What does MOG autoimmunity teach us about post-inflammatory CNS diseases?

10th Istanbul MS Days
24-OCT-2025;17:55-18:15
axel petzold

Disclosures

NIHR UK

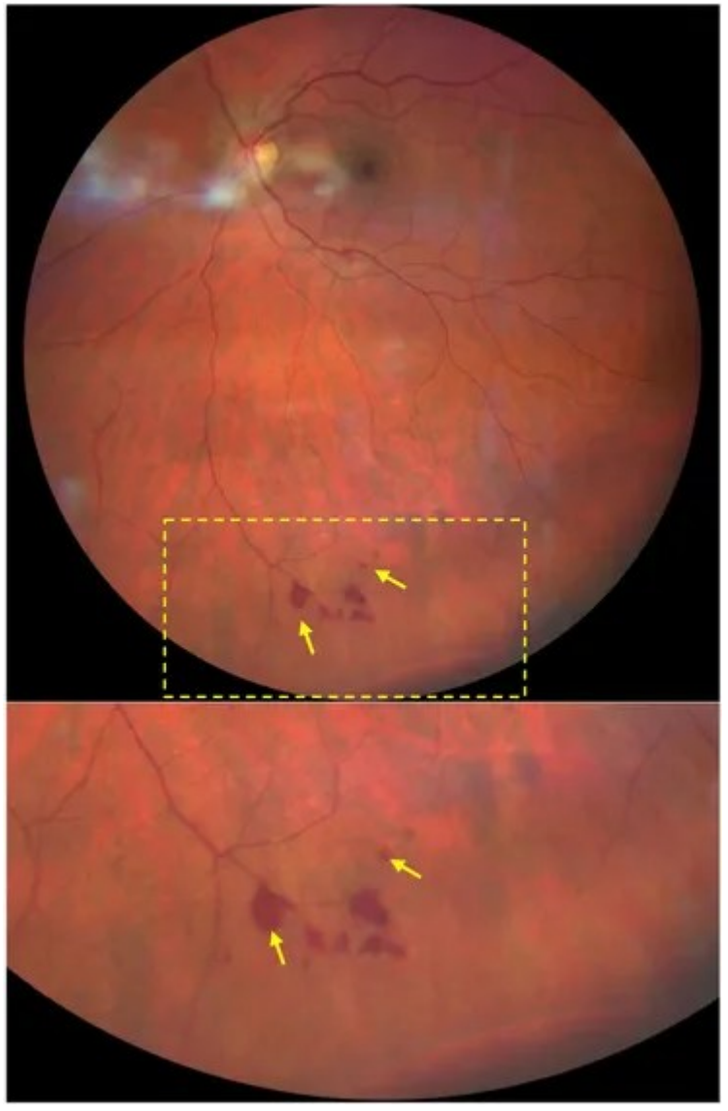
We all agree

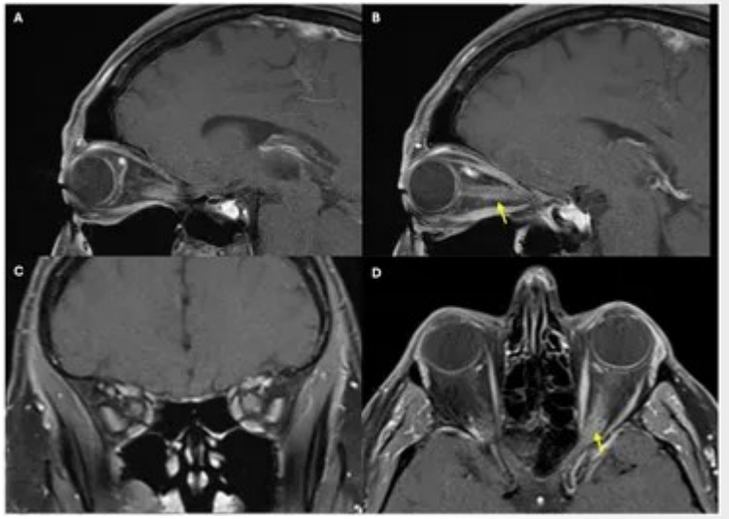
- MOG-ON is heterogenous
- MOG-ON frequently indicates onset of MOGAD
- Therefore MOGAD is also heterogenous

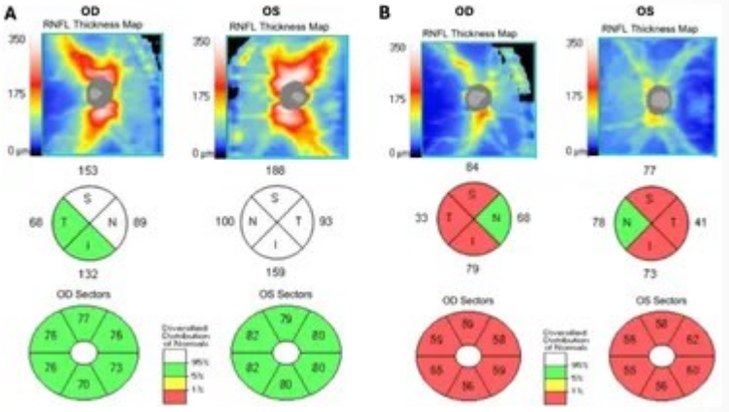
Practical examples

MOG-ON & retinal haemorrhage after a upper respiratory infection

MOG titre 1:1,000 CBA



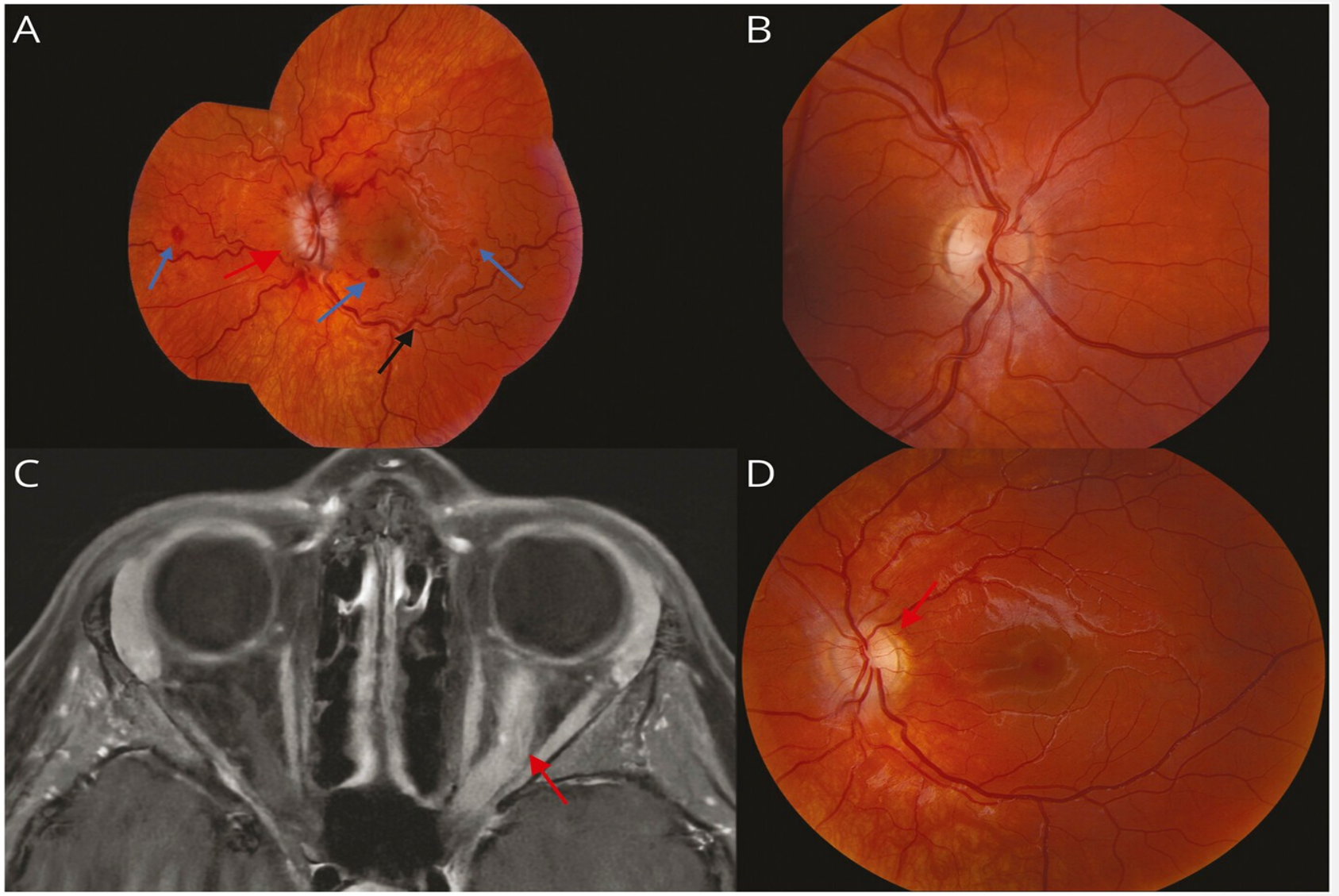




Wilson JR, Cummings OW, Elitt MS, Van Stavern GP. Case Report: Fundus findings in myelin oligodendrocyte glycoprotein-associated optic neuritis. Frontiers in Ophthalmology 2025; 5. doi:10.3389/fopht.2025.1620614

