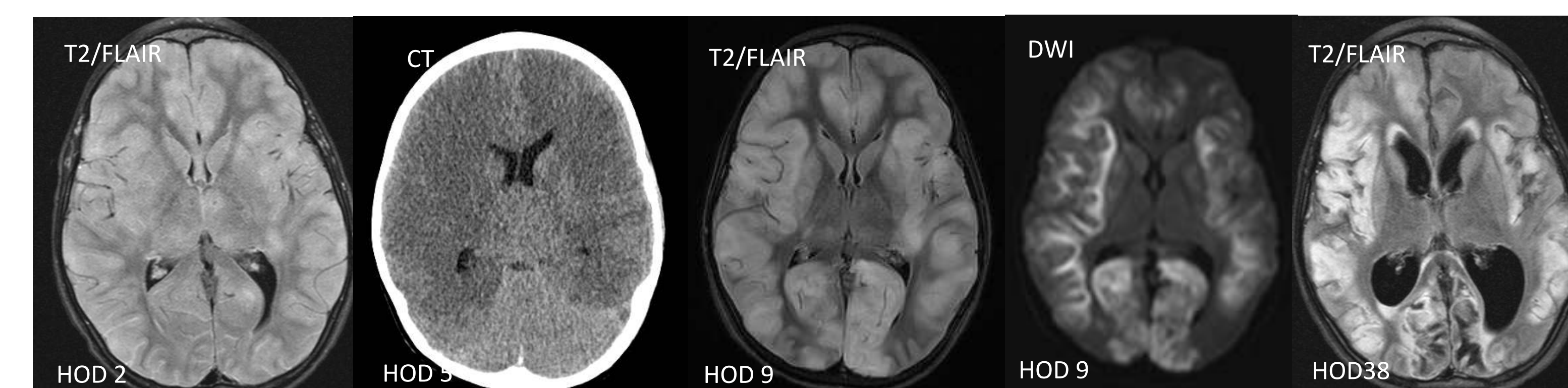
- Out of 23 inpatients who were tested for anti-MOG antibodies, 7 patients were positive (30%).
- Titers ranged from 1:100 to 1:10,000.
- Oligoclonal bands were negative for all MOG Ab positive patients, and only 1 of 7 had elevated IgG index.
- The average age of presentation was 11.1 years (range 5-16 years, SD 4.1).
- 5 children were male (71%).
- 4 children presented with optic neuritis (57%), 2 with myelitis (29%), and 1 with ADEM (14%).
- All MOG positive children received IV corticosteroids as first line therapy and 6 of 7 received additional second line therapies.
- All children returned to near baseline level of functioning except the child with ADEM, whose illness was complicated by increased intracranial pressure.
- During the same period of time, 2 patients were diagnosed with multiple sclerosis (2 F, mean age 16.5 yrs), 1 patient with AQP-4 positive NMOSD (M, age 11), and 2 patients with anti-NMDAR encephalitis, 1 of whom had preceding HSV encephalitis (1 F, 1 M, mean age 9.5 yrs). Oligoclonal bands and IgG index were positive for MS pt and NMDA pts.
- Follow MOG titers obtained approximately 6 months later for patients ranged from 1:40-1:100 and none of the children became seronegative.

	Age	Sex	Phenotype	MOG titer	F/u MOG titer (~ 6mo later)
Pt 1	5	F	Bilateral ON	1:100	1:100
Pt 2	6	M	ADEM	1:10,000	Not obtained
Pt 3	12	F	Unilateral ON	1:1000	1:100
Pt 4	13	M	Unilateral ON	1:100	1:40
Pt 5	13	M	TM	1:10,000	1:100
Pt 6	13	M	TM	1:1000	1:100
Pt 7	16	M	Unilateral ON	1:100	Not obtained

