



There is Hope Through
'CONTACT'

Printed in the interest of those
Affected by Myasthenia Gravis


"Could It Be MG?"

Quarterly News Volume 46 Issue 2 June 2022

**June is Myasthenia Gravis
Month.
And in Ontario,
by Bill 117
"It's Official"**

"The whole intent of this bill is to raise awareness, to make the month of June Myasthenia Gravis Month so that we all are aware of things that other families, other people, other loved ones, have to deal with on a very regular basis"

Bill 117 was co-sponsored, was passed unanimously and given Royal Assent on April 14, 2022.

Legislative Assembly of Ontario  Assemblée législative de l'Ontario

2ND SESSION, 42ND LEGISLATURE, ONTARIO
71 ELIZABETH II, 2022

Bill 117


(Chapter 14 of the Statutes of Ontario, 2022)

An Act to proclaim the month of June as Myasthenia Gravis Month

Co-sponsors:
Mr. B. Walker
Miss M. Taylor

1st Reading	April 13, 2022
2nd Reading	April 13, 2022
3rd Reading	April 13, 2022
Royal Assent	April 14, 2022

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The following “Explanatory Note” was written a reader’s aid to the Ontario Legislature Bill 117 2022

“Bill 117 2022

An Act to proclaim the month of June as Myasthenia Gravis Month

Preamble

Myasthenia Gravis is a chronic autoimmune disorder in which antibodies destroy the communication between nerves and muscle, resulting in weakness of the skeletal muscles. The disorder affects the voluntary muscles of the body, especially those that control the eyes, mouth, throat and limbs. A Myasthenia Gravis crisis can involve difficulty in swallowing or breathing. The following are the most common symptoms of Myasthenia Gravis:

- 1. Visual problems, including drooping eyelids (ptosis) and double vision (diplopia).**
- 2. Muscle weakness and fatigue that may vary rapidly in intensity over days or even hours and worsen as muscles are used (early fatigue).**
- 3. Facial muscle involvement causing a mask-like appearance; a smile may appear more like a snarl.**
- 4. Trouble swallowing or pronouncing words.**
- 5. Weakness of the neck or limbs.**

Myasthenia Gravis is not inherited and it is not contagious; it is caused when antibodies attack receptors on muscle thereby blocking a chemical needed to stimulate muscle contraction.

It is estimated that there are 26.3 cases of Myasthenia Gravis per 100,000 people in Ontario, meaning this disorder impacts more than 3,800 Ontario residents.

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The disorder can strike anyone at any age, but is more frequently seen in young women between the age 20 and 30 and in men aged 50 and older. The cause of Myasthenia Gravis is unknown and there is no cure, but early detection and prompt medical management can help people live longer, more functional lives.

Therefore, Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:

Myasthenia Gravis Month

1 The month of June in each year is proclaimed as Myasthenia Gravis Month.

Commencement

2 This Act comes into force on the day it receives Royal Assent.

Short title

3 The short title of this Act is the *Myasthenia Gravis Month Act, 2022*.

EXPLANATORY NOTE ; This Explanatory Note was written as a readers aid to Bill 117 and does not form part of the law. Bill 117 has been enacted as Chapter 14 of the Statutes of Ontario, 2022. This Bill proclaims the month of June in each year as Myasthenia Gravis Month.

You can find the proceedings as recorded in the Hansard transcript on the passing of Bill 117 in the Legislative Assembly of Ontario on April 14, 2022.

<https://www.ola.org/en/legislative-business/bills/parliament-42/session-2/bill-117>

https://drive.google.com/file/d/1BcVXdTLv40wxR-RI3Wo82MDCH_3qRFbJ/view

Myasthenia Gravis Society of Canada Website:

www.MGCanada.org

We invite your participation through membership, blogs, volunteerism, donations, tips on coping with Myasthenia Gravis, and your MG story. Email: MGinfo@MGCanada.org

Myasthenia Gravis Society of Canada.