MOG-ON & Venous Stasis Retinopathy but no prior infection

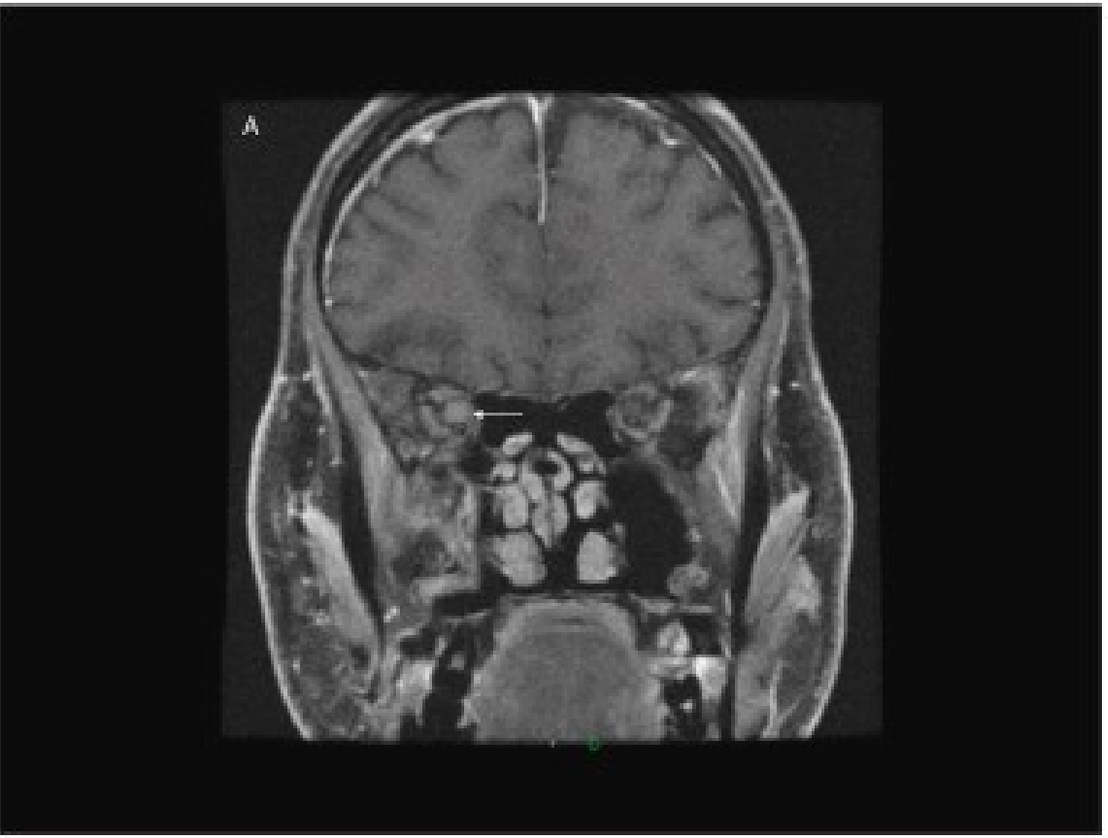
MOG titre 1:100 in 9 year old girl

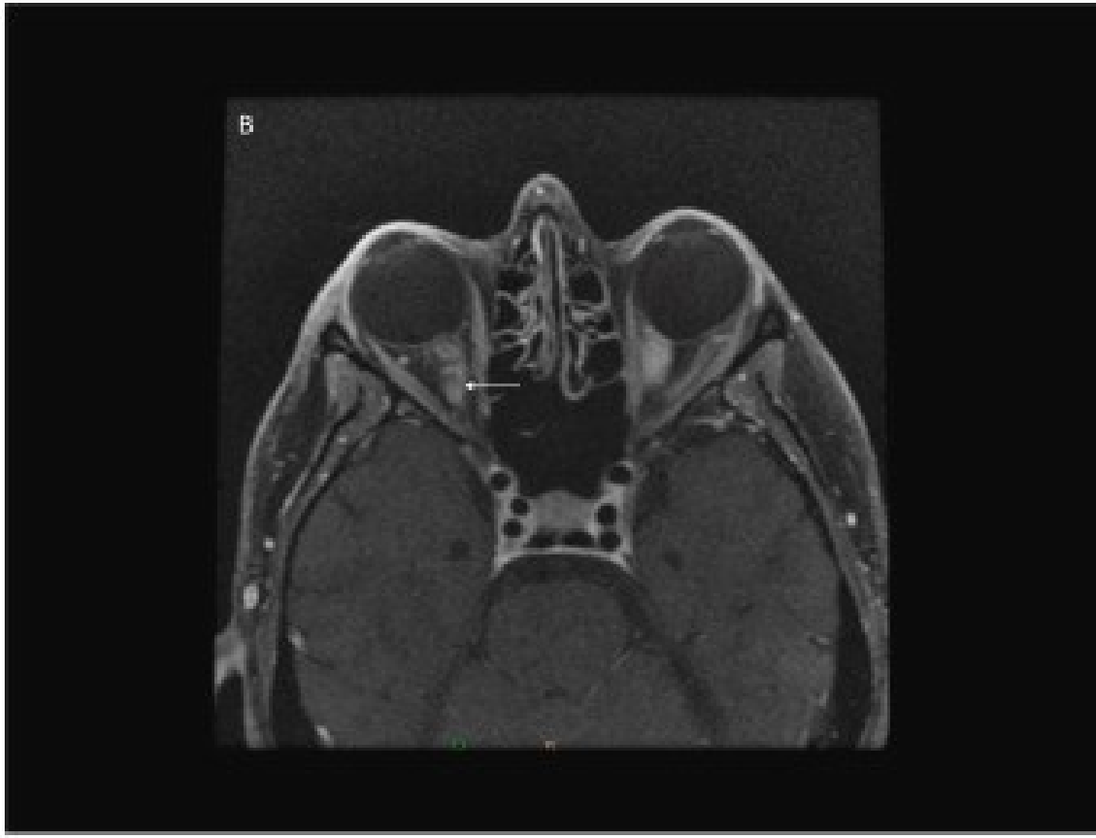


Saify M, Hur M, Guido FS, Selcen D, Chen JJ. Myelin Oligodendrocyte Glycoprotein Antibody–Associated Disease Optic Neuritis With Venous Stasis Retinopathy. Neurology 2025; 105. doi:10.1212/wnl.0000000000214038

MOG & Trauma
no infection, but BBB disruption

MOG titre 1:40 (laboratory cutoff 1:10)



