



VIDEO ASSISTED THORACOSCOPIC THYMECTOMY – AN ANAESTHETIC CHALLENGE

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ABSTRACT Myasthenia Gravis is an autoimmune disease characterized by progressive weakness of skeletal muscles with improvement following rest. The incidence is 50-142/million population with a female preponderance. We report a case of a 34 year male - diagnosed as Myasthenia Gravis who was receiving the treatment, was investigated in details and optimized. He was posted for right mediastinoscopic excision of thymoma. General Anaesthesia with one lung ventilation was planned. Thoracic epidural catheter was inserted for intraoperative and post-operative analgesia. One Lung Ventilation was achieved with left sided Double Lumen Tube (DLT) for better visualization of the operative field. Intraoperative haemodynamics were maintained using Isoflurane and Epidural top-ups of Local Anaesthetics. After completion of the surgery, (right lung was re-inflated) patient was extubated on table. Patient was shifted to post operative surgical unit. He was haemodynamically stable post-operatively and was eventually shifted to the wards on the 3rd post-op day

KEYWORDS : Myasthenia Gravis, thymoma, double lumen tube, thoracic epidural

I. INTRODUCTION

Myasthenia Gravis is a chronic autoimmune disorder caused by a decrease in functional acetylcholine receptors at the neuromuscular junction due to their destruction or inactivation by circulating antibodies. 70 – 80% of the functional acetylcholine receptors can be lost, and this accounts for the weakness and easy fatigability of these patients. It has a prevalence of 1 in 7500. Women 20 to 30 years of age are often affected, whereas men older than 60 years of age are affected.¹ There is a striking association between Myasthenia Gravis and hyperplasia of the thymus, with more than 70% of these patients having thymus hyperplasia and 10% having thymoma.² Thus, thymectomy is a widely accepted therapy for patients with Myasthenia Gravis. Although trans-sternal and trans-cervical thymectomy has been a standard approach for many years, recent advances of endoscopic techniques have facilitated less invasive approaches to thymectomy.^{3,4,5,6} We are reporting a case of mediastinoscopic thymectomy.

II. CASE HISTORY

A 34 yr male (Weight=71kg) came with chief complaints of progressive weakness of proximal muscle weakness of both upper and lower limbs and ptosis in the left eye. The complaints had a waxing and waning course since the past 7 months. He was diagnosed as Myasthenia Gravis with thymoma and had posted for excision of the same. The diagnosis was confirmed with, Ice pack test, Neostigmine Test, Edrophonium test, Decrement Studies and Acetyl Choline Receptor Antibody levels, Anti MusK Antibody levels, ASMA Antibody levels. Ice pack test, Neostigmine Test, Edrophonium test and Neostigmine Test was positive. Decrement Studies showed evidence of Neuromuscular Junction Defect. Acetyl Choline Receptor Antibodies were -14.06nMol/L (positive - >0.25). HRCT Thorax revealed a 4 X 3.7 X 2.3 cm. well defined heterogeneous & hypodense mass seen in anterior mediastinum not separated from the thymus gland. It showed coarse calcified changes in the mass. The lesion was behind the sternum in front of the base of right ventricle, ascending aorta, arch of aorta and inferior vena cava. The findings were suggestive of thymic mass, most likely thymoma.

Patient was treated with Tab Pyridostigmine 60 mg TDS, Tab. Prednisolone 30 mg OD and Tab. Folic acid 5 mg OD, IV Immunoglobulins 140 mg devived over 5 days. Inview of patients benefit from excision of mass Video Assisted Thoracoscopic Thymectomy is planned. He was evaluated for routine hematological investigations before posting for surgery (VATS).

