BMH MEDICAL JOURNAL

BMH Med. J. 2019;6(1):21-24. **Case Report**

Spinal Anaesthesia For LSCS In A Patient With Myasthenia Gravis: A Case Report

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Keywords: myasthenia gravis, spinal anaesthesia, caesarian section

Introduction

Myasthenia gravis is an autoimmune disease affecting the neuro muscuar junction, the pathology of which is known to be the presence of auto antibodies directed against the Acetyl Choline receptors which essentially destroys it. Anasthesia in the affected is a challenge irrespective of pre existing weakness as there is always a risk of peri operative exacerbation. In this case report we present the case of a young female who had been administered with subarachanoid block for lower segment Cesarean section and had an uneventful outcome.

Case report

A young female of second gravida (G2A1) who is a known case of Myasthenia Gravis with no other co-morbidities presented to the Pre-Anesthetic checkup clinic for elective Lower Segment Caesarian Section (LSCS). She was diagnosed with Myasthenia Gravis at 17 years of age when she first noticed weakness of both lower limbs while climbing stairs. A year later, she underwent Thymectomy as a curative management but episodes of weakness continued to occur and she was started on Physostigmine. The dose of the drug was gradually tapered over the last 14 years. She has had an episode of Ptosis (ocular involvement) but no episodes of respiratory distress till the present day. Thymectomy was done under general anesthesia which was uneventful. She has had a spontaneous complete abortion one and half years back at less than 6 weeks of gestation which did not require any further medical intervention.

After confirming the present pregnancy, the dose of Physostigmine was reduced to 60mg 8th hourly in the 1st trimester (from 60 mg 6th hourly). The dose was increased back to 60mg 6th hourly after 20 weeks of gestation. Apart from short episodes of muscle weakness when skipping the dose of the drug, she was completely asymptomatic during the present pregnancy.

On examination, patient was conscious and oriented with no significant clinical findings. She had a Heart Rate of 67 beats/minute, Blood Pressure of 118/75mm Hg and a SpO2 of 100% in room air.

Neurological examination revealed no significant abnormalities. Other organ systems were within normal limits. All the preoperative investigations were within normal limits including a normal Thyroid Function Test.

The patient was premedicated with Inj. Ranitidine 50mg and Inj. Metoclopramide 10mg 30 minute prior to the induction of anesthesia. In the operating room, she was monitored with 5 lead ECG, SpO2 and Non Invasive Blood Pressure. Under strict aseptic precautions, a subarachnoid block was performed with a 25G Quincke's needle with 7.5 mg Hyperbaric Bupivacaine and 25mcg Fentanyl at L3-L4 interspace. The anesthesia level was assessed and was recorded to be at T6 level. Patient was given 10 IU of Oxytocin as infusion after the delivery of the baby. Surgery lasted for 25 minutes and was uneventful. The level of anesthesia was rechecked after the surgery and was recorded to be at T6 level.

Patient was shifted to the post anesthesia care unit and post operative analgesia was given with Inj. Paracetamol 1g IV 8 hourly and Inj. Tramadol 50mg IV 8 hourly. The regular dose of Physostigmine was given 2 hours after the surgery. The levels of anesthesia were checked every 2 hourly which revealed a regression of three dermatome levels every 2 hours. She was closely monitored for any muscle weakness or respiratory distress in the post anesthesia care unit for 24 hours and then was shifted to room. She was discharged on the 5th post operative day without any significant complaints

Discussion

Myasthenia gravis is a rare disorder affecting the Neuromuscular junction where Auto Antibodies cause destruction of Nicotinic Acetyl Choline receptors. Muscle Specific Kinase (MuSK) and the Low-density Lipoprotein receptor-related protein (LRP4) are also identified as targets in some patients [1]. Many cases are seen associated with abnormal cell proliferations in the Thymus. But other factors like influence of a pro inflammatory environment, genetic factors, sex hormones and environmental factors are also implicated as possible etiologies of Myasthenia [1].

