IL-6 Inhibitors in Refractory Generalized Myasthenia Gravis: a case Report and Literature Review

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Background: Therapeutic options for generalized myasthenia gravis (gMG) have significantly expanded with the introduction of neonatal Fc receptor antagonists and complement pathway inhibitors. Furthermore, an increasing number of targeted therapies, including interleukin-6 (IL-6) inhibitors, have demonstrated a potential beneficial effects in patients with anti-AChR antibodies (AChRAb) gMG.

Summary of Evidence from Literature review

	STUDY CHARACTERISTIC	CONCLUSION
Jonsson, Dagur Ingi et al. "Beneficial effect of tocilizumab in myasthenia gravis refractory to rituximab." Neuromuscular disorders : NMD vol. 27,6 (2017): 565-568.	Case reports. Two patients with refractory gMG and AChRAb started monthly infusion of tocilizumab at 8 mg/kg and after switched to subcutaneous weekly injection (162mg)	Two patients reported here provides preliminary evidence that tocilizumab can be a therapeutic option for carefully selected cases of treatment refractory MG.
Ruan, Zhe et al. "Efficacy and safety of tocilizumab in patients with refractory generalized myasthenia gravis." CNS neuroscience & therapeutics vol. 30,6 (2024): e14793.	Single-center prospective cohort study . 34 patients with refractory gMG and AChRAb. 20 received tocilizumab 8mg/kg every 4 weeks (until week 24) and 14 received conventional immunotherapy	Tocilizumab is safe and effective in improving the MG-ADL score and reducing prednisone dose in refractory AChR-Ab+ gMG
Jia, Dongmei et al. "Responsiveness to Tocilizumab in Anti-Acetylcholine Receptor-Positive Generalized Myasthenia Gravis." Aging and disease vol. 15,2 824-830. 1 Apr. 2024	Open-label, single-arm study. 14 patients with refractory gMG and AChRAb received tocilizumab 8mg/kg every 4 weeks over a 48-week observation period.	This prospective study shows that tocilizumab may be an alternative to achieve a good clinical response in AChR (+) gMG.
Habib, Ali A et al. "Safety and efficacy of satralizumab in patients with generalised myasthenia gravis (LUMINESCE): a randomised, double-blind, multicentre, placebo-controlled phase 3 trial." The Lancet. Neurology vol. 24,2 (2025): 117-127	Double-blind, placebo-controlled, multicentre, phase 3 study of satralizumab in patients with gMG with AChrAb, MuSKAb, LRP4Ab. 188 patients randomly assigned (1:1) to receive SC satralizumab or placebo.	Satralizumab was well tolerated and resulted in small improvements in patient-reported and clinician-reported outcomes compared with placebo at week 24 in patients with AChR-IgG-positive generalised myasthenia gravis.

Case report: a 44-year-old woman with AChRAb gMG, with disease onset at age 13, had shown no benefit from multiple immunosuppressive therapies over the years, including azathioprine, mycophenolate mofetil, cyclosporine and rituximab. Thymectomy was performed at age 14. Pyridostigmine, prednisone and monthly plasma exchange (PEX) were mildly effective whereas repeated intravenous immunoglobulins (IVIg) was not well tolerated. Following the discontinuation of monthly PEX a further deterioration of myasthenic symptoms was observed. At a follow-up visit the patient's home treatment included prednisone at a dose of 17.5 mg every other day (EOD) neurological assessment using the MG-ADL and QMG scales resulted in baseline scores of 11 and 15, respectively. Following informed consent, the patient began intravenous tocilizumab (week 0) at a dose of 8 mg/kg every four weeks. At week 44, with prednisone treatment at 7.5 mg every other day, the MG-ADL further improved to 5, and the QMG was 11. No adverse effects were observed.

	Week 0	Week 12	Week 44
MG-ADL	11	6	5
QMG	15	n/a	11
Prednisone dose (EOD)	17.5 mg	15 mg	7.5 mg

Conclusion and discussion: Our case supports the hypothesis that IL-6 inhibitors may represent a potentially safe alternative therapeutic option in selected patients. Further studies should help clinicians identify when such treatments may be effectively applied.

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