NEOSTIGMINE CHALLENGE TEST

One lung anesthesia with a thoracic epidural was planned with proper preoperative evaluation & systemic examination. The relatives were explained the risk of the surgery and consent taken. He was shifted to OR after securing an 18G intracath and premedicated with Inj. Glycopyrrolate 0.2 mg intravenously, 30 min prior to procedure. After taking all aseptic precautions, left Radial Artery was cannulated. Monitors were attached for continuous IBP, ECG, EtCO₂, SpO₂ &

temperature monitoring. Epidural catheter was inserted at T₇ – T₈ interspace in sitting position with aseptic precautions. It was fixed at 7 cm at skin for intraoperative and postoperative analgesia.

Preinduction: Inj. Ondansetron 4 mg , Fentanyl 80 µg , Midazolam 1 mg were given intravenously. He was preoxygenated for 3 minutes and was induced with Inj. Propofol 140 mg. Patient was paralyzed with Inj. Atracurium 20 mg and intubated with Left sided 39 Fr Double Lumen Tube. Air entry was checked bilaterally and unilaterally with blocking the bronchial and tracheal ports respectively. Tracheal cuff was inflated with 3 ml, and bronchial cuff with 1 ml of air. Sidestream Capnometer was attached to the tube.

After positioning in left lateral tilt of bed, the right lung was collapsed for better visualization of the surgical field for nearly 2 hours and 10 min. All the precautions for one lung anaesthesia were taken and vigilant monitoring was done throughout the procedure. For left lung controlled ventilation given and for right lung continuous 100% oxygen flow connected. He was maintained on O₂ (100%), Isoflurane (1 to 1.2%) and intermittent Inj. Atracurium (2mg). Intraoperative analgesia was given with epidural top-up of Inj. Bupivacaine 0.125% 4 ml once and inj. Paracetamol 1 gm intravenously. Intra-operatively 2.5 L of crystalloid was infused and patient was haemodynamically stable throughout the procedure. There was intraoperative hypoxemia, hypercarbia and Acidosis on Arterial blood gas analysis which was managed successfully. There was negligible blood loss because of minimally invasive surgery inspite of the presence of highly vascular structures around.



At the end of the surgery, bronchial cuff was deflated and the both lungs were ventilated. NMB reversal done with inj. Neostigmine 3 mg and inj. Glycopyrrolate 0.6 mg. Patient was extubated and shifted to POSU for further monitoring. In the POSU he was haemodynamically stable without any untoward complication and was started on Tab. Pyridostigmine. Epidural catheter was removed on 3rd post operative day which provided continuous analgesia for 3 days. Patient was discharged uneventfully on 10th day.

DISCUSSION:

Video Assisted Mediastinoscopic Thymectomy is a new alternative to thoracic surgery for patients of Myasthenia Gravis. Kido and co-workers performed this technique in 3 patients of anterior mediastinal mass without one lung ventilation.⁷ We used One Lung Anaesthesia for Video Assisted Mediastinoscopic Thymectomy for optimal surgical conditions.

Video Assisted Thoracoscopic Thymectomy was done under GA by EL- Dawlatly AA et al with non neuromuscular relaxant technique (NMRT) with OLV and thoracic epidural analgesia (TEA).⁸ In our case, we used the neuromuscular blocking drugs, the requirement of which was significantly reduced (50% of normal) & GA was supplemented with TEA. The use of neuromuscular blockers was mandatory in our case due to nature and site of surgery.

The key to uneventful anaesthesia lies in understanding the pathophysiology of disease, interactions with the drugs required intraoperatively & vigilant monitoring.

We conclude that video assisted mediastinoscopic thymectomy can be performed with OLV & TEA with minimal doses of muscle relaxants & vigilant monitoring. Though the use of peripheral nerve stimulator is strongly recommended in these cases, it was not used due to unavailability of working instrument.

The outcome of the surgery depends on successful teamwork between surgeons, anaesthesiologists, & OR staff. The VAT surgeries for thymectomy minimize the morbidity having less surgical trauma & consequently, lesser post-op pain, shorter hospital stay, better cosmetic results & hence, better acceptance.⁹

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