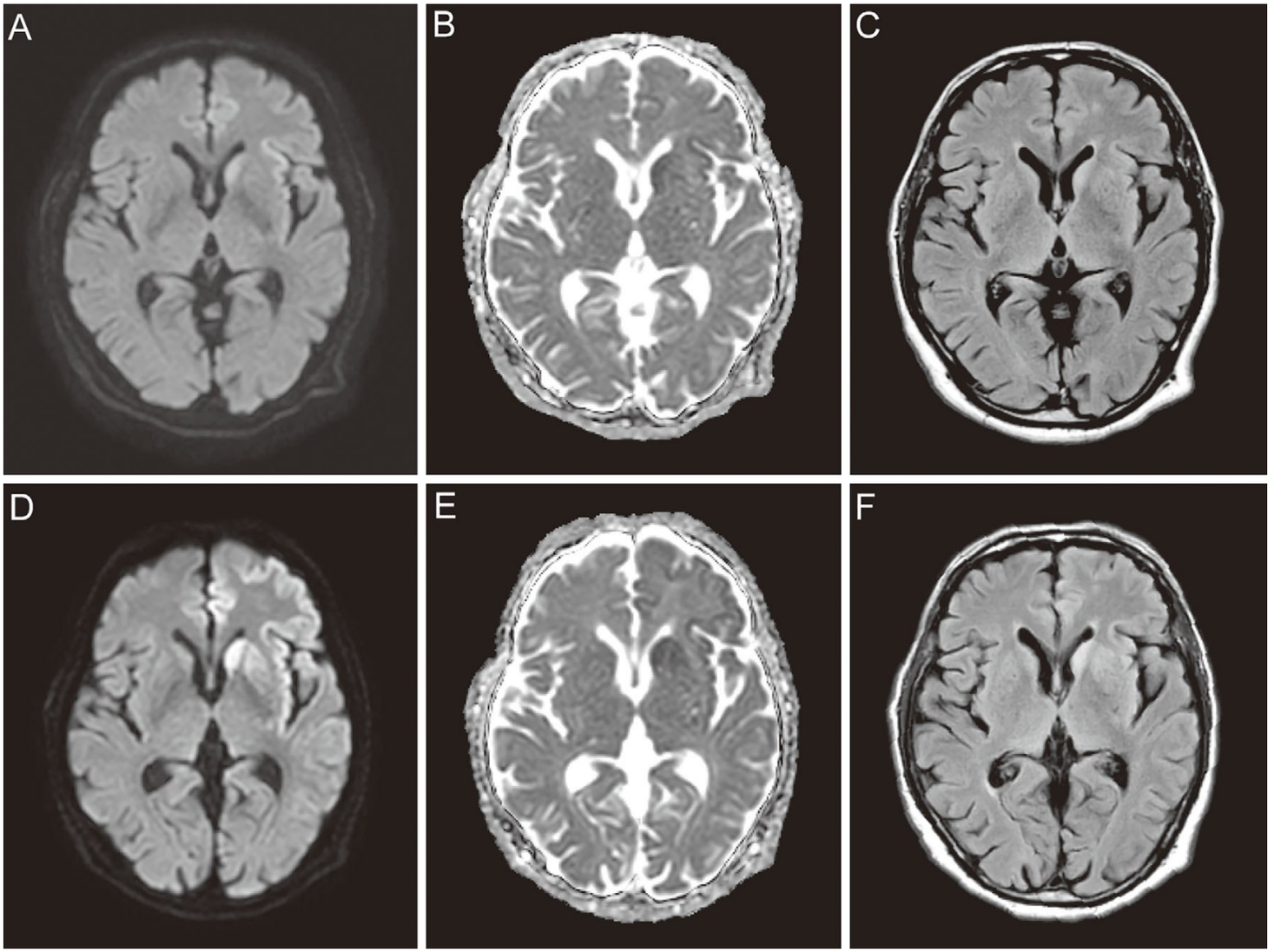


Hamdan SA, Nassur JA, Thornton S. Post-traumatic myelin oligodendrocyte glycoprotein antibody optic neuritis: A case report. American Journal of Ophthalmology Case Reports 2025; 39:102409.

MOG & CJD

CSF 14-3-3 positive, CSF total tau > 1200 pg/mL

MOG CSF titre 1:1 CBA in 75 year old man with E200K mutation for CJD

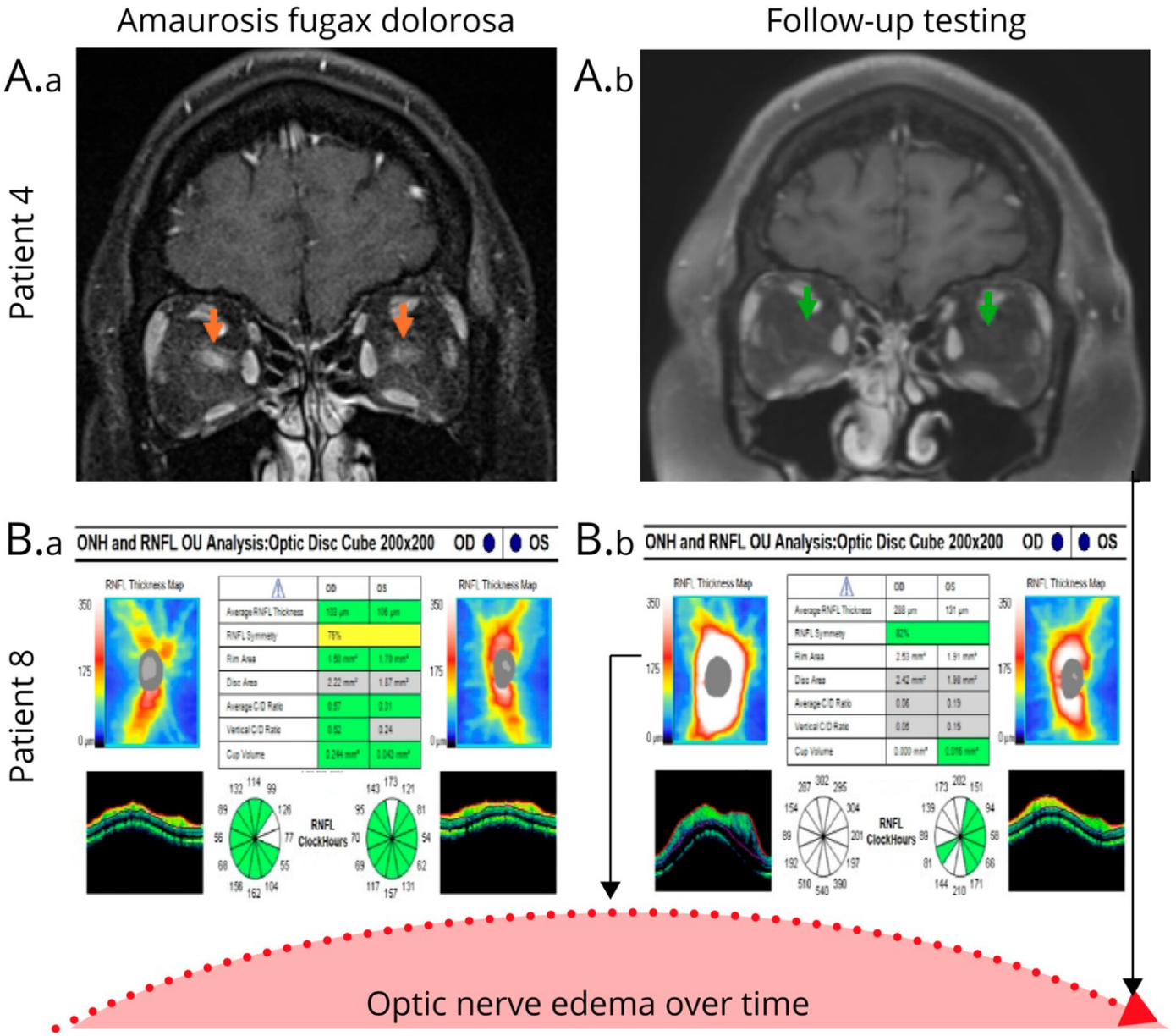


"[…] the clinical and radiological findings in this case, combined with the lack of response to steroid therapy and the exclusive detection of MOG-IgG in the CSF, suggest that MOG-IgG was a secondary by-product rather than a marker indicative of MOGAD."

Shimizu T, Horiuchi E, Matsukawa T, Yasuda T, Hashida H. A Unique Case of Genetic Creutzfeldt-Jakob Disease (E200K Mutation) with CSF-Restricted Anti Myelin Oligodendrocyte Glycoprotein Antibody. Internal Medicine Published Online First: 2025. doi:10.2169/internalmedicine.5715-25

Amaurosis Fugax Dolorosa

MOG titre 1:1,000 (normal < 1:20) in 1 of 8 cases (7 women)



