Sympathectomy for Palmar Hyperhidrosis

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Abstract Palmar hyperhidrosis is an important situation that may cause emotional and work-related problems. Although local treatment and psychotherapy have been used for palmar hyperhidrosis, the choice of treatment for palmar hyperhidrosis is video-assisted thoracoscopic sympathectomy. Retrospective analysis of 120 bilateral thoracoscopic sympathectomies (60 patients) was done in this study. Earlier, 12 of 60 patients (20 %) had been operated on by other surgeons who used clipping method for palmar hyperhidrosis in different hospitals within 1 year. The procedure was performed under general anesthesia using single-lumen endotracheal tube. Sympathetic chain resection was performed between lower level of the second rib and upper level of the fourth rib. Intercostal blockage at three levels was performed, while thoracoscopic control of the injection sites was done. We observed improvement of symptoms in 95 %, mild compensatory sweating in 20 %, and excessive dryness of hands in 10 % in our patients.

Keyword Thoracal sympathectomy · Video-assisted thoracoscopic sympathectomy (VATS) · Hyperhidrosis · Sympathetic chain

Introduction

Palmar hyperhidrosis is an important condition that may cause emotional, educational, and work-related problems [1, 2]. While the condition affects between 0.6 and 1.1 % of the western population, 3 % of population can be affected in eastern countries [3, 4]. Family history is observed in 12.5 to 56.5 % of the patients [5]. Although local treatment and

psychotherapy have been used for palmar hyperhidrosis, the choice of treatment for palmar hyperhidrosis is video-assisted thoracoscopic sympathectomy (VATS) [2, 6, 7]. Sympathectomy refers to procedures in which the sympathetic chain is resected, ablated, or divided [8]. In our study, we want to discuss the method and results of VATS for palmar hyperhidrosis.

Patients and Methods

Retrospective analysis of 120 bilateral thoracoscopic sympathectomies that were performed between March 2010 and June 2012 was done in this study. Sixty palmar hydrosis patients were included. There were 42 (70 %) male and 18 (30 %) female patients. The mean age of the patients was 19 years (range 14–30). Earlier, 12 of 60 patients (20 %) had been operated on by other surgeons who used clipping method for palmar hyperhidrosis in different hospitals within 1 year. Surgeries were performed by the same surgeon. VATS procedure and possible complications were explained to all of the patients, and informed consent was taken. The procedure was performed under general anesthesia using a single-lumen endotracheal tube. The patient was placed in semi-seated position at 45–60° with both arms abducted to 90°. Anterior axillary line of the fourth intercostal space and midaxillary line of the third intercostal space were used for port entrance. Thoracoscope with 0° was inserted through fourth intercostal space. Low-volume high-frequency ventilation was made by anesthesiologist for performing surgical procedure. Sympathetic chain was observed and identified between T2 and T4 levels. Hook cautery was used for separation of chain from underlying structures. Sympathetic chain resection was performed between lower level of the second rib and upper level of the fourth rib. Intercostal blockage at three levels was performed, while

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thoroscopic control of the injection sites was done. Bupivacaine hydrochloride (0.5 %, 5 mg/mL) was used for intercostal blockage. Dilution of 10 mL bupivacaine hydrochloride with 10 mL 0.9 % sodium chloride solution was performed, and injection of 5 mL of this solution was done for each level. Until the end of other side, 16-Fr small catheter was held in place in the first operated side. At the end of the operation, both chest tubes were taken, while both lungs were reexpanded by the anesthesiologist. Local anesthetic injection (bupivacaine hydrochloride 0.5 %, 5 mg/mL) was administered at thoracic sites to reduce postoperative pain. Nonsteroidal anti-inflammatory drugs (NSAIDs) were given to patients at the time of discharge from the hospital.

Results

Totally, 120 bilateral VATSs were performed in 60 patients. Open surgery was not necessary, and there was no operative mortality. The hands of all operated patients were warm and dry after operation. Posteroanterior chest X-ray was taken after operation for pneumothorax and/or hemothorax. Pneumothorax was observed in nine (15 %) patients; chest tube drainage was not needed for them. To decrease the postoperative pain, tramadol HCl 50 mg was given to patients for 2 days with intervals of 8 h by intravenous route. All of the patients were discharged from hospital at second day of the operation.