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Editorial: Myasthenia Gravis Society of Canada: Gentle with Love

Cap Cowan, President and Newsletter Editor

April 13, 2022 A modern miracle for democracy happened in Ontario. **Our Ontario Legislature unanimously passed 3rd reading of Bill 117 – “June is Myasthenia Gravis (MG) Month in Ontario” with 100% support of all parties.**

The next day, April 14, Royal Assent finalized the bill. A huge success of many who recognize Myasthenia Gravis as needing much more awareness and hope for a productive quality of life with diagnosis and proper treatment.

The passing of this act Bill 117 also underlines the credo of Myasthenia Gravis Society of Canada. If you have chronic MG we are your best new friends for life. Why? Because part of our purpose is to be your advocacy. We have no choice. You are part of our core purpose.

Thank you to our members for this suggestion nearly 5 years ago. Thank you to our Ontario Legislative Assembly for making this a totally focused singular achievement in a time when it is courageous to achieve this consensus anytime never mind 4 weeks before a provincial election. Thank you specifically to our House Leader Honourable Paul Calandra, his follow-through and all other political party leaders and members for their co-sponsored support. A “great democracy in action” legacy for Ontario and Canada.



Hope you’ll be inspired and get aboard to help promote awareness of Myasthenia Gravis. To educate caregivers, family, the public & Healthcare Professionals. To encourage research into cause and cure for MG. Let’s talk and do this together.

Thinking of Having a Baby?

Study on Effects of Pregnancy

ORIGINAL ARTICLE

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Myasthenia Gravis and Pregnancy: Toronto Specialty Center Experience

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Hans Katzberg, Mathew Sermer, Vera Brill*

ABSTRACT: Background: Myasthenia gravis (MG) is an autoimmune disorder that frequently affects young women of reproductive age. The multidirectional interplay between MG, pregnancy, and fetal health poses a complex scenario for pregnant women with MG and the healthcare team. Here, we reviewed our local experience with MG, pregnancy, and outcomes.

Methods: We performed a retrospective chart review of patients with MG attending the Prosserman Family Neuromuscular Clinic from 2001 to 2019 and who were referred to a high-risk pregnancy clinic. MG status was defined as stable, better, or worse. Information was collected on the delivery route, pregnancy, and neonatal complications.

Results: We identified 20 women with MG for a total of 28 pregnancies. Worsening was observed in 50% of pregnancies: 18% during pregnancy, 25% following delivery, and 7% during both. 66.7% of patients with MG duration of 2 years or less had worsening during pregnancy. Three patients who stopped immunosuppressive treatment during pregnancy worsened and one had a crisis. C-section was done in 29% of pregnancies. The rate of delivery complications was 7% and of neonatal MG was 7%. Conclusion: A high proportion of MG patients worsened during pregnancy, particularly those with disease duration less than 2 years, and those who discontinued immunosuppression during pregnancy. However, pregnancy was largely unaffected, rate of neonatal MG was low, frequencies of C-section, delivery complications, and premature births were similar to the general population. While the study

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has limitations due to the retrospective nature, these insights provide some guidance when counseling young myasthenic women about family planning.

Keywords: Myasthenia gravis, Pregnancy, Outcomes, Complications, Management
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INTRODUCTION

Generalized autoimmune myasthenia gravis (MG) preferentially affects young women of child-bearing age.^{1,2} Concerns in this patient population include family planning and the safety of pregnancy in MG, the effects of pregnancy on MG control, complications at the time of delivery and in the immediate postpartum period, and the concerns of teratogenic potential of MG medications including cholinesterase inhibitors, corticosteroids, and other immunosuppressants.³

Our knowledge about MG and pregnancy arises from retrospective reports as MG is rare and prospective studies are lacking. Older literature suggests that immunosuppressive drugs should be stopped in women contemplating pregnancy or who are pregnant, and more recent guidelines advocate judicious use of immunosuppressants.^{4,5} The course of MG during pregnancy is uncertain and it has been reported that one-third of patients worsen during pregnancy, but two-thirds remain stable.⁶ The risk of disease exacerbation is reported to be higher in the first trimester and postpartum period, with the highest reported risk of exacerbation in the postpartum period at about 30% of patients.^{6,7} Additionally, the course of MG may vary in subsequent pregnancies.⁸ MG exacerbation may be associated with spontaneous abortion possibly due to placental inflammation caused by autoimmune antibodies and inflammatory cytokines leading to disruption of fetal perfusion.^{8,9}