Myasthenia is characterized by muscle weakness which usually begins with Ocular symptoms like Ptosis, Diplopia and then spread to other muscle groups [2]. This weakness usually worsens with exertion and returns to normal on rest, and periods of exacerbations occur multiple times during the course of the disease [2]. In severe disease, oropharyngeal and respiratory muscles may be involved, affecting speech, chewing and swallowing thereby making the patients prone to pulmonary aspiration and ventilatory support [2,6]. Hyperthyroidism, Hashimoto's disease, SLE, Rheumatoid Arthritis, Red Cell Aplasia, Alopecia, Myocarditis, Conduction defects, Takotsubo cardiomyopathy and Autnomic dysfunction leading to hemodynamic disturbances may be seen in these patients [2,7]. Diagnosis is usually established using clinical features but as many as 20 diagnostic tests with variable accuracy are available of which Anti Acetyl Choline Receptor Antibody testing and Single Fiber EMG are of the better quality than others [8]. Thymomas or Thymic hyperplasia can be seen associated with these patients and Thymectomy along with post operative regimen of Pyridostigmine and Prednisolone is found to improve the clinical course in most of these patients [3,4]. Other treatment modalities include Immunomodulators like Steroids, Azathioprine, Tacrolimus,Cyclosporine but IVIG and Plasmapheresis may be needed for rapid response [9]. Oropharyngeal and respiratory muscle involvement may warrant mechanical ventilatory support.

Myasthenia and pregnancy is a dangerous combination as myasthenia is a potent risk factor complicating pregnancy [3], the labour, the postpartum period, as well as the the neonate while pregnancy can result in deterioration of myasthenia which may even warrant mechanical ventilator support [4]. Exacerbation of myasthenia has to be anticipated in all pregnant patients as it may occur even in Thymectomised patients and there are no risk assessment criteria for the same.

A review of literature shows women with Myasthenia can go through the pregnancy without any significant issues and only about one third of the patients suffer exacerbations [10]. A planned

pregnancy should always be preferred when the disease is stable and it is advisable to avoid pregnancy at the beginning of the disease [11]. Just as in our case, most patients can be managed with Anticholinesterases but some may require additional therapies like Steroids, Immunomodulators, IVIG or even Plasmapheresis depending on the severity [12]. Most exacerbations are seen in the first trimester and post partum period and most of them can be controlled by dose adjustment of Anticholinesterases alone [12]. Due to the high prevalence of multiple co-existing illnesses, a thorough workup including evaluation by Neurologists, Cardiologists, Rheumatologists and Endocrinologists are often necessary apart from an expert Obstetric care.

Myasthenia gravis as such is not an indication for Caesarian Section but many Obstetricians avoid vaginal delivery because of the fear of a prolonged labour and associated muscle tiredness of the patient [14]. Second stage of labour may also be complicated by an acute respiratory difficulty which may need mechanical ventilatory support [14]. This warrants a preoperative anesthetic evaluation and a tertiary care setup with a pre arranged emergency operation theatre if the Obstetrician plans a normal vaginal delivery. Epidural analgesia maybe indicated to alleviate labour pain but it carries the extra risk of prolonging labour which may prove detrimental to the patient. Obstetric complications are uncommon in Myasthenia and Caesarian Section may be required if any occur [13].

Caesarian section poses unique challenges to the Anesthesiologist as both general anesthesia and regional anesthesia are associated with complications in a myasthenic patient. A review of literature shows caesarian section has been performed successfully with both general anesthesia and regional anesthesia but complications including severe respiratory compromise needing post operative ventilation and ICU admission was required in some patients, indicating that no method is superior over the other. Bulbar involvement or respiratory compromise is the only true indication for general anesthesia in these patients. Although most intravenous and inhalational agents can be safely used in Myasthenic patients, use of muscle relaxants should be as limited as possible. Succinyl choline may produce unpredictable responses and hence is better avoided, while non depolarizing muscle relaxants should be administered cautiously using neuromuscular monitoring [15]. Delayed emergence, residual muscle paralysis and respiratory failure needing prolonged ventilatory support has been reported [15] which adds to the list of problems pregnancy itself causes while administering general anesthesia.

Many authors are seen to prefer Regional anesthesia; spinal, epidural and combined spinal epidural could all be used, each with their own risks and benefits. Sanwal MK et al [10] reports a case of Caesarian section in a Myasthenic patient managed with spinal anesthesia using low dose Bupivacaine and short acting Opioid without any significant complications. The combination of Opioid helps to reduce the dose of local anesthetic and also reduce the motor blockade. However, Almeida C et al [15] reports an incidence of dyspnea requiring mechanical ventilation following the administration of Subarachnoid block. Thus, low dose spinal anesthesia with careful monitoring of level of the block and patient respiratory efforts can also be a method of anesthesia for caesarian section in myasthenic patients. Continuous Epidural anesthesia with local anesthetics and opioid can also be another alternative but since epidural anesthesia require large amounts of local anesthetics, they may interfere with neuromuscular transmission in myasthenic patients [15].

Conclusion

Myasthenia gravis has an unpredictable course during pregnancy, thereby producing serious management challenges to the obstetrician and anaesthesiologist. Caesarian section if indicated in such patients poses unique challenges to the anesthesiologist as all available modes of anesthesia are associated with its own risks and benefits.

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