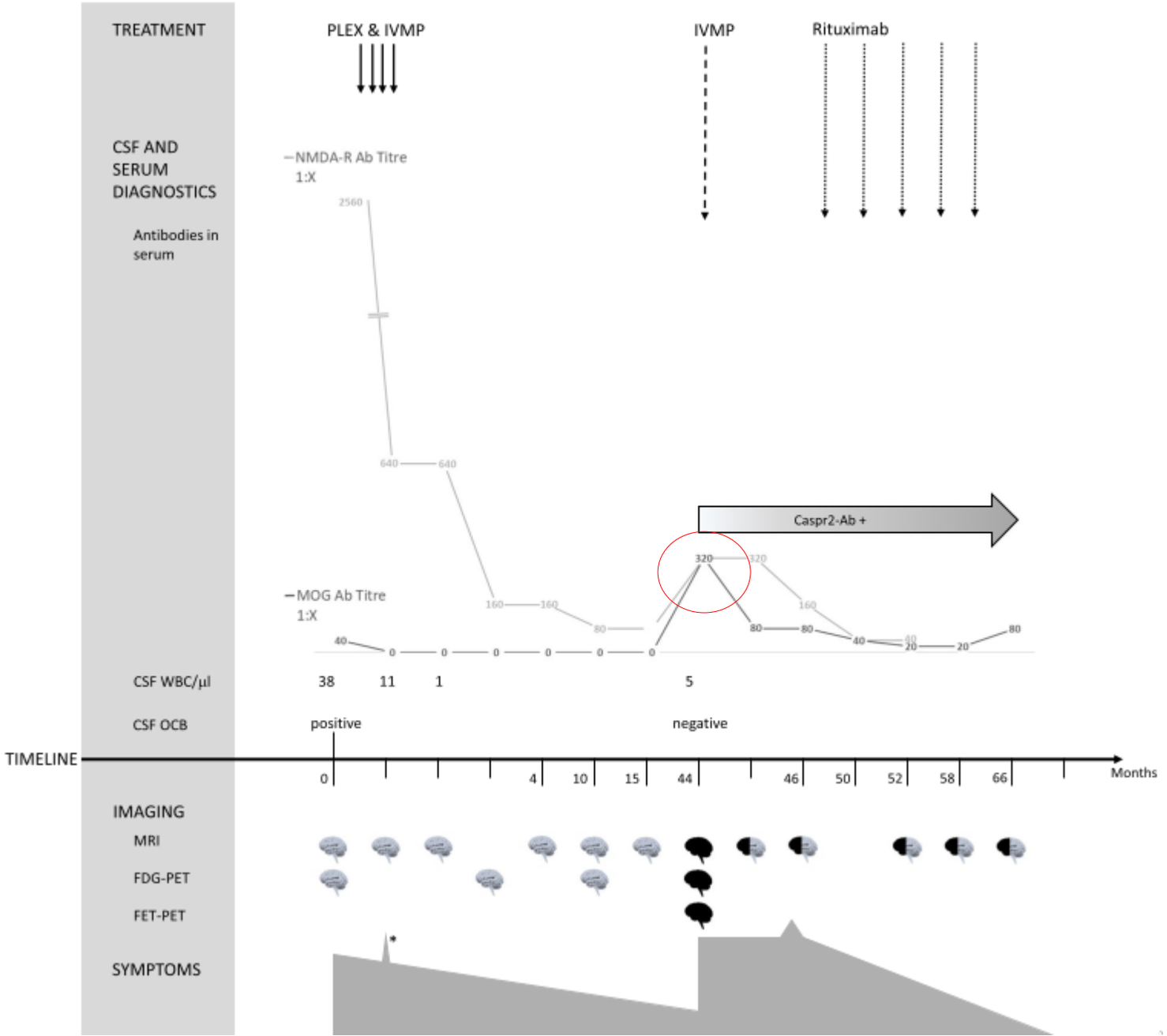
The diagnostic tests in the left column were performed during amaurosis fugax dolorosa before the onset of full-phenotype optic neuritis (ON), whereas those in the right column represent follow-up findings of the same tests after significant visual impairment from ON.

(A) Patient 4 exhibited bilateral optic nerve enhancement on orbital MRI during the amaurosis fugax episode (A.a, orange arrows), which resolved following corticosteroid treatment (A.b, green arrows).

(B) Patient 8 had subtle optic disc edema on OCT (B.a) that went unrecognized during the amaurosis fugax phase but significantly worsened once full-
phenotype ON developed (B.b).

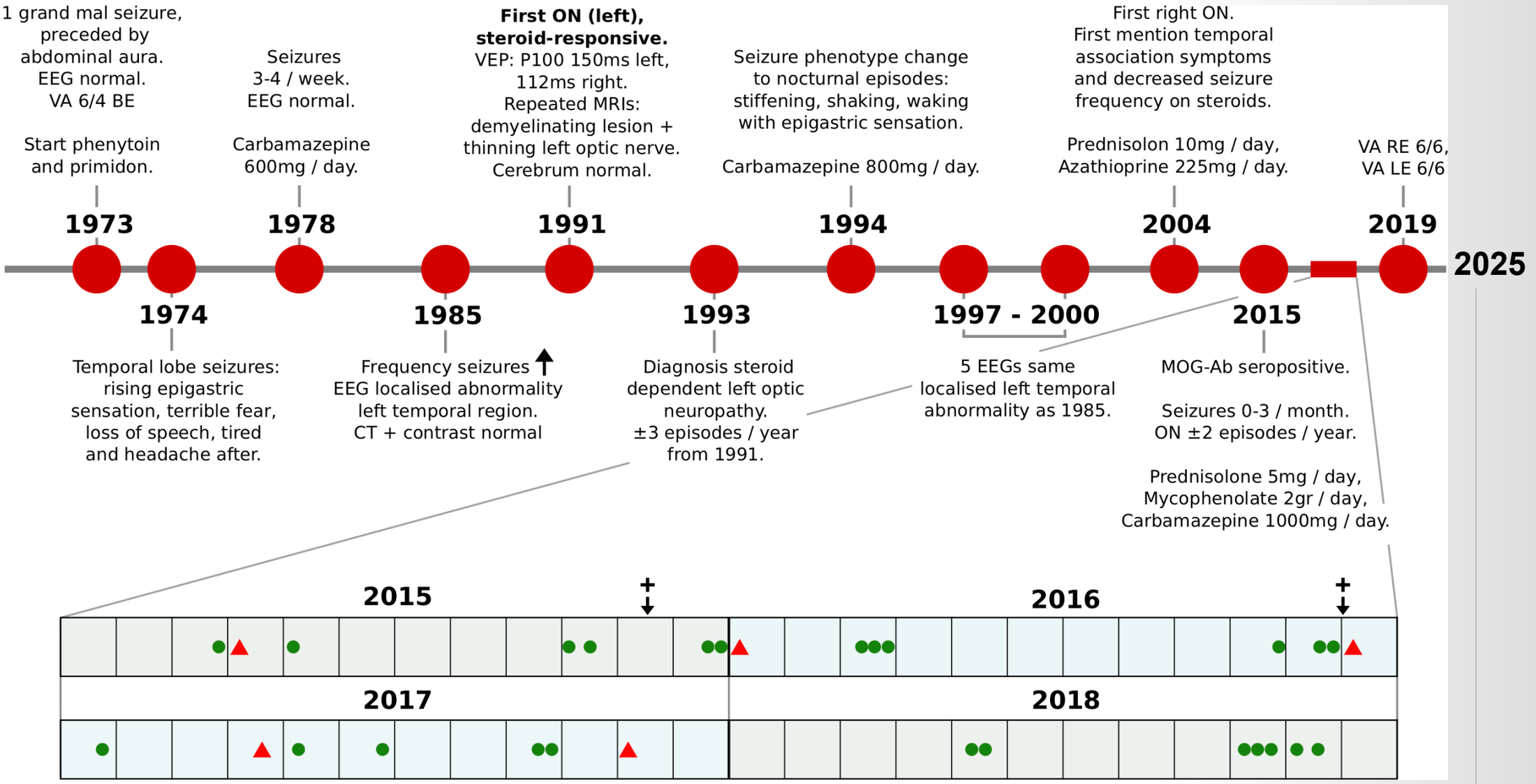
Vilaseca A, Syc-Mazurek SB, Vorasoot N, Tajfirouz DA, Eggenberger E, Chodnicki KD, et al. Amaurosis Fugax Dolorosa: A Prodromal Syndrome in Optic Neuritis Associated With Myelin Oligodendrocyte Glycoprotein Antibody–Associated Disease. Neurology Neuroimmunology & Neuroinflammation 2025; 12. doi:10.1212/nxi.0000000000200471

MOG titre over time in anti-NMDA receptor encephalitis



Berek K, Grams A, Uprimny C, Prieschl M, Ramberger M, Unterberger I, et al. Anti-NMDA receptor encephalitis and MOG-associated demyelination – a case report with long-term follow-up and a systematic review. BMC Neurology 2022; 22. doi:10.1186/s12883-022-02974-x

