Myasthenia gravis during pregnancy: A descriptive real-world study based on US claims data

Sabrina Guye[1], Bright Dube[2], Jenny Lindroos[3,4], Elizabeth Packnett[5], Meghan Moynihan[5], Ryan Ross[5], Andreea Lavrov[6], Laura Shaughnessy[7], Lesley Butler[1], Nils Erik Gilhus[3,4]

[1]UCB, Bulle, Switzerland; [2]UCB, Slough, UK; [3]Department of Clinical Medicine, University of Bergen, Bergen, Norway; [4]Department of Neurology, Haukeland University Hospital, Bergen, Norway; [5]Merative, Ann Arbor, MI, USA; [6]UCB, Monheim, Germany; [7]UCB, Morrisville, NC, USA

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Introduction

- Myasthenia gravis (MG) is a rare autoimmune disease in which autoantibodies impair neuromuscular transmission, causing fluctuating muscle weakness[1]
- Although MG can occur at any age, women experience an incidence peak at around 30 years, overlapping with their reproductive years[2]
- Therefore, in women of childbearing age with MG, pregnancy introduces important clinical and disease-specific considerations, including disease instability[3–7] and treatment approach
- Concerns about disease worsening, treatment safety, and unclear guidance influence reproductive choices; many women with MG avoid pregnancy, and limited disease-related knowledge is known to discourage other women with MG from having children[8–9]
- **The objective of this study was to describe the course of MG during pre-conception, pregnancy, and postpartum**

Methods

- A retrospective cohort study using data from two large US administrative claims sources: the MarketScan® Medicaid and Commercial Databases
- The Medicaid-insured population includes eligible low-income families, pregnant women, children and individuals with disabilities covered through public insurance. The commercially-insured population is enrolled in private health plans, most commonly through employer-sponsored coverage

Patient selection

- Pregnancies with a valid pregnancy outcome (live birth, stillbirth, spontaneous abortion or pregnancy termination) from 1 Jan 2013 to 31 Dec 2023 were eligible for inclusion if the mother had an MG diagnosis at any time prior to the start of pregnancy, defined as date of conception (14 days after the estimated last menstrual period) or throughout the pregnancy (**Figure 1**)
- Characteristics of MG were measured during pregnancy-related periods defined as:
  - Pre-conception: 180 days before date of conception
  - Pregnancy: from date of conception to pregnancy end date (variable length)
  - Postpartum: up to 42 days after pregnancy end date (90 days for assessing disease severity)

Characteristics of MG

- MG-related HCRU (including hospital stays, ED visits, office visits, and MG medication use), MG exacerbations, myasthenic crises and disease severity were assessed

Results

- Data analyses were descriptive and performed separately for Medicaid and Commercial Databases

Patients

- A total of 597 MG pregnancies were identified (168 and 429) in 126 and 335 unique women, with a mean (SD) age of 27.9 (5.8) and 32.4 (5.3) years
- Mean (SD) number of pregnancy episodes per woman during the study period was 1.37 (0.71) and 1.34 (0.75)
- More than half (53.0%) and approximately a third (31.7%) of women had a prior live birth, 15.5% and 13.3% had a previous spontaneous abortion, 1.8% and 4.0% had a previous pregnancy termination, and 0.6% and 0.2% had a previous stillbirth
- Medication use was frequent prior to pregnancy (over 78% in total had ≥1 pharmacy claim), with the most frequently used medications being antibiotics, acetylcholinesterase inhibitors, and corticosteroids (**Table 1**). A total of 31.5% and 20.3% of pregnancies were exposed to a teratogenic agent prior to date of conception

MG disease characteristics

- Results are presented in **Figure 2**

Summary

Most women with MG experience low disease severity during pregnancy, although HCRU and exacerbations remain high, especially postpartum

Myasthenic crisis is lower than previously reported, possibly representing the improved standard of care in the US and a less severely affected patient population

MG medication use was high during the pre-conception period and during pregnancy, but >95% had no treatment claim recorded postpartum

Conclusion

Integrating postpartum treatment planning into pregnancy counselling is essential, as timely adjustment or resumption of therapy may help reduce postpartum exacerbations