Transient neonatal myasthenia may affect 12–20% of infants born to patients with MG; affected newborns have weakness, hypotonia, bulbar and extraocular weakness, and possible respiratory impairment that can persist for up to 3 weeks.^{10,11} Very rarely, a severe myopathy or arthrogryposis multiplex congenita with multiple joint contractures may affect children of MG mothers.³ In light of these different reports, guidelines about patient education, monitoring and

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referral to rapid access, neonatal high-dependency care have been developed.⁵ We aimed to review our experience with MG and pregnancy at our local MG specialty center.

METHODS

We performed a retrospective chart review of patients with MG attending the Prosserman Family Neuromuscular Clinic from 2001 to 2019. The diagnosis of MG was based on the clinical presentation, abnormal single fiber electromyography studies, and the presence of MG autoantibodies, if done. **Different methods of MG assessment were done over the years:** initially with routine physician’s clinical assessment of disease status in all subjects and quantitative myasthenia gravis (QMG) scores. In the last 10 years, the myasthenia gravis quality of life score (MG-QoL 15) (indicates increased disease severity with higher scores),¹² myasthenia gravis impairment index (MGII), (used for assessment of disease severity and used for baseline and follow-up assessments with higher values showing greater disease burden),¹³ and the single simple question (SSQ) (reports a patient’s perception of their overall MG status with 100% being normal) were also used for patient assessment.¹⁴ Due to the variation in evaluation methods, we classified the MG outcome into stable, improved, or worse based on the patient’s report, clinical assessment, and MG score (in use at the time of visit) as documented during the respective clinic visit. The final classification was based on the majority outcome of these parameters, i.e. two out of three. We included both pregnancy and the post-partum period (6 weeks after delivery) as periods for assessment. We considered any patient who had worsening respiratory and bulbar function that required ICU admission as having a myasthenic crisis. Other than demographic factors such as age at pregnancy, acetylcholine/MUSK serology, type of MG (generalized vs. ocular), thymectomy status, and treatment, we also collected information related to pregnancy complications, the delivery route, premature birth, and neonatal complications during delivery including neonatal MG.

Table 1: Demographic data on patients with MG and pregnancy

Twenty-eight pregnancies in 20 women	2001–2019
Generalized MG	20 (100)
AChRAb	13 (77)
MuSK	1 (8)
Mean age at the first pregnancy (Y)	29.7 ± 5.7
Mean duration MG (Y)	5.7 ± 5.9
MG worse	16 (57)
MG worse during pregnancy	7 (25)
MG worsening during pregnancy when duration < 2Y	5 (71)
Odds ratio of getting worse with < 2Y MG duration	3.43:1
MG worse after delivery	9 (32)
MG worse when immunosuppression stopped	3 (100)
Onset MG during pregnancy	1 (5)
Onset MG following delivery	1 (5)

AChRAb = acetylcholine receptor antibody; MuSK = muscle specific kinase antibody, Y = years. Data are given as n (%) or as means ± standard deviation.

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Statistical analysis was performed with IBM SPSS Statistics for Windows, Version 20.0 (IBM Corp., Armonk, NY, USA). We used univariate analysis to explore any associations between demographic variables and treatments and MG status during pregnancy or in the postpartum period. Using contingency tables, we calculated the odds ratio and relative risk for MG worsening either during pregnancy or in the postpartum period when the duration of MG before pregnancy was less than or equal to 2 years; the latter cutoff based on previous reports.^{15,16} The study was approved by the University Health Network Research Ethics Board.