52-year follow-up



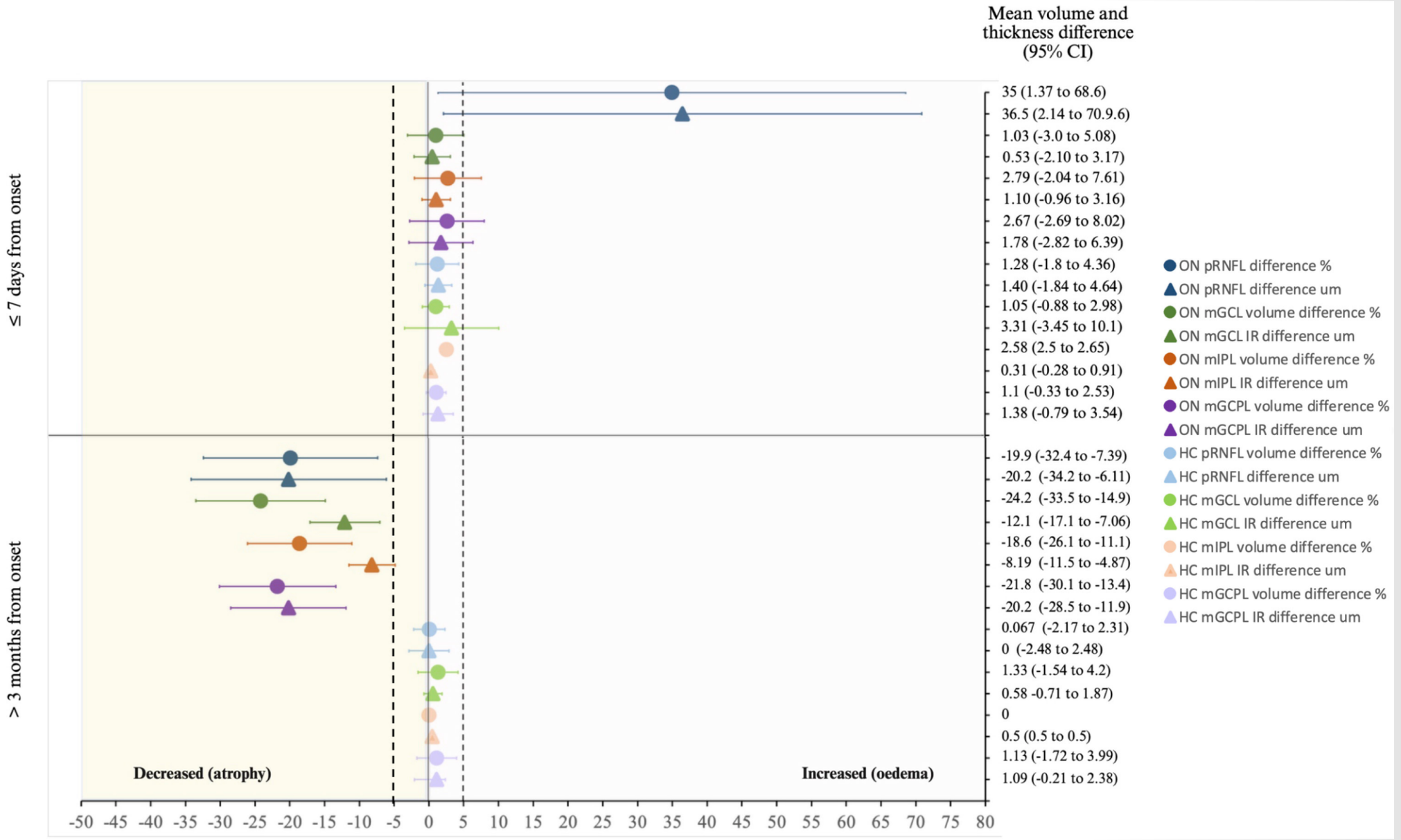
Maintains disease course, remains corticosteroid responsive and VA preserved.

Kleerekooper I, Trip SA, Plant GT, Petzold A. Expanding the phenotype of MOG antibody-associated disease (MOGAD): half a century of epilepsy and relapsing optic neuritis. Journal of Neurology, Neurosurgery & Psychiatry 2020; 92:jnnp–2020.

Preliminary conclusion

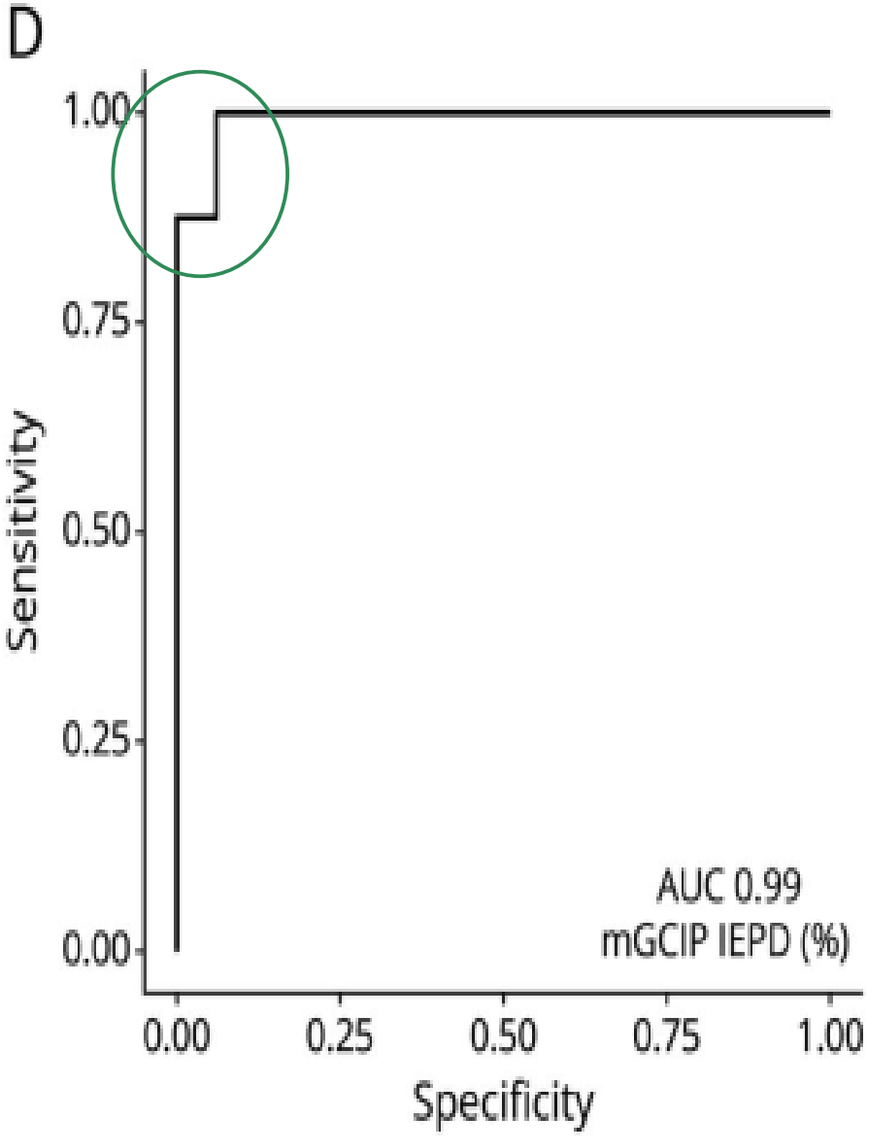
- What does MOG autoimmunity teach us about post-inflammatory CNS diseases?
- Many triggers
- Corticosteroid responsive
- Can be sustained or transient:
  - Clinically
  - Immunologically (MOG titre)

OCT over time



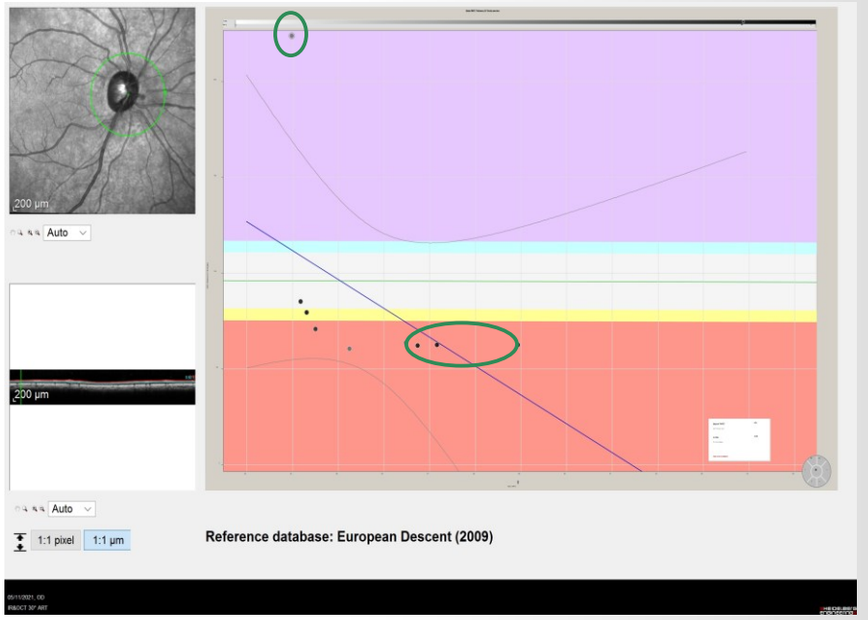
Mauceri VA, et al. Optic nerve as a 5th location in the revised McDonald diagnostic criteria for multiple sclerosis: limitations of OCT in the acute phase. BMJ Neurology Open2025; 7:e001118.

