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Case Report

Unusual Labor-Onset Flare of Generalized Myasthenia Gravis in Pregnancy: A Case Report

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Abstract

Background: Myasthenia Gravis (MG) is the most prevalent disorder affecting neuromuscular transmission, characterized by fluctuating weakness of voluntary muscles attributed to the presence of autoantibodies that target components of the neuromuscular junction, predominantly the acetylcholine receptor (AChR). This condition exhibits a notable flare for MG in a woman during her first labour. The management of MG during pregnancy is challenging due to various physiological changes, concerns regarding the safety of pharmacological interventions, and the inherent risks associated with myasthenic exacerbation or crisis.

Case Presentation: We report the case of a 27-year-old primigravida at 40+ weeks of gestation with an established diagnosis of generalized seropositive MG and a history of prior thymectomy secondary to thymic carcinoma. Labor induction was enacted; however, she subsequently experienced an exacerbation of her MG, manifesting as ptosis and increased muscle weakness. In response, her oral dosage of pyridostigmine was elevated, and a high-potassium diet was implemented. Due to a failure to progress in labor, a grade 2 emergency cesarean section was conducted. Postoperatively, she exhibited significant improvement and was subsequently discharged with comprehensive postpartum care and counseling from the multidisciplinary team.

Conclusion: This case underscores the critical need for early recognition and proactive MDT planning, as well as the implementation of tailored pharmacological and obstetric strategies for managing MG during pregnancy. The management of MG during pregnancy should prioritize the maintenance of disease control while simultaneously minimizing potential risks associated with medication use and delivery-related stressors.

Keywords: *Myasthenia Gravis, Pregnancy, Autoimmune disease, Myasthenic crisis, Thymectomy, case report*

Introduction

Myasthenia gravis (MG) is a complex, long-term autoimmune disorder of the neuromuscular junction, characterized by fluctuating weakness in the ocular, bulbar, limb, and respiratory muscles (1). It is a prototypical autoantibody-mediated disorder characterized by the presence of antibodies targeted against the acetylcholine receptor (AChR). These antibodies are detected in approximately 85% of patients exhibiting generalized muscle weakness, and in around 50% of those with isolated ocular manifestations (2). The prevalence is only 20 per 100000 cases in the US population only (1), which exhibits a bimodal distribution in the affected population, with an early peak onset in the second and third decades among young females (3). There are two clinical forms of MG, which are ocular and generalized (4). Many patients with AChR-positive MG have thymic abnormalities, including thymic hyperplasia in more than 50% and thymic tumors in 10% to 15% (5).

It is common for MG to complicate pregnancy, since it affects women of childbearing age (6). However, its effect on pregnancy may vary. For instance, the disease course may show improvement in 29%, worsening symptoms in 41% and may remain unchanged in 30% of patients (7). Patients with active MG are most likely to experience flares in the first trimester and the postpartum period, while in other cases, the disease may go into remission (3). Meanwhile, remission is reported in the second and third trimesters, which is attributed to pregnancy-induced immunosuppression (8). Exacerbation occurs during pregnancy due to puerperal infections, hypoventilation due to weakness of respiratory muscles and elevation of the diaphragm during pregnancy, stress of labour and delivery, and drugs (6). The duration of MG experienced by a patient is a significant factor influencing mortality rates. For example, a patient with a one-year history of MG before pregnancy exhibits a higher risk of mortality compared to a patient who has managed the condition for seven years before conception (9). This report discusses a rare case of MG during pregnancy and the treatment plan implemented.

Case Report

This 27-year-old primigravida patient came to our facility at 40+ weeks of gestation for a planned delivery. She came with a medical background history of generalized seropositive MG, which was diagnosed in 2016, and had a history of thymic carcinoma, for which she had a thymectomy in 2017. What makes this case especially noteworthy is the acute disease flare that occurred during labor rather than during the antenatal or postpartum period, as is more frequently reported (10), and the uncommon combination of a prior thymectomy in a young woman with MG.

