Case Report

Thoracic sympathectomy for peripheral vascular disease can lead to severe bronchospasm and excessive bronchial secretions

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ABSTRACT

A 57-year-old male patient suffering from Buerger’s disease presented with pre-gangrenous changes in right foot and ischemic symptoms in right hand. Computed tomographic angiography revealed diffuse distal disease not suitable for vascular bypass and angioplasty. Right lumbar sympathectomy was done using a retroperitoneal approach followed 1 year later by right thoracic sympathectomy using a transaxillary approach. Postoperatively, the patient had severe bronchospasm and excessive secretions in the respiratory tract resistant to theophylline and sympathomimetic group of drugs and without any clinical, laboratory and radiological evidence of infection. The patient was started on anticholinergics in anticipation that sympathectomy might have lead to unopposed cholinergic activity and the symptoms improved rapidly. The patient recovered well and was discharged on 10th post-operative day.

KEY WORDS: Anticholinergics, bronchospasm, thoracic sympathectomy

INTRODUCTION

Buerger’s disease is a type of peripheral vascular disease (PVD) which commonly affects the small- and medium-sized vessels in upper and lower limbs. The disease is also known as thromboangiitis obliterans and has a strong association with use of tobacco and is more prevalent in males. The disease is segmental in distribution and is characterized by skip lesions seen on angiography. This patient also had disease in both upper and lower limbs but the severity was more on the right side.

Sympathectomy was widely used in the management of PVD before the era of vascular bypass and angioplasty, later on indications for sympathectomy got limited to those cases where either vascular bypass or angioplasty was not feasible or have failed. Other indications for sympathectomy apart from PVD include hyperhydrosis, causalgia, and neuropathic pain.

This case is reported for the unique post-operative incidence of severe bronchospasm and excessive bronchial secretions resistant to theophylline group of drugs and rapid resolution with anti-cholinergics and antihistamines.

Nowadays thoracoscopic² and laparoscopic techniques are used in preference to open surgery for thoracic and lumbar sympathectomy respectively in centers where facilities for these are available; however, in developing countries open surgery is being done at many centers as facilities for video-assisted thoracoscopic surgery (VATS) are not commonly available. The presence of dense adhesions and previous surgery are relative indications for open approach. Advantages of minimally invasive techniques include (1) bilateral procedure can be done in the same sitting (2) shorter hospital stay (3) small incision (4) lesser postoperative pain (5) minimal deterioration in pulmonary function. Chemical lumbar sympathectomy³ is also an option with variable results and complications.
CASE REPORT

A 57-year-old male patient known case of PVD presented with pre-gangrenous changes in the right foot. The patient was diagnosed as a case of Buerger’s disease as history, clinical and radiological findings suggested involvement of the small sized arteries of the upper and lower limbs without involvement of the large- and medium-sized vessels. The patient was a chronic smoker and left smoking after gangrene developed but he did not give any history of dyspnea or angina on exertion and was not on bronchodilators prior to thoracic sympathectomy. The patient was not suffering from diabetes mellitus, hypertension or any other associated disease. Echocardiogram and chest roentgenogram were normal and pulmonary function tests revealed mild obstructive airway disease. Computed tomographic angiography revealed diffuse distal disease not suitable for vascular bypass and angioplasty. Right Lumbar sympathectomy was done using a retroperitoneal approach. The patient recovered well and was discharged on eighth postoperative day. Patient’s foot was warm after surgery and ulcerations healed. The patient presented again after one year with ischemic symptoms in right hand. Computed tomographic angiography revealed diffuse distal disease not suitable for vascular bypass and angioplasty. Right thoracic sympathectomy was done using the transaxillary approach. Thoracic epidural analgesia was given along with general anesthesia using a single-lumen endotracheal tube. T2-T4 segment of the thoracic sympathetic trunk [Figure 1] was excised and sent for histopathology examination. Epidural catheter was kept for 2 days postoperatively for analgesia and was removed thereafter. Postoperatively, the patient had excessive perspiration, severe bronchospasm and excessive secretions in the respiratory tract. The patient was afebrile, laboratory parameters for infection were within normal range, and there was no evidence of consolidation/collapse on chest roentgenogram. The patient was on broad spectrum antibiotics and bronchodilators (Theophylline) and sympathomimetics (Salbutamol) with little benefit if any. Patient was later on started anticholinergics (Ipratromium bromide) and antihistamines in anticipation that sympathectomy might have lead to unopposed cholinergic activity leading to severe bronchospasm and excessive secretions and the symptoms improved rapidly thereafter. The patient was discharged on 10th postoperative day. First follow up was after 1 month and the patient was doing well and recovered completely [Figure 2]. Histopathology examination confirmed that the specimen was of sympathetic trunk and medical treatment was continued thereafter.

DISCUSSION

It is not common to do both lumbar and thoracic sympathectomy in a particular case as was done in this patient. Mortality of both the procedures is negligible using open or minimally invasive approaches and morbidity has further decreased with better anesthetic techniques, drugs and minimally invasive techniques.

Complications of lumbar sympathectomy include ureteric injury, paralytic ileus, ejaculation disturbances, neuropathic complications and rarely intestinal infarction. Complications of thoracic sympathectomy include pneumothorax, Horner’s syndrome, hyperhidrosis, hemothorax, vascular, parenchymal injuries and rarely chylothorax and skin depigmentation; however, there are few reports in literature on severe bronchospasm and excessive bronchial secretions post thoracic sympathectomy resistant to theophyllines and sympathomimetics (Salbutamol) as was found in this case. The cause of the severe bronchospasm and secretions in this case could be due to unopposed cholinergic activity after sympathectomy which responded rapidly to anticholinergic drugs (Ipratromium bromide).

Acute exacerbation of chronic obstructive pulmonary disease (COPD) was initially thought as a cause for the severe bronchospasm and excessive bronchial secretions but minimal
response to theophyllines, sympathomimetics (Salbutamol) and even steroids and rapid response to anticholinergics drugs (Ipratromium bromide) lead us to anticipate that sympathectomy might have lead to unopposed cholinergic activity leading to severe bronchospasm and excessive secretions. Although sympathectomy was done on right side bronchospasm, excessive secretions and perspiration was not unilateral which may be difficult to explain.

In our experience of thoracic procedures (excluding thoracic sympathectomy), we did not come across such a presentation even in cases who had associated severe COPD.

CONCLUSION

Thoracic sympathectomy can lead to severe bronchospasm and excessive bronchial secretions and anticholinergics are the drugs of choice in this condition.

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How to cite this article: Goyal VD, Gupta B, Kumar S, Pal S. Thoracic sympathectomy for peripheral vascular disease can lead to severe bronchospasm and excessive bronchial secretions. Lung India 2015;32:73‑5.

Source of Support: Nil, Conflict of Interest: None declared.