RESULTS We identified 28 pregnancies in 20 patients with generalized autoimmune MG (Table 1) seen in the clinic from 2001 to 2020 with pregnancies dating back as far as 1990. Ten out of 13 (77%) tested patients had elevated acetylcholine receptor antibodies and one patient (8%) had anti-MuSK antibodies. The other 15% were seronegative. The mean age at first pregnancy was 29.7 ± 5.7 years and the mean MG duration was 5.7 ± 5.9 years. **Two patients had onset of MG during pregnancy – both in the first trimester and one had onset in the immediate postpartum period. MG was well controlled in 17 patients, active in 5, worsened at time of conception in 1, and diagnosed after pregnancy in 3. The preconception MG status was unknown in two. Pregnancy was planned in all except two pregnancies.**

Worsening was observed in 50% of pregnancies: 18% during pregnancy, 25% following delivery, and 7% during both pregnancy and following delivery. All except one patient needed uptitration of treatment, which included increasing the dose of steroid in four, addition of steroid in one, increasing frequency of IVIG in four, administering PLEX in three, and only increasing pyridostigmine in one. One patient who had mild worsening was closely followed without any change in medication and had spontaneous improvement. Univariate analysis did not show any significant relationship of MG worsening with age at pregnancy, duration of myasthenia, serology, type of MG, and treatment. In those with MG for 2 years or less, 71.4% had worsening during pregnancy or in the postpartum period. (OR 3.43, [0.65–18.22], RR 1.89 [0.86–3.82]). Two other patients worsened: MG durations were 3 and 9 years. Of the three patients who stopped immunosuppressive treatment (azathioprine) against medical advice during pregnancy, all worsened and one had a myasthenic crisis. Seven women had multiple pregnancies; 6 women had 2 pregnancies and 1 woman had three pregnancies amounting to a total of 15 pregnancies. Seven of these pregnancies had worsening MG, four during the first and three during the second pregnancy. One woman who had three pregnancies, remained stable and had been on PLEX during the first and second pregnancies and received PLEX just before the third delivery, which happened to be an elective C-section. There were no significant differences in presentation or clinical characteristics from those with a single pregnancy.

Regarding MG treatments during pregnancy, 10 (35.7%) of the pregnancies were in patients on azathioprine before pregnancy and 7 (25%) during pregnancy.

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Prednisone was used in 13 (46%) patients before pregnancy and in 14 (50%) during pregnancy. Intravenous immunoglobulin (IVIG) was used in 4 (14%) before pregnancy and in 6 (21%) during pregnancy. In 25% of the pregnancies, patients took more than one immunotherapy before pregnancy and 8 (28%) during pregnancy. All except five patients had undergone thymectomy before the delivery. In those five patients, three had MG diagnosed after they became pregnant and in two, thymectomy had to be deferred till after delivery since the pregnancy was unplanned. Myasthenic crises occurred in 14% of pregnancies, including one patient with new-onset MG and one who stopped immunosuppressive medications. Cesarean section was done in 29% of pregnancies: 75% were primary cesarean sections and 25% were repeat sections. There were only 2 (7%) deliveries with complications: one case of postpartum jaundice and one case of nuchal cord. There were 2 premature births (7%) and 2 (7%) cases of neonatal MG. All infants recovered fully without permanent issues. None of the patients in our series had an infant with severe myopathy or arthrogryposis multiplex congenita. Treatment with azathioprine before or during pregnancy did not confer risk to the mother or fetus.

DISCUSSION Our local experience with MG and pregnancy is consistent with previous reports showing that around one-third to two-thirds of MG patients worsen during pregnancy, particularly those with a disease duration of less than 2 years and those who discontinued immunosuppression during pregnancy. However, we also found that the frequencies of C-section, delivery complications, and premature births were not higher compared to the general population in

Ontario and that the rate of neonatal MG was lower than in most reports.^{17–19}



The influence of pregnancy on MG and the incidence of pregnancy-associated worsening of MG and its timing are variable across studies. A large retrospective study of the Medical Birth Registry data in Norway identified 135 births in 73 women with MG and found worsening of MG in only 10% of pregnancies. However, more than one-third of patients were not on medication and one-third of the cases of MG were diagnosed after their first delivery suggesting a mild or subclinical form of MG compared with most patients in our study who were being treated in an MG specialty referral center and took at least one immunosuppressant medication.

