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Case Report

A rare case of myasthenia gravis in pregnancy with impending eclampsia

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ABSTRACT

Managing myasthenia gravis during pregnancy is challenging due to its high-risk nature, particularly among women aged 20 to 30, coinciding with childbearing age. This risk is exacerbated when myasthenia gravis coexists with pregnancy-induced hypertension, leading to an increased threat of morbidity and mortality for both the mother and the fetus.

This case report highlights the challenges associated with simultaneous occurrence of myasthenia gravis and pregnancy-induced hypertension, leading to impending eclampsia. Employing a multidisciplinary approach involving obstetricians, neurologists, anesthesiologists, and neonatologists was pivotal in addressing the complexities presented. An emergency cesarean section at the eighth month addressed worsening pre-eclampsia and respiratory distress. Strategic administration of a bolus of steroids and pyridostigmine, coupled with the use of cardiac-stable ropivacaine for spinal anesthesia, contributed to a successful procedure. Post-delivery, neonatal observation confirmed the absence of transient myasthenia gravis, with subsequent normal follow-up examinations for both mother and baby. This case underscores the need for a comprehensive approach in managing these uncommon but high-risk conditions during pregnancy.

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1. Introduction

Pregnancy in individuals with myasthenia gravis (MG) poses a unique set of challenges, necessitating a specialized and multidisciplinary approach. MG, a neuromuscular disorder, involves the damaging effects of immunoglobulins G1 and G3 on acetylcholine receptors, leading to skeletal muscle weakness. Triggers for MG symptoms include genetic factors, infections, stress (both emotional and physical), certain medications, pregnancy, hormonal fluctuations, and even surgical procedures with neuromuscular blockers during anesthesia.[1]

Common manifestations of MG include skeletal muscle weakness, affecting extraocular, bulbar, and limb muscles, often resulting in symptoms such as diplopia, ptosis, dysarthria, dysphagia, and respiratory muscle paralysis that may require mechanical ventilation. The diagnostic process involves a comprehensive assessment, specialized tests, and the edrophonium test, which provides temporary improvement in muscle strength and aids in confirmation. Acetylcholinesterase inhibitors, like pyridostigmine, are generally considered safe during pregnancy and lactation, although individual adjustments may be necessary.[2]

A particular concern is the risk of myasthenic crises during pregnancy, characterized by severe muscle weakness and respiratory distress.[1,2] Close monitoring is essential to promptly recognize and manage such situations.

2. Case Report

A 24-year-old primigravida, in her 35th week of pregnancy, presented with complaints of a headache, elevated blood

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pressure (180/110 mmHg), and ptosis. Her medical history included childhood myasthenia gravis, managed with Tab pyridostigmine 60 mg TID. She also had pregnancy-induced hypertension (PIH) initially treated with Tab labetalol 100 mg B.D., later switched to Tab nifedipine 10 mg B.D. in the third trimester on the recommendation of a neurologist. Additionally, she suffered from hypothyroidism, requiring daily Tab levothyroxine 50 mcg.

Vital signs assessment revealed a pulse rate of 94 bpm, respiratory rate of 18, and oxygen saturation ranging from 92% to 94%. Further investigations uncovered abnormal liver function, with lactate dehydrogenase at 475 U/L, total protein at 5 g/dL, serum albumin at 2.63 g/dL, platelet count at 1.4 lakh/mm^3, and alkaline phosphatase at 298 U/L. Urinary analysis indicated a 3+ albumin level and uric acid at 7.6 mg/dL.

Given the heightened risk of severe eclampsia, an emergency cesarean section was planned following thorough informed consent. Preoperatively, 12 mg of betamethasone was administered, and the pyridostigmine dosage (60 mg TID) was adjusted to QID under the guidance of the neurologist. Spinal anesthesia, using 2 ml of 0.75% ropivacaine, was chosen over bupivacaine for its hemodynamic stability. The procedure, lasting approximately one hour, resulted in the delivery of a 2.4 kg baby. Post fetal delivery, 20 units of oxytocin were administered, and the patient experienced a smooth recovery with a minimal blood loss of about 500 ml.

