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ANAESTHETIC MANAGEMENT IN A PATIENT WITH MYASTHENIA GRAVIS PLANNED FOR ERCP WITH STENTING UNDER GENERAL ANAESTHESIA

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ABSTRACT Here we report a case of 78 year old female, a known case of myasthenia gravis for than 6 years diagnosed with periampullary carcinoma with obstructive jaundice posted for ERCP with stenting under general anaesthesia and its anaesthetic management. This report highlights the challenges the anaesthetist encounters perioperatively and underscores the anaesthetic considerations in managing such a condition.

KEYWORDS : Myasthenia gravis, no NMBAs, Dexmedetomidine

INTRODUCTION:

Myasthenia gravis is an auto immune disease in which autoantibodies are produced against post synaptic nicotinic Acetylcholine receptors(nAchR) at neuromuscular junction which reduces the capacity of terminal plate to transmit nerve signals. Myasthenia gravis causes weakness of skeletal muscles and also affects the voluntary muscles of the body that control the eyes,mouth,throat and limbs. The disease may strike at any age. The incidence is 5.3 persons/million and prevalance of 77.7 persons/million[1]. The weakness may get aggravated during exertion and ameliorated during rest. It has 2 crisis like cholinergic and myasthenic crisis. It causes various symptoms depending on the muscles involved. The most common involvement is ocular muscles which causes diplopia and ptosis. Bulbar involvement can result in difficulty in swallowing. Respiratory muscle involvement is usually mild which may result in difficulty in breathing due to fatigue of respiratory muscles and respiratory arrest in severe form which requires mechanical ventilation.

The management of such condition requires a multi disciplinary approach involving anaesthesiologist, neurologist, surgeon and critical care specialist. Preoperative assessment should include identifying high risk patients and optimising the disease process. Intraoperative stratergies should aim to keep the anaesthetic plane deep if no neuromuscular blockade agents used and adequate analgesia. Postoperatively, vigilant monitoring is crucial to fulfill the extubation criteria in these patients.

Case Report:

78 year old female weighing 40 kg ,a known case of Myasthenia gravis for more than 6 years initially took Tab.Pyridostigmine, Azathioprine and Prednisolone for 4 years and stopped medications due to remission for next two years. Now presented with complaints of abdominal pain, vomiting, jaundice, loss of appetite and loss of weight for 2 months. CT abdomen and MRCP was done which revealed periampullary mass. Preoperative routine blood investigations were done and were within normal limits except liver function test which showed obstructive features. The patient was planned for ERCP with stenting under general anaesthesia. Preoperative neurological evaluation was done by neurologist as the patient was having mild ocular symptoms like diplopia and generalized weakness & tiredness. Necessary investigations were done including Anti AchR ,Anti MUSK antibodies, RNS-Repetitive Nerve Stimulation test,CV Doppler, PT-INR, CT Brain and found to have milder form of Myasthenia gravis and started on Pyridostigmine accordingly by neurologist and advised to review after 2 weeks. Patient improved symptomatically and reassessed by neurologist after 2 weeks and advised to proceed with surgery as the patient was in stable phase. Patient was assessed under ASA 3 and airway examinination showed MPC grade 1.The patient was explained about the anaesthetic procedure including the non usage of muscle relaxant, risk of aspiration and the need of post operative mechanical ventilation. Patient was encouraged to do incentive spirometry preoperatively to improve the pulmonary function and strengthen the respiratory muscles. After getting all the consents, the patient was shifted to OT as the first case in the day with two wide bore iv lines. Standard ASA monitor was connected and preoperative vitals noted. Patient was adequately pre oxygenated and premedicated with Inj.Glycopyrrolate 0.2 mg iv ,Inj.Midazolam 1 mg iv and Inj.Fentanyl 5mcg/kg iv. The patient was induced with Inj.Etomidate 20 mg iv and inhalational agent Sevoflurane. Once the patient became under with stable hemodynamics, using direct laryngoscopy the patient was intubated with ET tube 6.0 size in single attempt.