No recurrence of palmar hyperhidrosis was reported at the 6-month follow-up period. Compensatory sweating that did not affect social or professional life and activities was seen in 12 (20 %) patients, which was determined between 2 and 4 months after the operation. The most frequent locations were the back and abdomen. Excessive dryness of hands was observed at six (10 %) patients. Pain at the time of discharge affected 20 % of the patients and was related to the surgical wounds. At tenth day of postoperative period, 10 % of the patients complained about pain that got better with NSAIDs. Minimal thenar hidrosis at one side in three patients (5 %) was determined approximately 5 months after the operation that did not require reoperation. We observed improvement of symptoms in 95 %, mild compensatory sweating in 20 %, and excessive dryness of hands in 10 % of our patients.

Discussion

Palmar hyperhidrosis is a relatively frequent situation, which causes social embarrassment, psychological problems, and interruption in daily activities [5, 9–11]. Although nonoperative treatment modalities such as topical

agents, iontophoresis, antidepressants, and botox may provide some benefits, they have short effect duration and some side effects [8]. Bilateral VATS is an effective and safe choice of treatment for palmar hyperhidrosis with low morbidity–mortality rates, good cosmetic results, less postoperative pain, and short hospitalization [5, 11–13]. Success rate of VATS changes from 88 to 100 % [1, 2, 9, 11, 14]. We observed improvement of symptoms in 95 % in our study.

Double-lumen intubation is generally preferred for ventilation [2, 5, 8, 9, 11–13]. Simple monolumen endotracheal intubation was used in our study. When double lumen tube is used, bronchoscopic control should be done for positioning of the tube. Double-lumen or single-lung ventilation takes more time than monolumen intubation. Although double lumen provides more intrathoracic surgical area for thoracic surgeon by one-lung ventilation, same results are observed with low-volume high-frequency ventilation with monolumen.

Carbon dioxide insufflation was not used in our operations like in most of the studies that were done before [2, 5, 8–10, 12–14]. Semi-seated position of the patient and low-volume high-frequency ventilation provide enough visualization of sympathetic chain.

Clipping of nerve fibers with limited dissection is a reversible method for palmar hyperhidrosis. Its statistical results are similar to sympathectomy [9]. Reversibility of the technique by removing clips because of compensatory sweating gives superiority to sympathectomy. In our study, we operated 12 patients who were operated for palmar hyperhidrosis using a clipping method in other hospitals. In six of 12 patients, we found additional thin sympathetic chain under the clipped chain, which could not be seen without complete dissection and lifting of sympathetic chain between second and fourth ribs. Sympathetic chain variations are very important for the success rate of operation [15, 16]. Surgical failure and recurrence of hyperhidrosis after operation probably may be resulted from the anatomical variations as seen in our study. Therefore, thoracic surgeon must be knowledgeable about the anatomy of the sympathetic trunk to reach better surgical results. Also, more studies should be done to compare the effectiveness of sympathectomy and clipping of sympathetic chain.

Pain at postoperative period and at the time of discharge is a significant problem for patients. In previous studies, postoperative pain was reported between 0.8 and 93 % for thoroscopic surgeries [2, 10, 11, 13, 17–19]. Pain at the time of discharge affected 20 % of the patients, which decreased to 10 % at the tenth day of postoperation in our study. We think that intercostal blockage with the control of injection sites by a thoracoscope and local anesthetic injection to thoracic sides could decrease complain of pain.

Compensatory sweating is an important complication of thoracic sympathectomy with different incidences ranging

from 37 to 84 % [2, 11, 13]. We observed that 20 % of patients had compensatory sweating that did not reach the point of social embarrassment or occupational disability. Our follow-up period was about 6 months. In the literature, compensatory sweating has been observed mostly between 6 and 12 months. Our lower incidence rates may be due to shorter follow-up period. Also, regional temperature differences are an important and effective factor for sweating. Lower compensatory sweating rates could be resulted from regional high temperature that causes general sweating most of the time.

Conclusion

Thoracoscopic sympathectomy is a useful and safe procedure with success rates that improves the quality of life. Patients must be informed about the procedure and possible complications.

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