The neonate was kept under observation in the neonatal unit for 48 hours, monitoring for signs of transient muscle weakness and respiratory distress. The postoperative period for both mother and baby was uneventful. Subsequent follow-up examinations confirmed the normal health status of both the mother and the baby, underscoring the success of the carefully planned and executed management strategy.

3. Discussion

Managing myasthenia gravis (MG) and pre-eclampsia during pregnancy is rare and poses a challenge due to conflicting treatment strategies. While blood pressure control is crucial in pregnancy-induced hypertension (PIH) and pre-eclampsia, traditional medications like β-blockers and calcium channel blockers may worsen muscle weakness in myasthenic patients. Guidelines recommend labetalol for mild to moderate hypertension during pregnancy;[3,4] however, in myasthenic patients, methyldopa or oral hydralazine may be preferred to mitigate exacerbation of muscle weakness. This highlights the necessity for a customized and multidisciplinary approach to navigate the complexities of treating both conditions simultaneously during pregnancy.

Severe hypertension requires treatment with labetalol (intravenous or oral), hydralazine (intravenous), and nifedipine (oral).[5] In myasthenics, hydralazine is regarded as safe for acute blood pressure control, as labetalol and nifedipine can aggravate muscle weakness. Nevertheless, labetalol has been used in the management of myasthenia gravis and severe PIH, as described in other case reports.[6] When labetalol is used as the first drug or as an additional treatment in pre-eclampsia, intensive monitoring before and during surgery is essential as it can exacerbate myasthenic symptoms.

Magnesium sulfate is the recommended drug of choice for eclampsia prophylaxis.[7] As magnesium can trigger a myasthenic crisis;[1,8] it is contraindicated for eclampsia prophylaxis in myasthenia.[1,2,9] Surplus magnesium at the neuromuscular junction presynaptically restricts the release of acetylcholine. It reduces postsynaptic membrane excitability, causing weakness, bulbar muscles to stop working and respiration to cease at serum magnesium levels that are safe in nonmyasthenic patients. Symptoms can appear rapidly and sometimes occur within 10 minutes of administration.[1,8] Phenytoin in small doses can also be used temporarily for seizure prophylaxis in PIH patients with myasthenia.[10] The disease may worsen with prolonged use.

Regional anesthesia is recommended for cesarean sections in myasthenic patients unless the patient has severe respiratory distress or bulbar dysfunction.[11,12] Since ester local anesthetics may have a longer half-life in patients taking anticholinesterase therapy, amide local anesthetics are more appropriate.[12] It is normal for patients treated with anticholinesterase to show more potent vagal side effects. This was the case in this case report after neuraxial blockade. In non-urgent cases, gradual onset epidural anesthesia should be considered as it provides better control over the block level. Prophylactic administration of atropine or glycopyrrolate is preferred to counter the muscarinic side effects of anticholinesterases as used in our case. Intrathecal opioids, particularly longer-acting drugs such as morphine, should only be used with extreme caution due to the increased opioid sensitivity of myasthenic patients. If used, postoperative monitoring should be done to watch out for respiratory dysfunction.

General anaesthesia (GA) is usually avoided in patients with myasthenia gravis as the drugs used can prolong neuromuscular weakness and can cause respiratory dysfunction with prolonged ventilator requirements. Only in severe cases of PIH with impending eclampsia or in patients with generalized seizures and airway compromise, GA can be considered in myasthenic patients weighing the risks vs benefits and with low doses of muscle relaxants and inhalational agents with careful neuromuscular and peripartum monitoring.

4. Conclusion

The coexistence of myasthenia gravis and pre-eclampsia during pregnancy, though rare, poses significant risks. Effective management requires a multidisciplinary

approach and vigilant perioperative monitoring. Our case emphasizes personalized medication adjustments, from labetalol to nifedipine, and preoperative administration of a tailored bolus of steroid and pyridostigmine. Careful use of glycopyrrolate, ropivacaine in spinal anesthesia, and supplemental oxygen demonstrates a nuanced consideration of potential myasthenic symptom exacerbation. Management strategies are tailored to individual patient factors. While regional anesthesia is generally safe, offering direct childbirth experience and postoperative pain control, cautious use of general anesthesia is reserved for specific cases, weighing risks and benefits with meticulous neuromuscular and peripartum monitoring.

5. Source of Funding

None.

6. Conflict of Interest

None.

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