The ET tube was fixed at 19 cm after confirming bilateral equal air entry.The plane of anaesthesia was maintained with Oxygen &Nitrous oxide of 3 litres/minute each and Sevoflurane at the flow rate of 0.8%. Inj. Dexmedetomidine 1 mcg/kg was used to further deepen the plane and as an analgesic.The procedure lasted for one and a half hours with one episode of intra operative hypotension during induction which was managed with Inj.Phenylephrine 20 mcg iv. Inj.Fentanyl 25 mcg iv was used as an analgesic.Towards the end of the procedure, the volatile agent was tapered and Inj.Dexmedetomidine was stopped. After few minutes, the patient was able to open her eyes, breathe spontaneously and generating adequate tidal volume. Hence after thorough suctioning, the patient was extubated. Post extubation patient was obeying commands and there was adequate muscle power and tone, vocalization present, cough reflex present. There was no respiratory distress. Patient was shifted to PACU with stable hemodynamics with supplementary O2 support. Observed for 1 hour and shifted to post operative ward without any untoward events.

DISCUSSION:

Previous studies suggest that the elective procedure should be done in the stable remission phase[2].In Myasthenia gravis,the elective procedure should be done in the stable phase. The type of anaesthesia should depends on factors of admission, severity of the disease and type & duration of surgery. The severity of the disease is classified based on Osserman-Genkis classification as follows[3]

Stages	Name	Description
I	Ocular myasthenia	• Weakness involves only ocular muscles-diplopia and ptosis
IIa	Mild generalised myasthenia	• Weakness of another muscle group along with ocular muscles-axial muscles & extremities or both • Good response to drug therapy • No respiratory muscle involvement • Low mortality
IIb	Moderate generalised myasthenia	• Moderate weakness of ocular muscles with more involvement of peripheral muscles • Dysarthria ,dysphagia occurs • Fair response to drug therapy • Patient's activities limited • Low mortality

III	Acute fulminating myasthenia	• Progresses within 6 months • Severe bulbar and skeletal muscle involvement • Poor response to treatment • Involves respiratory muscles • Patient's activities limited • Low mortality
IV	Late severe myasthenia	• Develops within 2 years • Severe bulbar and skeletal muscle involvement • Poor response to treatment • Involves respiratory muscles • Patient's activities limited • High mortality

In our case initially the patient was in stage IIb ,went into remission phase after treatment. During presentation, the patient was in stage I according to Osserman & Genkis classification. Hence neurologist opinion obtained , started on medications and optimized preoperatively. Since the duration of the proposed procedure was less, we planned to give general anaesthesia without muscle relaxant. Volatile agents like sevoflurane and isoflurane provide muscle relaxation for intubation and maintains the plane of anaesthesia by the effect of reduction in neuromuscular transmission through different pathways. One of them is inhibition of post synaptic nAch receptors [4]. Here in our case, the use of Sevoflurane made it possible to avoid neuromuscular relaxant during induction and maintenance phase of anaesthesia. Also the intraoperative plane of anaesthesia kept deep along with the use of dexmedetomidine which also has an analgesic property. After tapering and stopping the agents used for maintaining deep plane , the patient became awake ,obeys commands and there was adequate respiratory efforts and tidal volume. The muscle power and tone was also good. Hence the patient was extubated after thorough suctioning. Postoperatively vigilant monitoring was done and the continuous observation of respiratory and other status were ensured. Multimodal analgesia was used as post operative pain management.In high risk patients, the need for postoperative ventilation can be predicted beforehand by using Leventhal orkin and Hirsh scoring[4]

No	Category	Points
1.	Duration of more than 6 years	12
2.	History of COPD	10
3.	Pyridostigmine dose more than 750 mg/day	8
4.	Vital capacity less than 2.9 litres	4

Score of more than 12 points indicates need for post operative ventilation.

Depending upon the severity of Myasthenia gravis, type and duration of surgery the choice of using muscle relaxant or not, should be made[5,6]. Whenever non depolarizing neuromuscular blocking agent used, Inj.Sugammedex can be used as a reversal agent[7]. Anaesthetic management of a patient with myasthenia gravis includes either muscle relaxant or non muscle relaxant usage. Our case underscores the safe use of combination of fentanyl ,propofol, dexmedetomidine and sevoflurane without the use of muscle relaxant[8]. This combination was tolerated well for intubation as well as for the quick transition to spontaneous breathing during extubation and an uneventful recovery[9].

CONCLUSION:

The effective management of myasthenia gravis requires a multidisciplinary approach. Non usage of muscle relaxant can be preferred whenever possible depending upon the type & duration of surgery and the patient's clinical status as discussed above.

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