OCT in MOG-ON



Acutely:
severe disc swelling

Chronic:
severe atrophy



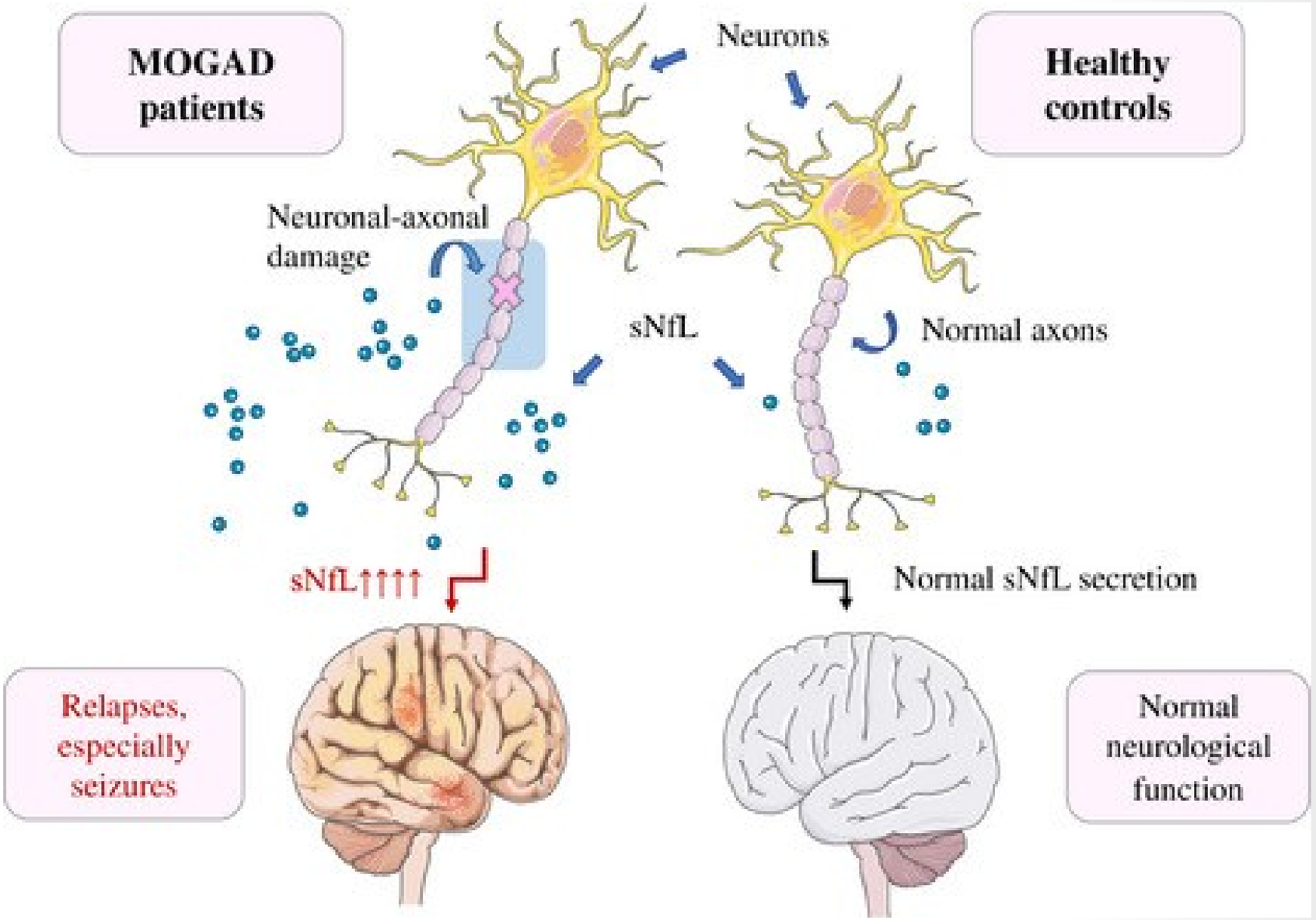
Volpe, G. et al. Neurol Neuroimmunol Neuroinflamm 2024

Sensitivity & Specificity

Table 3 Diagnostic Sensitivity and Specificity of IED in MOG-ON

	AUC	95% CI	Specificity (%)	Sensitivity (%)	Positive predictive value	Negative predictive value
MOG-ON vs HCs						
pRNFL IEAD	0.89	0.80–0.98	79	84	0.80	0.83
pRNFL IEPD	0.93	0.86–1.0	82	84	0.82	0.84
mGCIP IEAD	0.92	0.83–1.0	82	88	0.83	0.87
mGCIP IEPD	0.94	0.86–1.0	82	92	0.84	0.91
MOG-ON (unilateral) vs HC						
pRNFL IEAD	0.99	0.98–1.0	79	≥99	0.74	0.99
pRNFL IEPD	>0.99	0.98–1.0	82	≥99	0.77	0.99
mGCIP IEAD	0.99	0.98–1.0	82	≥99	0.77	0.99
mGCIP IEPD	0.99	0.98–1.0	82	≥99	0.77	0.99
MOG-ON (bilateral) vs HC						
pRNFL IEAD	0.73	0.53–0.93	79	62	0.53	0.84
pRNFL IEPD	0.83	0.67–0.98	82	62	0.57	0.84
mGCIP IEAD	0.79	0.58–1.0	82	67	0.59	0.86
mGCIP IEPD	0.84	0.63–1.0	82	78	0.63	0.90

Neurofilaments & MOG



Luo W, Chen Y, Mao S, Jin J, Liu C, Zhong X, et al. Serum neurofilament light chain in adult and pediatric patients with myelin oligodendrocyte glycoprotein antibody-associated disease: Correlation with relapses and seizures. Journal of Neurochemistry 2021; 160:568–577.

