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Bilateral endoscopic thoracic sympathectomy via single incision for the treatment of palmar and axillar hyperhidrosis

Palmar ve aksillar hiperhidrosis tedavisinde tek kesi ile bilateral endoskopik torakal sempatektomi

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Abstract

Aim: Video-assisted thoracoscopic sympathectomy (VATS) is a safe, minimally invasive and effective procedure for primer hyperhidrosis. In this research, we aimed to present the advantages of uniportal endoscopic thoracic sympathectomy (ETS) surgery on patients who had palmar and axillary hyperhidrosis and did not respond to medical treatment.

Methods: Between February 2012 and November 2018, 46 ETS surgeries were performed on 23 patients (12 female patients and 11 male patients; the average age was 21 [16-27]) and the outcomes were evaluated in this retrospective cohort study. Uniport (Richard Wolf) sympathicotripsy and Kuntz nerve ablation were performed. We presented all the data about surgical techniques, perioperative-postoperative complications and patient satisfaction with their long-term results.

Results: During the long term follow-ups of our patients, compensatory hyperhidrosis was the most frequently observed finding. Hyperhidrosis occurred in multiple areas of the body in 11 of the patients (47%). 22 patients were completely satisfied with ETS surgery, and one of our patient with compensatory back sweats reported partial satisfaction. Recurrent hyperhidrosis was observed on the left side of one of our patients at 33 months post-operative examination. Minimal pneumothorax was observed in one of the patients, and it was regressed with medical treatment. The average operation duration was recorded as 21 minutes (15-31) per each hemithorax.

Conclusion: In conclusion, endoscopic thoracic sympathectomy is a treatment option with low mortality and morbidity. This approach should be considered for patients with palmar and axillar hyperhidrosis that medical treatment was not effective.

Keywords: Hyperhidrosis, Quality of life, Uniportal thoracoscopic surgery, Sympathectomy

Öz

Amaç: Video yardımlı torakoskopik cerrahi primer hiperhidroz tedavisinde güvenli, minimal invaziv ve etkili bir işlemdir. Biz bu çalışmamızda, medikal tedaviden fayda görmeyen palmar ve aksiller hiperhidroz hastalarında endoskopik torasik sempatektomi (ETS) operasyonlarının avantajlarını sunmayı amaçladık.

Yöntemler: 2012 Şubat-2018 Kasım arasında yirmi üç hastaya (12 kadın,11 erkek yaş ortalaması 21 [16-27] kırk altı ETS operasyonu uygulandı ve sonuçlar bu retrospektif kohort çalışmada değerlendirildi. Uniport (Richard Wolf) T2-T4 sempatik ganglionu ve Kuntz sinir ablasyonu yapıldı. Cerrahi teknik ve operasyon süresi ile ilgili tüm veriler, perioperatif ve postoperatif komplikasyonlar, hasta memnuniyeti ve uzun dönem sonuçları sunuldu.

Bulgular: Hastalarımızın uzun dönem takiplerinde en sık olarak vücudun çeşitli bölgelerinde kompansatuar terleme gördük ve 11 (%47) oranındaydı. Yirmi iki hasta ETS operasyonundan tamamıyla memnundu. Kompansatuar sırt terlemesi olan bir hasta kısmen memnunluk bildirdi. Otuz üç ay sonra hastalarımızdan birinin sol tarafında tekrarlayan hiperhidrozis gözlendi. Bir hastamızda minimal pnömotoraks izlendi ve medikal tedaviyle geriledi. Ortalama operasyon süresi her bir hemitoraks için 21 dk (15-31) olarak kaydedildi.

Sonuç: Medikal tedaviden fayda görmeyen hiperhidrozisli hasta grubunda, endoskopik torasik sempatektomi düşük mortalite ve morbidite ile yüksek hasta memnuniyeti sebebiyle tercih edilmesi gereken bir tedavi seçeneği olduğu sonucuna vardık.

Anahtar kelimeler: Hiperhidroz, Yaşam kalitesi, Uniportal torakoskopi, Sempatektomi

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Introduction

Hyperhidrosis is a disease with excessive sweating on skin because of overactive sympathetic ganglion innervations [1]. While primary hyperhidrosis can be seen on face, palm, axillary area and feet, secondary hyperhidrosis can be seen on any part of the body. Obesity, infections, endocrine disorders and malignancies can be considered as the etiological factors [2]. In addition to being observed between 0.3% and 4.5% of the general population, equally on both genders, conservative treatment is generally inadequate [3].