Spring in the city 2022.

Photo by Tony Watkins

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Higher rates of both pregnancy-related (21%) and delivery-related (30%) complications were seen in the Norwegian cohort, perhaps due to the differences in MG therapy in that population.¹⁰ Other smaller studies show variable rates of worsening ranging from 23 to 50%.^{9,20–23} The course of MG in pregnancy can be difficult to predict with worsening occurring in any of the three trimesters or in the postpartum period, although similar to our study most women have worsening in the postpartum period.⁷

A few factors have been shown to have some bearing on worsening related to pregnancy.

As noted in the literature, we found a high proportion of patients with a duration of MG less than 2 years to have worsening of MG during pregnancy with an odds ratio of 3.49 [0.65–18.22].^{15,16} A shorter duration, greater disease severity, and abnormality in repetitive nerve stimulation (RNS) studies are other factors described as predicting worsening of MG during pregnancy.²³ Although a specific recommendation about the timing of pregnancy and disease activity is not available for MG, a stable period of at least 6 months is advised before attempting conception in other autoimmune disorder and this advice may apply to MG as well although “stable” is not defined when this interval is suggested.^{5,24} Stopping immunosuppressive treatment during pregnancy in our cohort was associated with worsening MG and a higher risk of crisis lending support to the recommendation that this not be done.²⁵ Somewhat surprisingly, the risk of cesarean delivery was not increased by MG, but was the same as that in the general population in Ontario of about 29% from 2013 to 2019.¹⁷ Also, the rate of premature delivery was 7%, the same as in general population.^{17,19} While the rates of C-section vary in different MG populations with rates as high as 67% in Brazil and 78% in Turkey, other large population-based studies do not show increased C-section rates compared to the general population similar to our study.^{9,23,26} These results indicate a wide diversity in the global therapeutic approach to pregnancies in MG patients. As suggested by our data, C-section should be reserved for obstetrical reasons. MG is not an indication for C-section and should not preclude a trial of vaginal delivery.^{5,27} We found a lower rate of neonatal MG (7%) than previously reported (12–30% of pregnancies).¹⁸ Factors that influence the incidence of neonatal MG have been controversial with maternal severity and the maternal antibody titers failing to show a consistent association.^{3,28} One series reported that maternal thymectomy lessened the likelihood of neonatal MG and a long duration of MG had an inverse association with neonatal MG.^{8,16} While the mechanisms by which thymectomy reduce the incidence of MG remain obscure, one factor in our series was that the majority of patients had thymectomy before pregnancy and delivery. In addition to thymectomy, disease management in a specialized MG center might also account for these outcomes. None of the patients in our series had an infant with severe myopathy or arthrogryposis multiplex congenita. Although this could be a reflection of the relatively small sample size, genetic factors have been

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implicated in these severe complications, where in a shared HLA haplotype between mother and neonate, increased the susceptibility for neonatal MG by increasing the immunoreactivity to passively transferred antibody.^{3,18}

In summary, our results support that pregnancy is a risk factor for worsening in MG and that stopping immunosuppressive treatment increases the risks of relapse and MG crisis. Despite these findings, vaginal delivery was the main delivery route and the rate of cesarean section was not increased compared to that in the general population. The rate of delivery complications did not appear to be increased, and the rate of neonatal MG was lower than expected. Complications that have been noted in pregnant women with MG include premature rupture of membrane, prolonged labor, which may be attributed to the fatigue of striated muscles and also fetal distress.^{9,23,29} However, none of these complications were encountered in our patients.

Being a retrospective study design, the study has a few limitations. The acetylcholine receptor antibody status was not available for all patients and we did not have data on acetylcholine receptor antibody titers, as these numerical levels were not reported in a quantitative manner in previous years. Hence, we cannot comment on any potential association between antibody levels and pregnancy outcomes in MG. We did not record the duration of worsening, and therapeutic interventions in a systematic and consistent fashion and there was a nonuniformity of clinical assessment methods, which limits comparisons in the outcome. We also do not have any data on the number of patients who may have elected not to have children due to their MG status, or on family-supportive care that may have been required following each delivery. Finally, a potential referral bias to our specialty MG center may limit the generalization of our results.