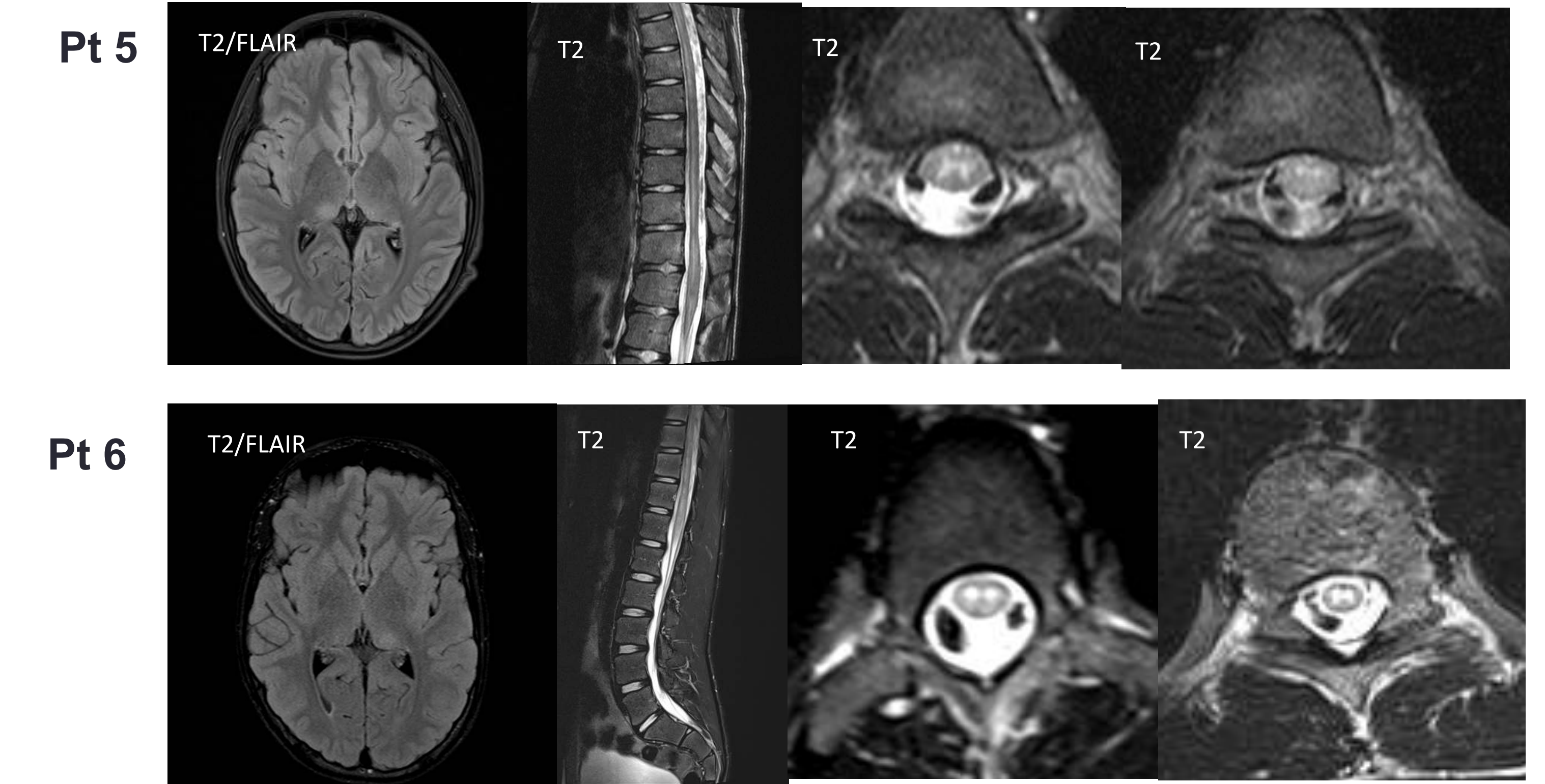
## Imaging from MOG+ optic neuritis patients



## Imaging from child with MOG+ fulminant ADEM complicated by increased intracranial pressure



## Imaging from MOG+ transverse myelitis patients



## Conclusions

- At our tertiary medical center, 7 of 23 inpatient children (30%) tested positive for MOG antibodies during a six-month period.
- Patient demographics and clinical presentations paralleled existing literature of MOG antibody positive children.
- Outcomes were very good except for one child with fulminant ADEM.
- The frequency of anti-MOG related disease exceeded the combined incidence of MS, NMOSD, and NMDA AE (total of 4 children) in the same clinical context.
- Follow up MOG testing completed approximately 6 months later in 5 of the 7 patients showed persistent, through often, downtrending, MOG positive titers.
- Our results suggest MOG antibody testing is clinically relevant for children admitted to tertiary pediatric centers with suspected neuroimmunological disorders.
- Further research is needed on the natural history of MOG antibody positive children and the significance of MOG antibody titers over time.

## Disclosures

Dr. Greenberg has received grant support from the NIH, PCORI, NMSS, Guthy Jackson Charitable Foundation for NMO, Genentech, Chugai, Medimmune and Medday. He has received consulting fees from Alexion and Novartis. He serves on the advisory board for the Transverse Myelitis Association.

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