Needlescopic thoracic sympathetic block by clipping for craniofacial hyperhidrosis

An analysis of 28 cases

T. S. Lin, M. C. Chou

Division of General Thoracic Surgery, Changhua Christian Hospital, Chung Shan Medical University, Taichung, 135 Nan-hsiao Street, Changhua City, Taiwan, Republic of China

Received: 11 July 2001/Accepted in final form: 18 December 2001/Online publication: 18 March 2002

Abstract

Background: Endoscopic thoracic sympathectomy or sympatheticotomy of the lower part of the stellate ganglion is an efficient method for the treatment of craniofacial hyperhidrosis, but postoperative compensatory sweating may be troublesome in some patients. Needlescopic thoracic sympathetic block by clipping may achieve a similar effect as well as providing a possible reverse operation for patients who suffer from intolerable postoperative compensatory sweating.

Methods: Between January 1998 and June 2000, we collected a total of 28 patients with craniofacial hyperhidrosis. There were 15 men and 13 women with a mean age of 39.2 years (ranges, 19–50). All patients were placed under single-lumen intubated anesthesia in a semisitting position. Two ports were needed. We used a 2-mm 0° thoracoscope and endo clips to perform a sympathetic block by clipping the lower third of the stellate ganglion at the second intercostal space.

Results: The operation was usually accomplished within 20 min (ranges, 15–30). All patients were discharged within 4 h after the operation. There were no surgical complications or surgical mortality cases. All patients achieved improvement of craniofacial hyperhidrosis without recurrent symptoms after a mean of 25.3 months (range, 12–41) of follow-up. Twenty-five patients (85.7%) developed compensatory sweating of the trunk and lower limbs. One of these patients could not tolerate this postoperative sweating; he therefore underwent a reverse operation and obtained improvement of the compensatory sweating 18 days after removal of the endo clips.

Conclusion: Needlescopic thoracic sympathetic block by clipping is a safe and effective method for the treatment of craniofacial hyperhidrosis; compensatory sweating may be improved after a reverse operation and removal of the endo clips.

Key words: Hyperhidrosis — Craniofacial hyperhidrosis — Needlescopic thoracic sympathetic block by clipping — Compensatory sweating — Endoscopic thoracic sympatheticotomy — Endoscopic thoracic sympathectomy

Craniofacial hyperhidrosis (CFH) is a rare clinical condition in which patients suffer from excessive local sweating on the head and face. This condition is often associated with mental stress. In addition, female patients may be troubled by an inability to apply cosmetics [4, 9]. The etiology remains unclear. In treating patients with CFH, we used to achieve successful sympatheticotomy of the lower third of the stellate ganglion, but this procedure has a major drawback in that it appears to be irreversible [9]. It is difficult to recover sympathetic nerve conduction after endoscopic thoracic sympatheticotomy or sympathectomy (ETS). Moreover, patients are often distressed by intolerable compensatory sweating over the trunk or back after ETS [6, 8]. Some patients express regret and even want to restore the original sweating sites. Therefore, we are attempting to devise a new surgical technique that not only yields a similar improvement of craniofacial hyperhidrosis but also maintains the cosmetic benefit. To date, there have been few reports of needlescopic thoracic sympathetic block by clipping (NTSSBC) for CFH. With this procedure, patients may opt for a reverse operation when they sustain such postoperative complications as craniofacial anhidrosis, intolerable compensatory sweating over the trunk and lower limb, Homer’s syndrome, and so on.

Correspondence to: T. S. Lin
Patients and Methods

From January 1998 to June 2000, we collected a total of 28 patients with CFH undergoing NTSBBC. They included 15 men and 13 women with a mean age of 39.2 years (range, 19–50).

For treatment, all patients were placed in a semisitting position with abduction of both arms under single-lumen intubated anesthesia. We then clipped the lower third of the stellate ganglion at the second intercostal space (Fig. 1). Throughout the procedure, the patients were ventilated with 100% inspired oxygen and anesthetized with propofol (Diprivan).