Neurofilaments & MOG

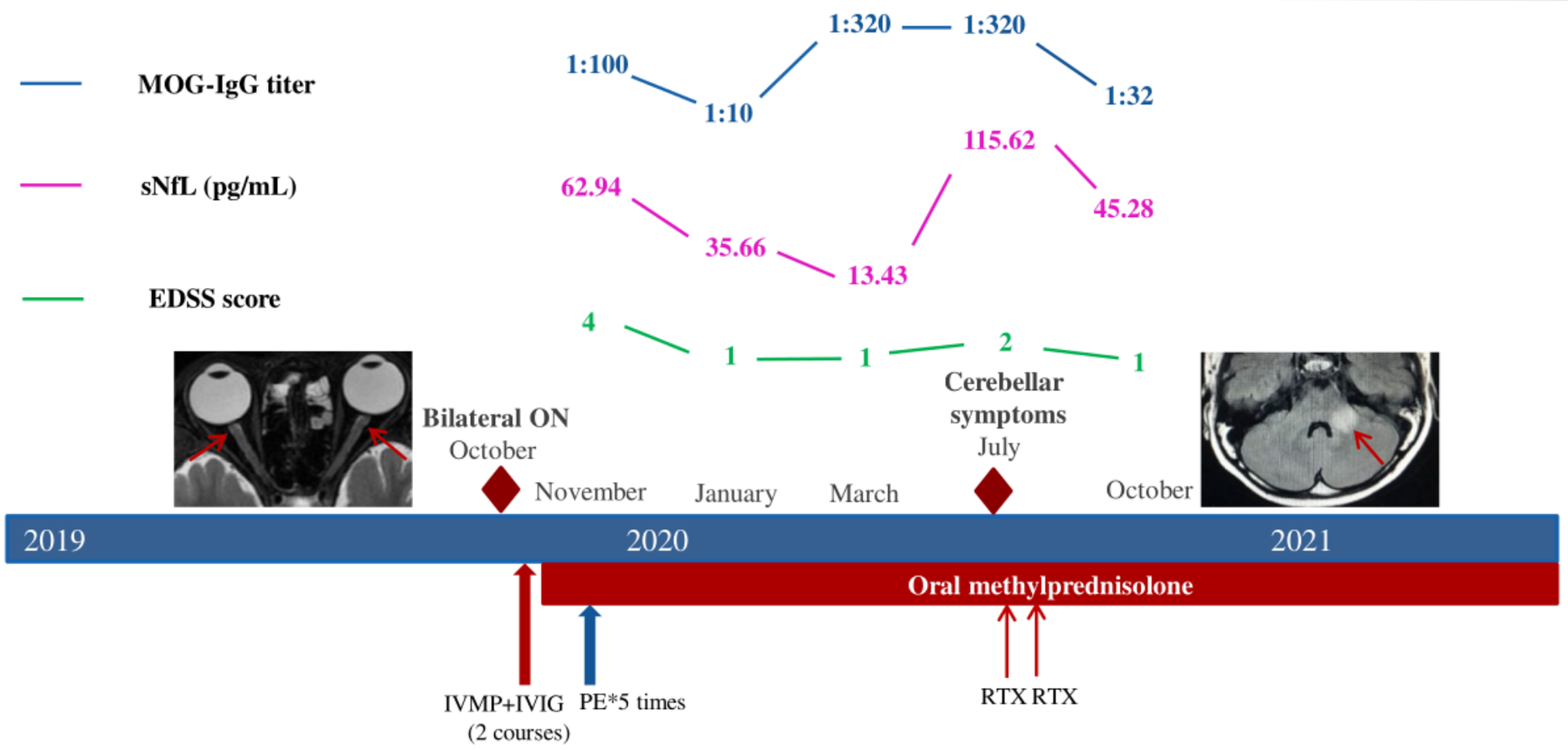
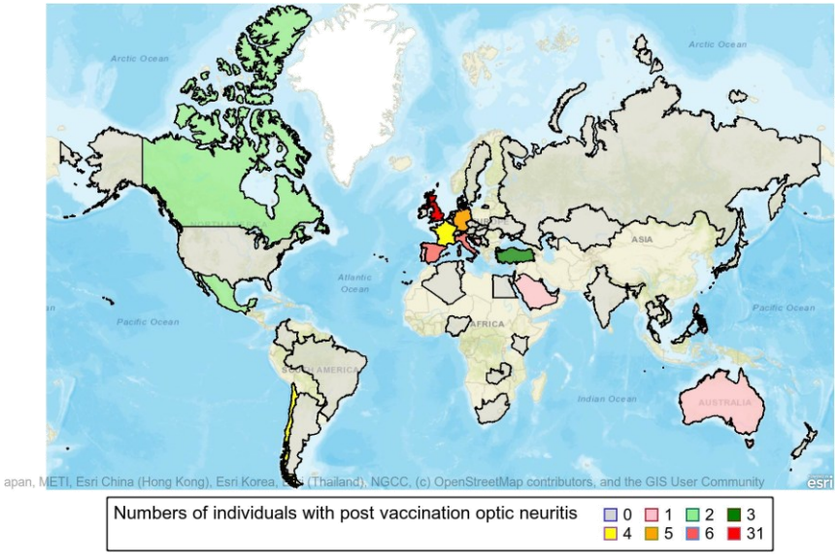
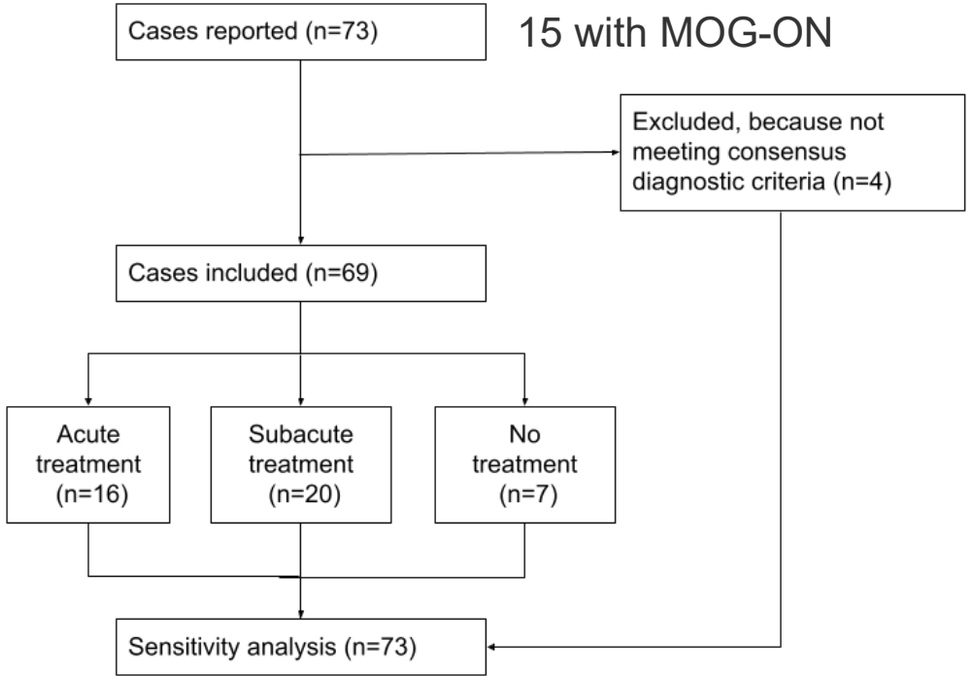


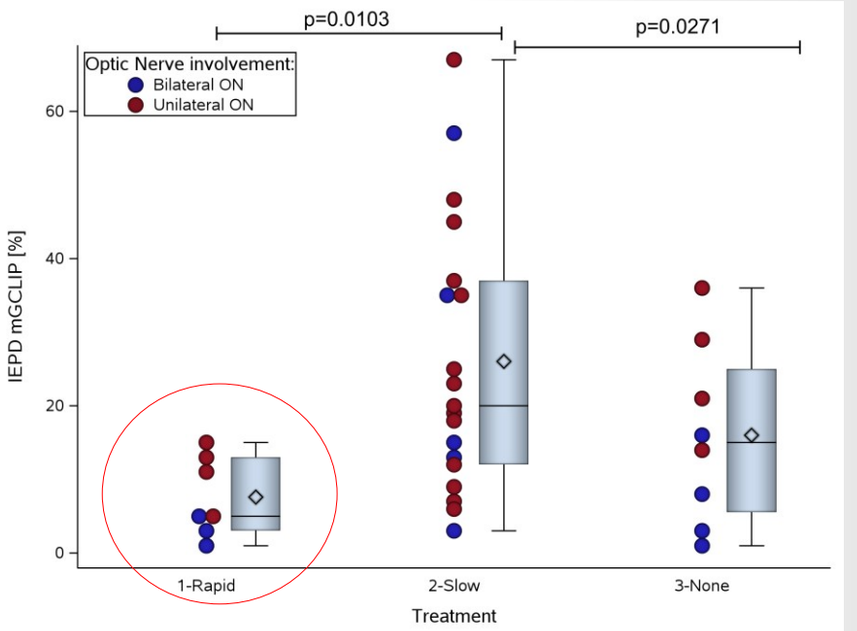
FIGURE 4 A representative case of MOGAD with repeated sNfL measurements over time. This patient was a 9-year-old Chinese boy who presented with bilateral ON at onset and had one relapse manifesting as cerebellar symptoms confirmed by MRI. MOG-IgG titers, EDSS

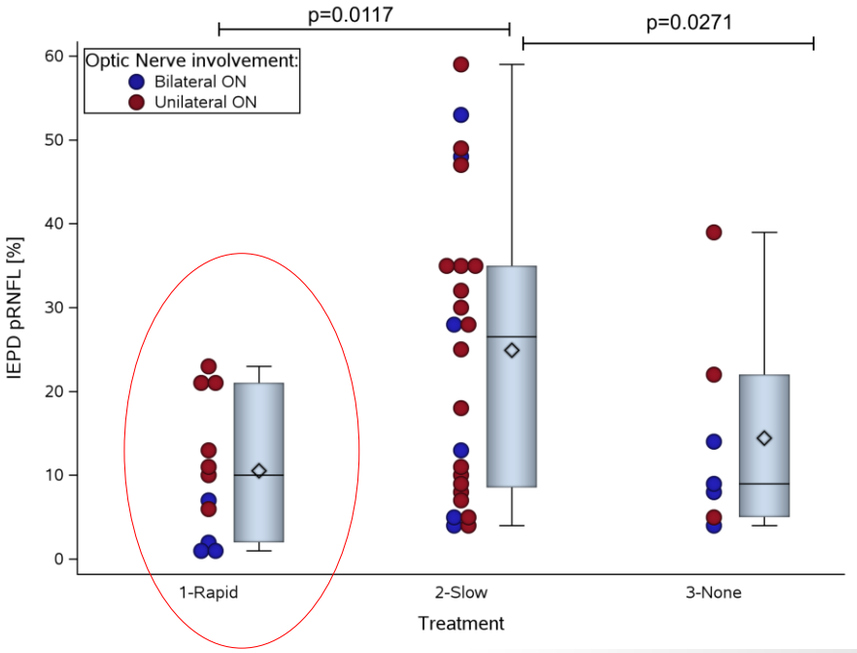
Luo W, Chen Y, Mao S, Jin J, Liu C, Zhong X, et al. Serum neurofilament light chain in adult and pediatric patients with myelin oligodendrocyte glycoprotein antibody-associated disease: Correlation with relapses and seizures. Journal of Neurochemistry 2021; 160:568–577.

