

Endoscopic Thoracic Sympathectomy (ETS) for Complex Regional Pain Syndrome (CRPS)

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Complex Regional Pain Syndrome (CRPS) is a condition characterized by chronic burning pain, swelling and colour changes commonly affecting hands. We report a case of CRPS in a 26 year-old female in whom non-operative therapy had failed, with full degree of pain relief achieved by Endoscopic Thoracic Sympathectomy. Her peri-operative period was uncomplicated and symptoms were improved immediately after the surgery. In the post-operative period she developed a pneumothorax, a known complication of the procedure.

Keywords: Complex Regional Pain Syndrome, Endoscopic Thoracic Sympathectomy

Introduction

Endoscopic Thoracic Sympathectomy (ETS) is a rapid and safe procedure which is effective in the management of Complex Regional Pain Syndrome (CRPS), ischemic upper limbs, hyperhidrosis and facial blushing^{1,2}. We report a case of CRPS in a 26 year-old female in whom non-operative therapy had failed, but full degree of pain relief achieved by ETS.

Case report

A 26 year-old housewife, suffering from severe burning pain affecting the tip of the left index finger for 4 years was referred to the surgical unit at Teaching Hospital Peradeniya with the diagnosis of CRPS. Attacks of burning pain are precipitated by exposure to cold water or cold weather and lasts for hours. These symptoms lead to a severe disability compromising her day to day activities. She had no other co morbidities. Examination findings were unremarkable except for tenderness and hyperalgesia at the tip of the left index finger. Ultrasonography of left index finger revealed pulp atrophy. Her haematological investigations exhibited no evidence of arterial occlusive disease or connective tissue disease. As she had no permanent improvement following oral medications, sympathetic blockade with ETS was considered for pain relief.

Procedure

Anaesthesia was induced with propofol and vecuronium. She was intubated with normal conventional single lumen tube. Both lungs were

ventilated. Anaesthesia was maintained with isoflurane, oxygen and air. Arterial blood pressure, ECG, oxygen saturation, peak airway pressure, CO₂ insufflation pressure and volume were monitored. The patient was positioned to near prone position (placed on the table in semi prone position and the table tilted anticlockwise in to a 30° angle); a camera port (5mm) and 2 working ports (5mm) were inserted through the 5th, 6th and 8th intercostal spaces respectively. A capnotherax was created and 6-7 mmHg CO₂ insufflation pressure was employed. Left side sympathectomy was carried out at 2nd, 3rd and 4th thoracic vertebral levels. The duration of surgery was 35 minutes. Haemodynamic and respiratory parameters were normal. The patient's symptoms improved immediately after the surgery. She developed a left sided pneumothorax on post-operative day 1, which was diagnosed and managed with an intercostal tube. Patient was discharged on post-operative day 3.

Discussion

CRPS is characterized by chronic burning pain, swelling and colour changes commonly affecting hands. Although the exact cause of CRPS is uncertain, a multifactorial aetiology, leading to over activity of the sympathetic nervous system is suggested. Diagnosis of CRPS is based on clinical criteria, whereas investigations are directed towards ruling out other conditions³.

Treatment options for CRPS include medical management with anxiolytics, low-dose antidepressants, anti-epileptic drugs and analgesics. Acupuncture, physical therapy, mirror box therapy and trans-cutaneous nerve stimulation have been found to be effective but not consistently. Sympathetic nerve block with drugs may temporarily relieve pain whereas in surgical sympathectomy, sympathetic nerves are permanently destroyed resulting in long-lasting symptom relief³.

Sympathectomy involves cauterization of a portion of the sympathetic nerve chain. In the past, surgical approach was either through the chest wall or the back just below the neck.¹ However, recent advances in endoscopic surgery has made it possible for surgeons to perform the procedure with minimal invasion¹.

The anaesthetic management employed in this surgery, with the use of a conventional endotracheal tube for both lung ventilation avoided the complications and technical difficulties of the use of a double lumen tube and one lung ventilation. The capnotherax of 6-7 mmHg insufflation pressure had collapsed the lung partially allowing adequate space to perform the surgery. There were no side effects or surgical difficulty by both lungs been ventilated which was evident by the stable cardiovascular and respiratory parameters of the patient.

Although the morbidity is low compared to the open sympathectomy, ETS still has risks with it, such as pneumothorax, bleeding, haemothorax, and neurological complications. Among these pneumothorax is the most frequent complication, which usually resolves spontaneously and a chest tube is rarely necessary^{4, 5, 6}.

Endoscopic approach is being used for many surgeries nowadays. But the use of Endoscopic Thoracic Sympathectomy for the management of Complex Regional Pain Syndrome (CRPS) has not been well documented^{7, 8}.

Because non-operative therapy failed to achieve a sustained relief of symptoms in our patient, permanent sympathetic blockade was considered appropriate. Her per-operative period was entirely uncomplicated and the pain relief was complete. In the post-operative period she

developed a pneumothorax, a known complication of the procedure which was managed appropriately.

Conclusion

Endoscopic Thoracic Sympathectomy is effective for pain relief in Complex Regional Pain Syndrome.

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PMid:23442937