CONCLUSION

Pregnant women with MG can have successful pregnancies and can be optimistic about outcomes in their offspring. However, their MG status is likely to worsen during pregnancy or just after delivery and this possibility must be considered and discussed with women with MG of reproductive age.

DISCLOSURES The authors have nothing to disclose.

STATEMENT OF AUTHORSHIP MA was involved in data collection, writing, editing, and reviewing the article. DM was involved in analysis, writing,

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editing, and reviewing the manuscript. HK was involved in writing, editing, and reviewing the article. CB was involved in writing, editing, and reviewing the article. MS was involved in writing, editing, and reviewing the article. VB was involved in conceptualization, guiding MA and DM in writing the article, editing, and reviewing

REFERENCES

1. Christensen PB, Jensen TS, Tsiropoulos I, et al. Incidence and prevalence of myasthenia gravis in western Denmark: 1975 to 1989. *Neurology*. 1993;43(9):1779–83.
2. Breiner A, Widdifield J, Katzberg HD, Barnett C, Bril V, Tu K. Epidemiology of myasthenia gravis in Ontario, Canada. *Neuromuscul Disord*. 2016;26(1):41–6.
3. Gilhus NE, Hong Y. Maternal myasthenia gravis represents a risk for the child through autoantibody transfer, immunosuppressive therapy and genetic influence. *Eur J Neurol*. 2018;25(12):1402–9.
4. Mertens HG, Hertel G, Reuther P, Ricker K. Effect of immunosuppressive drugs (azathioprine). *Ann N Y Acad Sci*. 1981;377(1):691–9.
5. Norwood F, Dhanjal M, Hill M, et al. Myasthenia in pregnancy: best practice guidelines from a U.K. multispecialty working group. *J Neurol Neurosurg Psychiatry*. 2014;85(5):538–43.
6. Téllez-Zenteno JF, Hernández-Ronquillo L, Salinas V, Estanol B, da Silva O. Myasthenia gravis and pregnancy: clinical implications and neonatal outcome. *BMC Musculoskelet Disord*. 2004;5:42.
7. Bolding MI, Maniaol AH, Brunborg C, Weedon-Fekjær H, Verschuuren JJGM, Tallaksen CME. Increased risk for clinical onset of myasthenia gravis during the postpartum period. *Neurology*. 2016;87(20):2139–45.
8. Batocchi AP, Majolini L, Evoli A, Lino MM, Minisci C, Tonali P. Course and treatment of myasthenia gravis during pregnancy. *Neurology*. 1999;52(3):447–52.
9. Tanacan A, Fadiloglu E, Ozten G, Gunes AC, Orgul G, Beksac MS. Myasthenia gravis and pregnancy: retrospective evaluation of 27 pregnancies in a tertiary center and comparison with previous studies. *Ir J Med Sci*. 2019;188(4):1261–7.
10. Hoff JM, Daltveit AK, Gilhus NE. Myasthenia gravis in pregnancy and birth: identifying risk factors, optimising care. *Eur J Neurol*. 2007;14(1):38–43.
11. Donaldson JO, Penn AS, Lisak RP, Abramsky O, Brenner T, Schotland DL. Antiacetylcholine receptor antibody in neonatal Myasthenia gravis. *Am J Dis Child*. 1981;135(3):222–6.
12. Burns TM, Grouse CK, Wolfe GI, Conaway MR, Sanders DB, MG Composite and MG-OL15 Study Group. The MG-QOL15 for following the health-related quality of life of patients with myasthenia gravis. *Muscle Nerve*. 2011;43(1):14–8.
13. Barnett C, Bril V, Kapral M, Kulkarni AV, Davis AM. Myasthenia gravis impairment index: responsiveness, meaningful change, and relative efficiency. *Neurology*. 2017;89(23):2357–64.
14. Abraham A, Breiner A, Barnett C, Katzberg HD, Bril V. The utility of a single simple question in the evaluation of patients with myasthenia gravis. *Muscle Nerve*. 2018;57(2):240–4.
15. Chaudhry SA, Vignarajah B, Koren G. Myasthenia gravis during pregnancy. *Can Fam Physician*. 2012;58(12):1346–9.
16. Djelmis J, Sostarko M, Mayer D, Ivanisevic M. Myasthenia gravis in pregnancy: report on 69 cases. *Eur J Obstet Gynecol Reprod Biol*. 2002;104(1):21–5.
17. Kelly S, Sprague A, Fell DB, et al. Examining caesarean section rates in Canada using the Robson classification system. *J Obstet Gynaecol Can JOGC J Obstet Gynecol Can JOGC*. 2013;35(3):206–14.
18. Papazian O. Transient neonatal myasthenia gravis. *J Child Neurol*. 1992;7(2):135–41.
19. Government of Canada SC. Preterm live births in Canada, 2000 to 2013 [Internet]. 2015. Available from: <https://www150.statcan.gc.ca/n1/pub/82-625-x/2016001/article/14675-eng.htm>
20. Almeida C, Coutinho E, Moreira D, Santos E, Aguiar J. Myasthenia gravis and pregnancy: anaesthetic management—a series of cases. *Eur J Anaesthesiol*. 2010;27(11):985–90.
21. Picone O, Audibert F, Gajdos P, Fernandez H. Myasthenia gravis and pregnancy. Report on 13 cases. *J Gynecol Obstet Biol Reprod (Paris)*. 2003;32(7):654–9.
22. Mitchell PJ, Bebbington M. Myasthenia gravis in pregnancy. *Obstet Gynecol*. 1992;80(2):178–81.
23. Ducci RD, Lorenzoni PJ, Kay CSK, Werneck LC, Scola RH. Clinical follow-up of pregnancy in myasthenia gravis patients. *Neuromuscul Disord*. 2017;27(4):352–7.
24. Marder W, Littlejohn EA, Somers EC. Pregnancy and autoimmune connective tissue diseases. *Best Pract Res Clin Rheumatol*. 2016;30(1):63–80.
25. Toscano M, Thornburg LL. Neurological diseases in pregnancy: *Curr Opin Obstet Gynecol*. 2019;31(2):97–109.
26. Wen J-C, Liu T-C, Chen Y-H, Chen S-F, Lin H-C, Tsai W-C. No increased risk of adverse pregnancy outcomes for women with myasthenia gravis: a nationwide population-based study. *Eur J Neurol*. 2009;16(8):889–94.