Figure 1 Study design

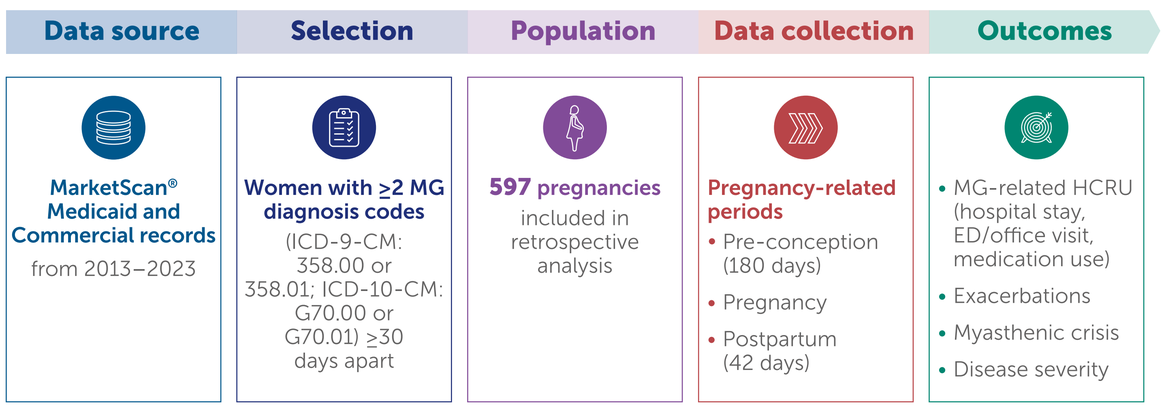
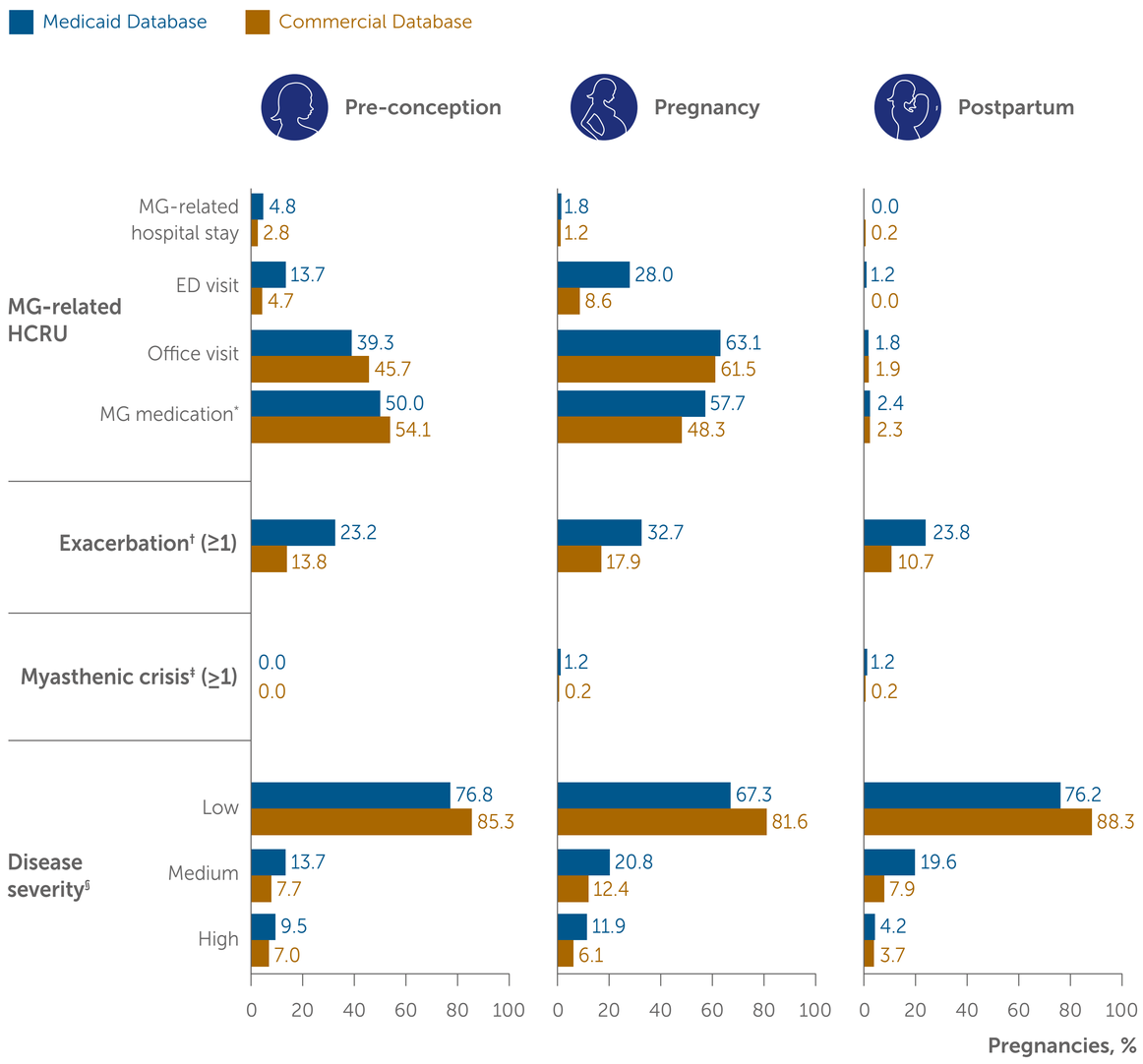


