Titers of MOG Antibody Detection: Fixed vs. Live Cells in Serum, a case report

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INTRODUCTION

Myelin oligodendrocyte glycoprotein antibody-associated disease (MOGAD) diagnosis relies on detecting MOG antibodies in serum. The choice between fixed and live-cell assays significantly impacts diagnostic accuracy. This case illustrates the superiority of live-cell assays in a 14-year-old with recurrent optic

CASE REPORT

A 14-year-old male presented with decreased visual acuity and pain in his left eye, preceded by flu-like symptoms. Examination revealed left optic disc swelling and impaired color saturation. MRI demonstrated left optic neuritis (Fig. 1). Initial fixed-cell MOG antibody titers were low (1:10), with unremarkable cerebrospinal fluid and infectious/autoimmune panels. Due to low MOG titers, a post-infectious perineuritis was considered. High-dose methylprednisolone (MTP) was administered, followed by oral prednisone and intravenous immunoglobulin (IVIG) on two occasions.

In July 2023, optic neuritis recurred in the right eye, confirmed by MRI (Fig. 2). Fixed-cell MOG antibody titers remained low, prompting a second course of MTP and IVIG. After steroid tapering, the patient experienced right eye recurrence, leading to the initiation of rituximab.

In March 2024, Mayo Clinic live-cell MOG antibody assay revealed significantly higher titers (1:1000), confirming MOGAD, while fixed cell-based assay remained low (1:10).

DISCUSSION

After the publication of the MOGAD 2023 criteria (Banwell, 2023), IgG1 live-cell-based assays (LCBA) were preferred for detecting anti-MOG antibodies in serum. Fixed-cell-based assays (CBA) have been associated with both false positives and false negatives (Reindl, 2020). Additionally, low titers (≤1:100) are associated with suboptimal positive predictive value (PPV) (Sechi, 2021). In such cases, confirmation using LCBA can enhance diagnostic accuracy.

In this case, fixed-cell assays demonstrated low sensitivity, delaying the diagnosis and treatment of MOGAD, illustrating and underscoring the diagnostic advantage of live-cell assays, particularly in complex cases.

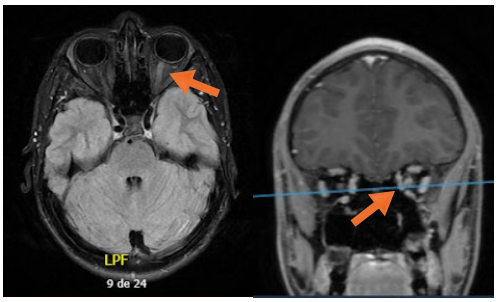

Figure 1. Sagital T2 FLAIR (left) and coronal T1 LAVA FLEX + C (right).

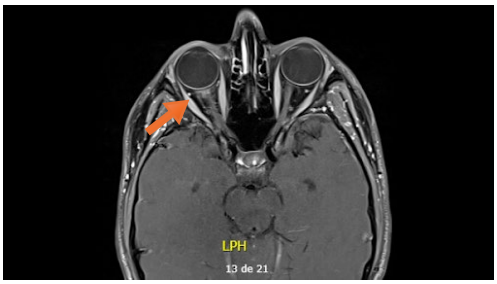

Figure 2. Sagital T1 TSE Dixon TRA +C W (fat suppression).

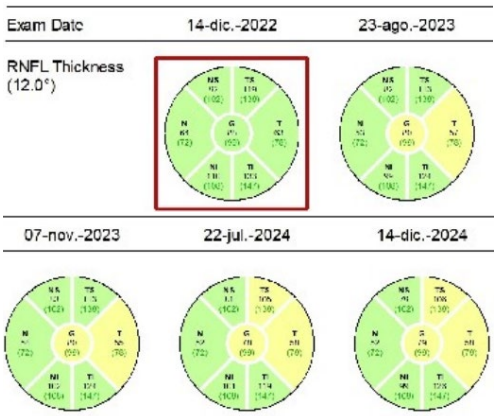

Figure 3. Progression of RNFL in the left eye as assessed by optical coherence tomography.

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