MOG & vaccination









Neo YN, Alvarez LM, Davagnanaom I et al. Gräf Arch Ophth (in print)

Post-hoc analysis for MOG-ON

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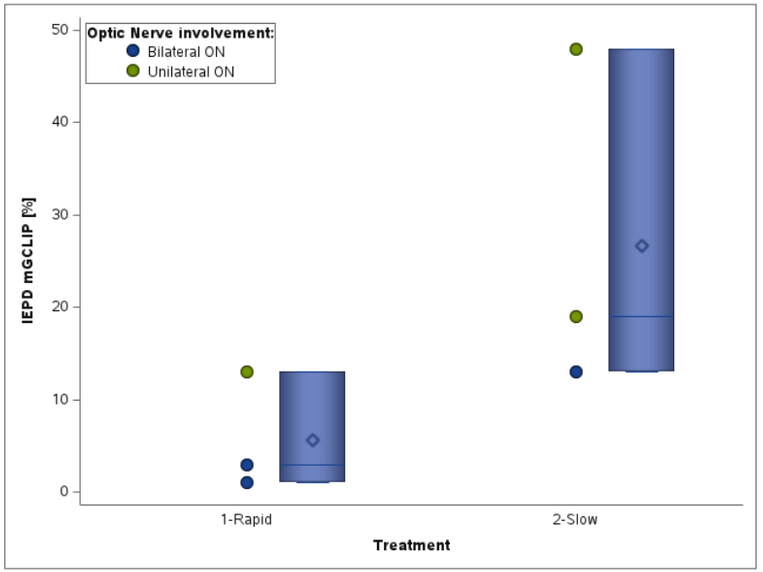

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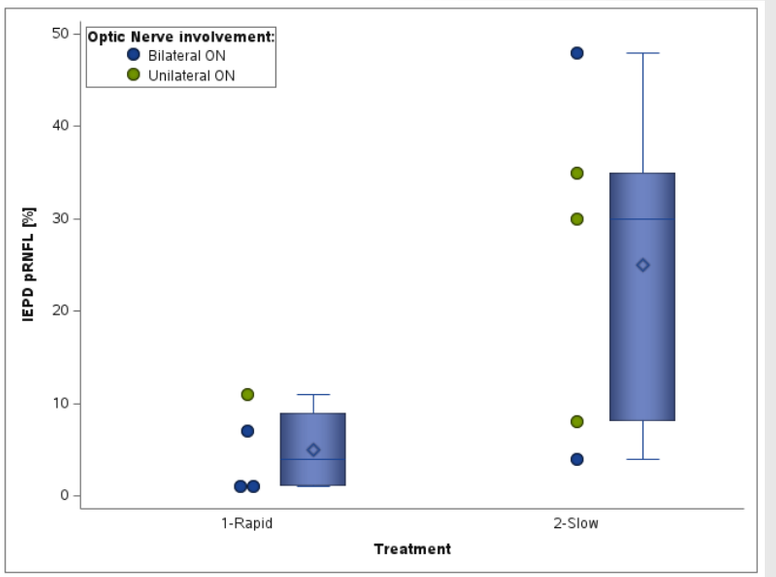


...more data in 2026

Geospatial Perspectives:

The Global Burden of Optic Neuritis

We present mapping of ON and its clinical subgroups across different world regions.

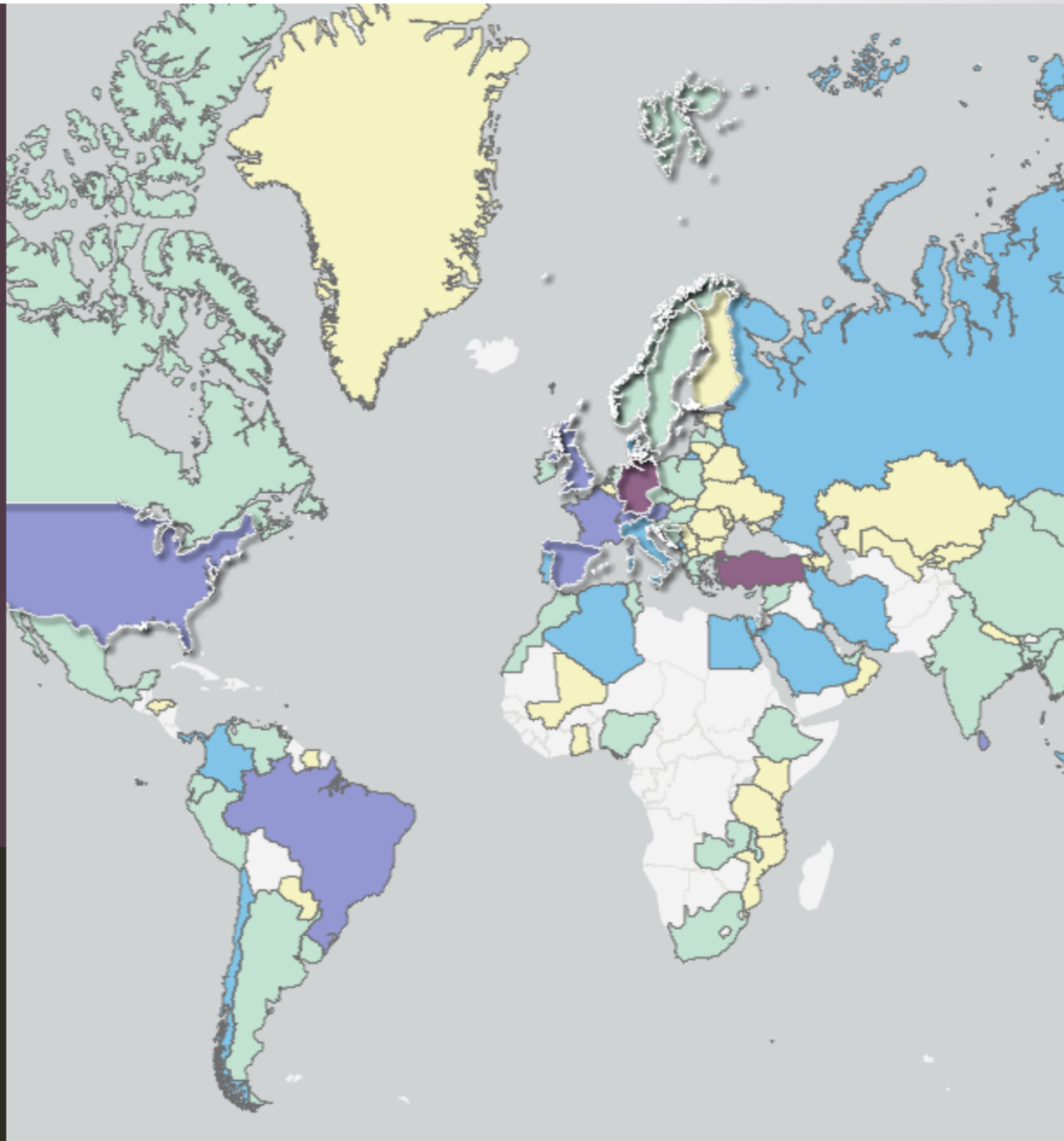
This work draws on up-to-date geographic data, statistics, and the ICON survey findings from 2024.

Explore the Data →

Presented by

The International Consortium for Optic Neuritis (ICON)
In partnership with
UCL Social Data Institute

Social Data Institute



Final conclusion

- What does MOG autoimmunity teach us about post-inflammatory CNS diseases?
- Many triggers
- Treat quickly !
- Can be sustained or transient:
  - Clinically
  - Immunologically (MOG titre)
  - Potential to expand the para-clinical tests used for monitoring MOG autoimmunity

Elmaları armutlarla karşılaştırmayın

Armut

Elma

Teşekkürler ederim