Two ports were used. First, a 2-mm incision was created along the anterior axillary line at the fifth intercostal space for the introduction of a 2-mm 0° thoracoscope (Auto Suture, Tyco, USSC, Norwalk, CT, USA) through an obtuse head trocar. Another 8-mm incision was made at the third intercostal space in the midaxillary line for insertion of a diathermy hook dissector and an endo clip applicator. When the narrow annular window between the ribs was opened, the lungs were displaced downward by gravity. Usually, the operative field from the first to the fifth rib can be visualized easily via temporary disconnection of the patient’s endotracheal tube from the ventilator by the anesthesiologist. During NTSBBC, a pulse oximeter monitor is necessary to prevent hypoxemia. When peripheral arterial oxygen saturation SaO2 oxygenation decreases to 92%, the lung should be reinfused by the anesthesiologist to avoid hypoxemia.

Next, the lower third of the stellate ganglion was blocked by clipping without transecting the sympathetic trunk. We prefer to use an M Disposable Clip Applicator with 20 medium titanium clips (Auto Suture) so that a constant compression force can be maintained even if the nerve trunk atrophies during the compression. A single port below each axilla is enough to allow a reverse operation with removal of the clips to be performed in cases where the patients cannot tolerate postoperative compensatory sweating or other complications. After adequate sympathetic blocking, the lung was reinfused under visual control. It is important to have the anesthesiologist exert continuous positive pressure for a few seconds to prevent pneumothorax and possible incomplete expansion of the lung before the skin is closed. No thoracic drains were needed.

A routine chest radiograph was checked postoperatively to rule out hemopneumothorax or segmental atelectasis of the lung. All operations were performed on an outpatients basis. For follow-up, questionnaires were sent to all patients.

Results

The NTSBBC was generally carried out within 20 min (range, 15–30). Successful bilateral sympathetic blocks were achieved in all patients. All patients were discharged within 4 h after the operation. The mean postoperative follow-up period was 25.3 months (range, 12–41). The postoperative results were satisfactory, and all patients obtained improvement of sweating on the head and face without recurrence. The degree of improvement in craniofacial hyperhidrosis were differentiated into the following four categories: (a) no sweating in 22 patients (78.6%), (b) markedly decreased sweating in six patients (21.4%),(c) mildly decreased sweating: in no patients, (d) no change:in no patients. Twenty-five patients (85.7%) developed compensatory sweating of the trunk and lower limb, six patients (21.4%) on the axillae, 22 patients (78.6%) on the back, 18 patients (64.7%) lower chest and abdomen, 21 patients (75%) on the lower limbs, and one patient (3.6%) on the sole. One patient (3.6%) was more embarrassed by the compensatory sweating than the original form of craniofacial hyperhidrosis, so he underwent a reverse operation 12 days after the first procedure. He obtained improvement of his troublesome compensatory sweating and the original sweating on his face returned ~18 days after removal of the endo clips. Overall, 27 patients (96.4%) achieved satisfactory results following NTSBBC. Neither transient nor permanent Homer’s syndrome occurred in any patient.

Discussion

CFH is one of the common cardial symptoms of social phobia and has a strong negative impact on quality of life. ETS is a well-established treatment of choice for CFH [2, 4, 9]. Drott et al. have advocated that ablation of the second and third thoracic sympathetic ganglia for palmar hyperhidrosis, ablation of the fourth thoracic sympathetic ganglion for axillary hyperhidrosis, and ablation of the lower part of the stellate ganglion for cases with facial involvement [2]. In addition, Yilmaz et al. performed transection of the lower third of the stellate ganglion to treat facial blushing [14]. We have treated patients with CFH successfully by performing a sympathectomy of the lower third of the stellate ganglion at the second rib bed [9]. All of the aforementioned reports imply that ablation of the lower part of the stellate ganglion will improve craniofacial hyperhidrosis [2, 9, 11, 14]. However, compensatory sweating is still a common complication that develops in ~47–98% of patients after ETS [1–5, 7–15]. In our current series, 85.7% of patients developed compensatory hyperhidrosis after NTSBBC. The exact mechanism of this complication is still not clear. It may be a thermoregulatory response. Despite its high incidence, there is no effective way to avoid it [6, 8].