Medical history and background of the patient

The patient had been receiving immunosuppressive treatment for a long time with stable disease control before becoming pregnant, having been diagnosed with MG in her early twenties. Among her preconception drugs were pyridostigmine 60 mg twice daily, prednisolone 5 mg every other day, and mycophenolate 500 mg twice daily, which was stopped before becoming pregnant. No known drug allergies in her, no prior obstetric history, and aside from MG and thymectomy, no other noteworthy medical or surgical history. In the year before becoming pregnant, she had no recent hospitalizations or exacerbations of her mild MG symptoms.

An antenatal course and pregnancy

It was a spontaneous singleton pregnancy. Her last menstrual cycle ended on February 4, 2024, and her estimated delivery date is November 11, 2024. No diagnostic challenges were encountered; the MG exacerbation diagnosis was clinically supported by neurological findings and patient history. The nuchal translucency scan performed in the first trimester revealed normal results (1.9 mm) and a low risk of chromosomal abnormalities (1:48116). Oral glucose tolerance testing and anomaly scans were both normal. A third-trimester ultrasound showed normal umbilical artery Doppler indices (PI within normal range), normal amniotic fluid index, and appropriate fetal growth. She continued to see her obstetrician, neurologist, and fetal medicine team regularly during her pregnancy. Without the

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need for dosage modifications, her MG stayed clinically stable, and no prenatal side effects were observed.

Management of Labor and Delivery

In response to the exacerbations, she was put on a potassium-rich diet, and her pyridostigmine dosage was raised to 60 mg three times a day. She had to have a grade 2 emergency low-segment cesarean section because her labor did not progress even after her MG symptoms stabilized. After being admitted for inducing labor, a dinoprostone pessary was used, and terbutaline was given to induce uterine hyperstimulation. Serial spirometry, full blood work, and the Modified Early Obstetric Warning Score (MEOWS) were all used as part of the ongoing maternal monitoring program. Extra precautions were taken to prevent common MG exacerbating factors like stress, lack of sleep, and physical exhaustion. The prognosis was favorable, with rapid stabilization occurring postpartum and no neonatal complications.

Complications during labor

An acute exacerbation of MG occurred during active labor, resulting in fatigue, generalized muscle weakness, and ptosis **(Figure 1)**. Crucially, there were no symptoms of ataxia, diplopia, dysphagia, dysarthria, or respiratory compromise (no dyspnea).

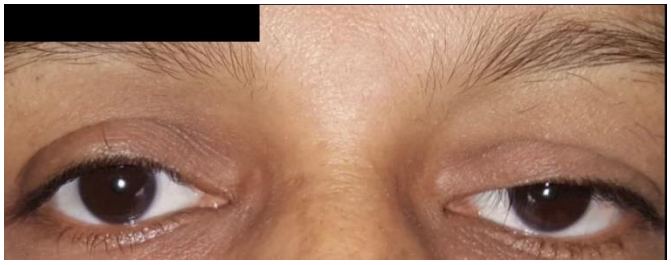

Figure 1: Picture of the patient showing unilateral ptosis during labor.

Postoperative plan and follow-up

The patient was moved to the intensive care unit for postoperative monitoring right away. She was transferred to the postnatal ward after an uneventful recovery. Neurology, obstetrics, physiotherapy, and lactation services recommended a thorough multidisciplinary follow-up after her stable discharge. Early ambulation, rehydration, encouraging mobility with thromboprophylaxis, breastfeeding support, wound and perineal hygiene, dietary advice (high potassium and iron intake), and explicit instructions on how to spot warning signs that call for immediate medical attention were all part of routine postnatal care counseling. There were no reported complications for the newborn. The infant did not show any symptoms of transient neonatal MG, which can happen to 10–20% of babies born to MG mothers (11).

Despite the patient's extensive history of autoimmune diseases and surgeries, this case stands out for its clinical stability throughout pregnancy, even though a flare-up was specifically brought on by the strain of labor. In such complex maternal conditions, the absence of effective labor monitoring for neonatal MG and the timely escalation of care underscore the importance of a tailored, multidisciplinary management approach.