In primary hyperhidrosis treatment, endoscopic thoracic sympathectomy (ETS) is being used increasingly lately as an effective minimal invasive way [3,4]. The complication that is seen commonly besides ETS's positive sides is compensatory hyperhidrosis which is seen on various parts of the body [5].

In this study, we aimed to present surgery techniques, their durations, complications and long term results, on patients with palmar and axillary hyperhidrosis who had ETS surgery.

Materials and methods

Between February 2012 and November 2018, 46 ETS surgeries were performed on 23 patients (12 female patients and 11 male patients, the average age was 21 [16-27]), and the results were evaluated retrospectively. All these surgeries took place in İzmit Seka State Hospital and Canakkale Onsekiz Mart University Hospital.

The patients consisted of those who were examined in endocrinology and dermatology policlinics before the operation and did not respond to medical treatment. Routine biochemical blood tests (potassium, sodium, chloride, bicarbonate, blood urea nitrogen-BUN, magnesium, glucose, and creatinine), PA/L (posteroanterior/lateral) Chest x-rays and electrocardiography ECG of the patients were evaluated before the operation. Patients were intubated with double-lumen tube (Carlens numbered 32-36) and were placed at a-30-degree in a supine position under general anesthesia. One-lung ventilation was established. Camera and thoracic instruments were inserted from approximately 2 cm long incision, which was in the intersection of the right anterior axillary line with the third intercostal space. An operating thoracoscope with zero-degree lens (Richard Wolf) is routinely used in all patients. Sympathetic ganglion was electro-cauterized from T3-T4 and T2-T3 levels. An aspiration catheter was sent to the thoracic cavity from the 2 cm incision after bleeding control and 'U' suture was applied. The free end of the catheter was taken to a closed underwater drainage system in a sterile container. After drawing the air in the thoracic cavity by applying positive ventilation pressure, skin incision was closed by end of catheter. The same process was applied to the other side. All the patients were evaluated with PA chest radiography in the early postoperative period. The average operation duration was recorded from the first incision to the last suture as minutes.

Statistical analysis

Clinical findings, sociodemographic qualities and complications of the patients operated in our clinic were presented in numbers and percentages as descriptive data.

Results

Surgical mortality was not observed in any of our patients. Pain control was provided to our patients with paracetamol and tramadol hydrochloride until the post-operative discharge time. Right after the surgery, we observed that the hyperhidrosis of the hands and the axillary areas of our patients were improved. 5 patients said that s/he experienced pain during respiration, and 3 patients described local pain on trocar area. In one patient after observing hemorrhage while removing partial cohesive ness on a diseased lung's apical area by dissection, incision was enlarged to 4 centimeters for taking the control of the bleeding endoscopically and right tube thoracostomy was applied. After cohesiveness on the left side passed, sympathetic chain was cauterized endoscopically. In one patient, postoperative minimal pneumothorax was observed, and after oxygen treatment (4lt/min of O2 with nasal cannula) pneumothorax resolved and the patient was discharged. Recurrent hyperhidrosis was observed on the left side of one of our patients after 33 months (Table 1). In our follow-ups, even though increased sweating on various body parts of 11 patients at different levels was observed. One patient said the level of his excessive back sweating was so high that he had to change his clothes a couple of times during the day. Compensatory sweating was mostly observed on the back area (Table 2). The average duration of operation was 21 minutes (15-31) for each hemithorax.

Table 1: Minor complications

Complication	No (%) of patients
Pneumothorax (minimal)	1 (4)
Bleeding	1 (4)
Respiratory pain	5 (21)
Local pain (trocar site)	3 (13)
Recurrence (single-sided)	1 (4)
Bradycardia	1 (4)
Horner syndrome	-

Table 2: Compensatory hyperhidrosis

Location	No (%) of patients
Back	6 (26)
Face	3 (13)
Abdomen	1 (4)
Neck	1 (4)

Discussion

Primary hyperhidrosis (idiopathic/essential) is the most common type of hyperhidrosis and occurs in three different patterns: palmoplantar (most frequently), axillary and cranio-facial. In primary hyperhidrosis (PH) etiology, any kind of an underlying disease is ruled out, and it is triggered by emotional changes and stress rather than fever. Family history is present between 60-80% of these patients [6], and secondary hyperhidrosis is associated with underlying diseases like infections, genetic syndromes, malignancies, drugs, neurologic, metabolic and endocrine disorders. Secondary hyperhidrosis can also be localized or generalized [7]. The endocrinology and dermatology consultations of the patients were held before the operation, and our patient groups consisted of those who did not respond to the treatment and did not have any underlying disease history.