Table 1 MG medication use in Medicaid and Commercial pregnancies

	Medicaid (N=168) Pregnancy-related periods			Commercial (N=429) Pregnancy-related periods		
MG medication use	Pre-conception	Pregnancy	Postpartum	Pre-conception	Pregnancy	Postpartum
Patients with ≥1 MG medication claim, n (%)	**84** (50.0)	**97** (57.7)	**4** (2.4)	**232** (54.1)	**207** (48.3)	**10** (2.3)
Mean (SD) number of MG medication claims	**6.1** (4.8)	**6.7** (6.4)	**1.0** (0.0)	**5.2** (6.4)	**6.1** (9.0)	**1.2** (0.4)
Acetylcholinesterase inhibitors,* n (%)	**59** (70.2)	**65** (67.0)	**0** (0.0)	**154** (66.4)	**129** (62.3)	**1** (10.0)
Mean (SD) number of acetylcholinesterase inhibitors claims	**4.1** (2.7)	**4.4** (4.0)	**0.0** (0.0)	**3.1** (2.4)	**3.6** (3.5)	**1.0** (0.0)
Non-steroidal immunosuppressant therapy,* n (%)	**7** (8.3)	**5** (5.2)	**0** (0.0)	**21** (9.1)	**10** (4.8)	**0** (0.0)
Mean (SD) number of immunosuppressant claims	**3.3** (1.9)	**5.0** (3.4)	**0.0** (0.0)	**2.5** (1.6)	**2.7** (2.1)	**0.0** (0.0)
Biologics,* n (%)	**20** (23.8)	**29** (29.9)	**2** (50.0)	**53** (22.8)	**61** (29.5)	**7** (70.0)
Mean (SD) number of biologic claims	**4.7** (2.6)	**5.7** (4.8)	**1.0** (0.0)	**6.4** (7.1)	**6.9** (9.0)	**1.1** (0.4)
Antibody fragments,* n (%)	**0** (0.0)	**0** (0.0)	**0** (0.0)	**0** (0.0)	**1** (0.5)	**0** (0.0)
Mean (SD) number of antibody fragments claims	**0.0** (0.0)	**0.0** (0.0)	**0.0** (0.0)	**0.0** (0.0)	**8.0** (2.8)	**0.0** (0.0)
Complement C5 inhibitors,* n (%)	**0** (0.0)	**0** (0.0)	**0** (0.0)	**2** (0.9)	**3** (1.4)	**0** (0.0)
Mean (SD) number of complement C5 inhibitors claims	**0.0** (0.0)	**0.0** (0.0)	**0.0** (0.0)	**8.0** (2.8)	**6.7** (6.6)	**0.0** (0.0)
Corticosteroids,* n (%)	**48** (57.1)	**58** (59.8)	**2** (50.0)	**113** (48.7)	**97** (46.9)	**3** (30.0)
Mean number of corticosteroids claims (SD)	**3.3** (2.4)	**3.1** (3.0)	**1.0** (0.0)	**2.9** (2.8)	**3.4** (3.3)	**1.0** (0.0)

*Denominator is total number of patients with ≥1 MG medication use claim during the period.

Figure 2 MG disease characteristics



*MG medication use included acetylcholinesterase inhibitors, antibody fragments (efgartigimod), non-steroidal immunosuppressants, biologics, C5 inhibitors and corticosteroids. †MG exacerbations were defined as the occurrence of: Ig cycle, PLEX cycle, MG-related hospitalisation or ED visit.[10] To be counted as separate events, a minimum of a 7-day gap was required between the codes. ‡Myasthenic crisis was defined as the occurrence of a hospital admission with respiratory failure OR mechanical ventilation, AND intravenous Ig or PLEX recorded within 7 days of the hospitalisation.[10] To be counted as separate events, a minimum of a 7-day gap was required between the codes. §Disease severity was defined as a composite variable of hospitalisation with MG diagnosis, exacerbations and myasthenic crises (as defined earlier) and MG treatment use (rituximab, eculizumab, ravulizumab, rozanolixizumab, zilucoplan and/or efgartigimod) and categorised into low, medium, or high severity if the patient had 0, 1–2, or 3 or more events, respectively.

Abbreviations: C5, component 5; ED, emergency department; HCRU, healthcare resource utilisation; ICD, International Classification of Diseases; Ig, immunoglobulin; MG, myasthenia gravis; PLEX, plasma exchange.

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