Discussion

Here we report a young primigravida who had a previous thymectomy and generalized seropositive MG. She remained stable during her pregnancy, but during labor, she had a flare-up that necessitated an emergency cesarean section. This clinical presentation is consistent with a variable course reported in the larger literature on MG in pregnancy.

MG is an uncommon autoimmune neuromuscular disease that disproportionally affects women who are of reproductive age. With a prevalence of approximately 150 to 200 per 1,000,000 people, MG is an example of an antibody-mediated autoimmune disease (12). Due to hormonal and immunological changes, the need to modify teratogenic or contraindicated medications and the possibility of a crisis or worsening of the disease, managing MG during pregnancy continues to be a clinical challenge (13). Sikka et al. (2015) reported a young primigravida woman with MG exacerbation and severe preeclampsia, with the final decision of cesarean section, and the baby was born with no neonatal complications (14). Benlghazi et al. (2024) presented a case of a young pregnant woman who presented with MG who underwent thymectomy, and the case worsened in her third trimester with

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severe hydramnios (15). Another case report published by De Silva et al. (2017) stated that the woman is a primigravida diagnosed with MG and underwent thymectomy, and the decision was made to undergo cesarean section due to failure to progress (16). About 40% of pregnant patients with MG may experience exacerbations, especially during the first trimester or postpartum period (17). The exacerbation in our case, however, happened intrapartum, which is a rare but documented occurrence that was probably brought on by uterotonic agents, physical stress, or lack of sleep (18). The patient notably had a well-controlled condition both before and during pregnancy, which is in line with a case published by Vincent et al. (2020) showing that pregnant women who have stable MG before becoming pregnant typically have better outcomes (18). Due to better respiratory outcomes and less surgical stress, vaginal delivery is usually preferred for MG patients in terms of obstetric outcomes. Nevertheless, in our instance, the inability to progress and deteriorating neuromuscular symptoms made labor difficult, requiring cesarean delivery. This is consistent with case series conducted by Ameida et al. (2010), indicating that although vaginal delivery is frequently possible, cesarean sections might be necessary if labor is hampered by maternal fatigue, inadequate pushing effort, or MG exacerbation (19). In terms of pharmacologic treatment, the patient's low-dose corticosteroid (prednisolone) and pyridostigmine regimen is in line with current best practices (20). Despite being the first-line treatment and generally regarded as safe during pregnancy, pyridostigmine requires careful dose adjustments during labor to account for increased physiologic demand and variability in absorption (21). In the local context of Belgium, experts recommend anticholinesterase agents be titrated on demand during the peripartum period (22). Similar evidence supports continuing low-dose corticosteroids during pregnancy. High doses should be avoided during the first trimester due to the slight risk of cleft palate and to prevent exacerbation of MG symptoms during dose titration, but steroids may be safely continued during pregnancy and lactation (6, 21). No steroid-related problems were seen, and our patients' use of prednisolone was steady and low-risk.

This case report presents valuable clinical insight into the intrapartum management of a pregnant woman with MG, specifically in the context of prior thymectomy and otherwise stable disease. One of the important strengths of this report is the multidisciplinary management. Additionally, the case underscores the importance of peripartum planning and monitoring during the chronic autoimmune neuromuscular disorder. However, this report has limitations; it is a single case that cannot be generalized, has no long-term maternal and neonatal follow-up, and no electrodiagnostic or serological testing was performed during the time of exacerbation.

Conclusion

To summarize, the incidence of MG-related complications during pregnancy and the postnatal period has generally decreased due to the preventative regimen and the optimization of maternal care and education before conception, antenatally, and in the puerperium. To conclude, MG may impose serious medical, psychological, social, and economic burdens, especially in the setting of congenital myasthenia occurrence or the progression to a maternal myasthenic crisis. Moreover, such case reports can aid in building future research theories and shaping the format of guidelines in modern world clinical practice.

Disclosures

Conflict of Interest

The authors declare no conflicts of interest.

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Consent

Written informed consent was obtained from the patient for publication of clinical details and images.

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