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REFERENCES CONTINUED...

27. Ciafaloni E. Myasthenia gravis and congenital myasthenic syndromes. *Contin Minneap Minn.* 2019;25(6):1767–84.
28. Polizzi A, Huson SM, Vincent A. Teratogen update: maternal myasthenia gravis as a cause of congenital arthrogyposis. *Teratology.* 2000;62(5):332–41.
29. Ferrero S, Pretta S, Nicoletti A, Petrera P, Ragni N. Myasthenia gravis: management issues during pregnancy. *Eur J Obstet Gynecol Reprod Biol.* 2005;121(2):129–38.



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Ontario, L4A 1C2.*

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June is Myasthenia Gravis Month

Hugging is Healthy

Hugging is healthy: it helps the body's immune system, it keeps you healthier, it cures depression, it reduces stress, it induces sleep, it's invigorating, it's rejuvenating, it has no unpleasant side effects, and hugging is nothing less than a miracle drug.



French Pug Puppy Hugo enjoys a hug from Tony Watkins.

Hugging is all natural: it is organic, naturally sweet, no pesticides, no preservatives, no artificial ingredients and 100 percent wholesome.

Hugging is practically perfect: There are no movable parts, no batteries to wear out, no periodic checkups, low energy consumption, high energy yield, inflation - proof, non-fattening, no payments, no insurance requirements, theft-proof, non-taxable, non-polluting and, of course, fully refundable.

Author Unknown.

