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Anesthetic Management of Patient With Myasthenia Gravis Undergoing CABG and Thymectomy Without Use of Neuromuscular Blockade

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Introduction

Myasthenia gravis (MG) is an autoimmune disorder that leads to skeletal muscle weakness caused by direct antibody-mediated immunological attack at acetylcholine receptors. Thymomas are seen in about 10% of people affected with MG [1]. Patients with MG are unpredictably sensitive to nondepolarizing neuromuscular blocking agents (NMBA) and resistant to depolarizing NMBA [2]. This case describes the perioperative management of a patient with MG who required both coronary revascularization and thymectomy without neuromuscular blockade

Case Report

This is a 67 year old male with history of MG on pyridostigmine who presented for elective surgery, coronary artery bypass graft (CABG) and thymectomy. For induction of anesthesia, an intravenous (IV) bolus dose of propofol (2 mg/Kg) was given over 30 seconds followed by the IV administration of a bolus of remifentanil (3mcg/Kg) over 30 sec without use of neuromuscular blocking agents. Endotracheal intubation was easily performed 60 seconds after completion of the remifentanil administration. General anesthesia was maintained with inhaled isofluorane (0.7-1.4) and a continuous IV infusion of sufentanyl (0.3 mcg/kg/hr) and dexmedetomidine (0.7-1 mcg/kg/hr). Total cardiopulmonary bypass (CPB) was 77 minutes. Sufentanyl infusion was stopped at the time of chest closure. At the end of the procedure, patient was transferred to the cardiac ICU, sedated with dexmedetomidine and on mechanical ventilator. After two hours, weaning parameters and arterial blood gas were satisfactory and his trachea was extubated. His ICU course was uneventful and patient was discharged to rehabilitation facility on postoperative day four.

Discussion

MG is one of the many disorders in which the use of neuromuscular blocking agents is contraindicated. Remifentanil, an ultrashort-acting opioid, is found to be effective for intubation while avoiding NMBAs [3]. Remifentanil is a typical mu-receptor agonist and has a rapid clearance. The intubating conditions vary with different dosages of remifentanil. Recent studies give us a range of dosages for satisfactory and excellent intubating conditions. One of the dose response studies, Bouvet et al, showed that co-administration of Propofol 2.5 mg/kg and Remifentanil 4 mcg/kg provided excellent intubating conditions in 95% of healthy patients [4]. The hemodynamic alterations were well tolerated in these healthy patients. Our patient, who is a 67 year old male with ASA 4 physical status and BMI of 28, underwent induction with 2.1 mg/kg of Propofol and 3.2 mcg/kg of Remifentanil which provided excellent intubating conditions. He was also given 10 mg of Ephedrine during induction to provide hemodynamic stability.

Conclusion

We describe a novel and effective anesthetic management of a 67 year old male with myasthenia gravis who underwent combined coronary artery bypass graft and thymectomy. Induction of general anesthesia with endotracheal intubation was performed with propofol and remifentanil without use of any neuromuscular blocking agents . General anesthesia was then maintained with inhaled isoflurane and continuous intravenous infusion of sufentanyl and dexmedetomidine. In ICU, trachea was extubated within two hours from admission and no complications occurred during the following 24 hours ICU stay. Avoidance of NMBA may improve outcomes by decreasing the risks associated with their use.

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