

Therapeutic plasma exchange in attacks of Myelin Oligodendrocyte Glycoprotein Antibody-Associated Disease: a systematic review and meta-analysis

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Introduction

Myelin Oligodendrocyte Glycoprotein Antibody-Associated Disease (MOGAD) attacks are usually treated with corticosteroids, but only about half of patients achieve complete recovery [1]. Therapeutic plasma exchange (TPE) may offer additional benefits to improve outcomes, though its efficacy remains uncertain.

Objective

To assess the response to TPE in MOGAD attacks.

Methods

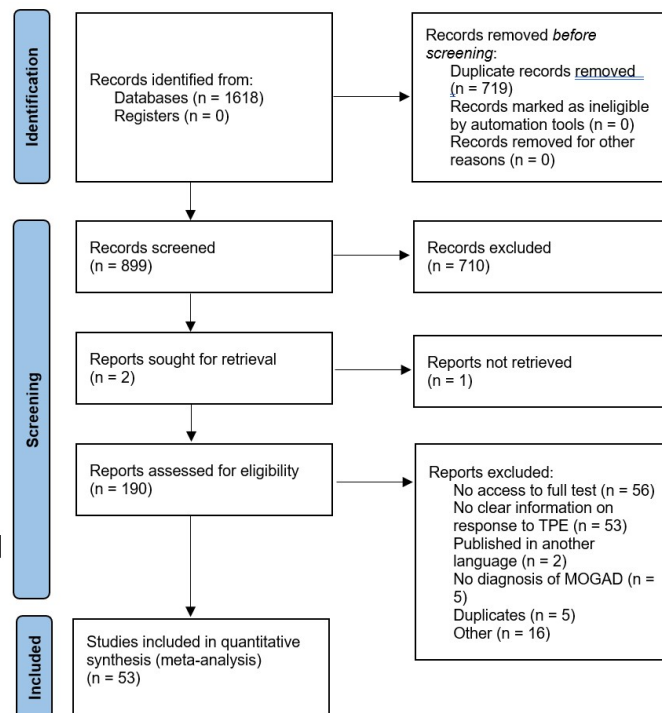
We conducted a systematic review and meta-analysis, searching PubMed/MEDLINE, Embase, and Scopus for manuscripts published until November 24, 2024. We included observational studies of patients with MOGAD attacks who received TPE. The primary outcome was the clinical response to TPE in MOGAD attacks at the discharge, categorized as complete recovery, partial recovery, or no recovery. We defined response as patients with either complete or partial recovery. Secondary outcome was to identify clinical predictors of response. We conducted a meta-proportion analysis on aggregated data to estimate the pooled response rate. Individual patient data were analyzed to compare responders and non-responders, using Fisher's exact test, Chi-squared test, or Mann-Whitney test, as appropriate, to identify factors associated with complete recovery.

Results

A total of 53 studies, comprising 409 MOGAD attacks, were included. The pooled response rate was 86% (95% CI: 78-91, $I^2 = 70\%$), while the pooled complete recovery rate was 30% (95% CI: 21-41, $I^2 = 83\%$). Meta-regression identified male sex as potential moderator of effect. Among 52 attacks analyzed individually, patients with complete recovery were significantly younger (median age: 16 [11.5, 28.5] vs. 35.5 [15.75, 47.25], $p = 0.048$). Cerebral and encephalitis MOGAD phenotypes were more frequent in patients achieving complete recovery (46% vs. 16%, $p = 0.037$; and 60% vs. 22%, $p = 0.011$, respectively).

Conclusion

TPE demonstrated a high response rate in treating MOGAD attacks (86%), with nearly one-third of patients achieving complete recovery. Future studies should focus on randomized controlled trials and further characterize male patients and those with cerebral/encephalitis phenotypes.



Reference

1. Jarius S, Ruprecht K, Kleiter I, Borisow N, Asgari N, Pitarkoili K, Pache F, Stich O, Beume LA, Hümmert MW, Ringelstein M, Trebst C, Winkelmann A, Schwarz A, Buttmann M, Zimmermann H, Kuchling J, Franciotta D, Capobianco M, Siebert E, Lukas C, Korporal-Kuhnke M, Haas J, Fechner K, Brandt AU, Schanda K, Aktas O, Paul F, Reindl M, Wildemann B; in cooperation with the Neuromyelitis Optica Study Group (NEMOS). MOG-IgG in NMO and related disorders: a multicenter study of 50 patients. Part 2: Epidemiology, clinical presentation, radiological and laboratory features, treatment responses, and long-term outcome. J Neuroinflammation. 2016 Sep 27;13(1):280. doi: 10.1186/s12974-016-0718-0. PMID: 27793206; PMCID: PMC5086042.

Complete recovery	30%
Partial recovery	56%
No recovery	14%