Call MG Canada Phone Support

These Members welcome calls from those wanting to connect.

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Tiina Elder, Mississauga, ON 905-565-5875

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Physical Activity Helps ...

MG Canada member Garry Morrison was recently featured in the publication “Brain and Health” Summer 2022 in an article entitled “Physical Activity Helps Manage Myasthenia Gravis” by John Haanc as quoted below:

“Years ago, physicians told patients to rest and avoid exertion.

“Because a hallmark of the disease is fatigue and weakness, the main emphasis in the past was on conserving energy,” says Dr. Rowin. “This got translated into ‘Don't do much.’ And we ended up with a whole host of other problems as a result.” One problem was that being sedentary exacerbates fatigue and muscle weakness, says Dr. Rowin. It also can make the weight gain and bone loss associated with long-term use of prednisone—a common treatment for MG—worse.

Other adverse health effects of inactivity, regardless of underlying disease, include an increase in all causes of mortality; a doubling of the risk of cardiovascular diseases, diabetes, and obesity; and a higher chance of colon cancer, high blood pressure, osteoporosis, lipid disorders, depression, and anxiety.

Today the message about activity is more nuanced. “We recognize that patients can exercise and that it can be done safely,” says Dr. Rowin. People with MG whose symptoms are controlled should be able to reap the benefits of physical exercise, says Anna Rostedt Punga, MD, PhD, professor of clinical neurophysiology at Uppsala University in Sweden and co-author of a 2020 study, published in *Frontiers in Neurology*, on how exercise helps people with MG. Her research has found that exercise reduces fatigue, improves fitness, and increases muscular function, allowing for a more active life. Physical activity, she says, also boosts mood and cognition.”

“How to Exercise Safely with MG

For those who are skeptical that physical activity can benefit people with myasthenia gravis (MG), Garry Morehouse, who was diagnosed with the disease in 2017, has this to say: “Exercise has been my savior, my lifeline.” He plays competitive pickleball four times a week, and at age 76 he's still one of the top-ranked players among the 100 or so

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members of his racquet club. As for his illness: “I have no effects, no symptoms from MG,” says Morehouse, who lives in Midland, ON, in Canada. With a highly individualized illness like MG, there's no guarantee that others with the disease will be playing competitive pickleball or racing a 10K anytime soon. But there is growing agreement that physical activity is something people with MG can and should be doing. To do it safely, consider these recommendations.

Talk to your doctor. Before you begin any exercise program, discuss your intentions with your neurologist.

Increase gradually. Start slowly. Take an easy walk to the end of the driveway or climb stairs in the house; then build from there. As your fitness and stamina improve, increase the challenge.

Work with a pro. A physical therapist or a certified personal trainer can help develop a regimen that's right for you. Either one should understand that any fitness routine may have to be modified to accommodate disease progression and fatigue. “People with MG will perceive more muscle fatigue in the beginning,” says Anna Rostedt Punga, MD, PhD, professor of clinical neurophysiology at Uppsala University in Sweden, who researches exercise and MG, but “this will decrease, and approximately two to three weeks into the regimen, they will feel stronger and have more energy.”

Attend to fatigue. There is a healthy tiredness that comes from exertion, and there's dangerous fatigue related to MG. Signs of MG-related fatigue are limb weakness and shortness of breath, says William G. Buxton, MD, a neurologist at the Pacific Neuroscience Institute Brain Health Center in Los Angeles. “Such symptoms can be a red flag to rest,” he says. “And if they don't improve with rest, patients should contact their physicians.”

Listen to your body. This advice is particularly true for people with MG, says Morehouse, who in addition to playing pickleball does strengthening exercises at home. “I don't tire very easily, but there are times when I get a little dizzy,” he says. When that happens, “I just stop right on the court. People know, ‘That's Garry. He's had enough.’”

Disclaimer: The degree of muscle weakness and the muscles that are affected vary greatly from person to person and from time to time. One should consult with your physician before embarking on an exercise program. Submitted by Garry Morehouse.



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***Spread the word about Myasthenia Gravis
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“Could It Be MG?”

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