In order to diagnose primary idiopathic focal hyperhidrosis, the criteria developed by Homberger et al. [8] were used. Excessive sweating observed in certain parts of the body without a clear reason for at least six months and

experienced during sleep, hyperhidrosis more than once in a week, starting before the age of 25, affecting individuals' daily activities in a negative way and having a family history can be considered as a diagnostic finding especially if a patient has at least two of these symptoms. Due to excessive sweating on hands and armpits, social lives of patients with primary hyperhidrosis are affected. These patients look for many different solutions to get rid of these complaints. Medical treatment methods can be benefited for patients with hyperhidrosis. While surgical treatment can be benefited for patients for whom medical treatment is not effective. ETS has become the gold standard in surgical treatment [9,10]. Especially in the recent period, the use of double-lumen endotracheal intubation tubes has increased the practicability of ETS. We prefer double-lumen intubation tubes in our operations. Because of the fact that some parts of the research were conducted in a small state hospital and that anesthesiologists had less experience about double-lumen intubation compared to those in a much bigger center, the duration of anesthesia was partially longer. Thoracoscopic surgery was firstly performed by Kux in 1951 [11], but it was not used much until the 1980s [12].

Today, for palmar hyperhidrosis and vasospastic vascular diseases (Buerger, Raynoud syndrome etc.), video-assisted thoracoscopic sympathectomy (VATS) sympathectomy has been found to be absolutely superior to conventional thoracotomy due to the low duration and safety of the process, patient comfort and its shorter length of in-hospital stay after surgery [13]. Considering factors such as cosmetic concerns and postoperative pain, which affects patient comfort negatively, a decrease in surgical incision has also been aimed. In a prospective comparison study about using two ports or a single port in VATS for palmar hyperhidrosis, both procedures were found to be safe and minimally invasive. While single port method found out to be less painful, so it was should be preferred [14]. We also used a single port in all of our operations and received positive feedbacks from patients on lesser postoperative pain. Although there is not a common idea regarding which sympathetic ganglion should be cauterized in order to ensure ablation in primary hyperhidrosis, T2-T4 sympathectomy is performed for excessive sweating of the palms; many studies in the literature have reported that performing only T2-T3 sympathectomy increases compensatory hyperhidrosis [15]. In our research, ablation was performed through the cauterization of the T2-T3 and T3-T4 levels.

The most common side effect of primary hyperhidrosis surgery is compensatory hyperhidrosis which is reported to occur between 3% and 98% in the literature [16,17]. In our research, compensatory hyperhidrosis was the most frequent complication (47%) and showed similarities with other studies. Although nearly all of our patients experienced compensatory sweating at a level that would not embarrass them or would not urge them to change clothes one patient experienced serious compensatory sweating on the back area which led him to change clothes more than once.

Another serious complication in ETS is Horner syndrome which mostly affects one side of the face (unilateral) and is seen as ptosis, miosis, anhidrosis and enophthalmos. Temporary or permanent Horner syndrome reported after sympathectomy surgery was less than 5% [18]. Horner syndrome was not seen in any of our cases.

Bilateral sympathectomy can also cause cardiac sympathetic blockage and subsequently result in serious bradycardia [19]. That is why ECG findings of patients should be evaluated thoroughly before the operation. In one of our patients, temporary perioperative bradycardia occurred during the operation, and after a while it got better spontaneously. In a study conducted by Gossot et al. [13], it was reported that acute bleeding occurred due to intercostal vein injury in 5,3% of the cases and that these cases were taken under control through thoracoscopic methods.

In one of our cases, while the cohesiveness on apical lung was being removed, intercostal vein injury occurred and bleeding was taken under control endoscopically by enlarging the incision for a bit more. The cohesiveness on the left side of the same patient was removed through standard thoracoscopic method, and the sympathectomy was completed without complications. It should be kept in mind that our patient having a tuberculosis history in her family. It can be seen quite often due to chronic diseases and inappropriate antibiotic treatments in Turkey, that patients should be analyzed beforehand by taking this fact in to account.

Pleural effusion (1%), pneumothorax (1%), chylothorax and persistent intercostal neuralgia (<1%) were among the complications which were seen less [2,20]. In post-operative chest radiography of one of our patients, minimal pneumothorax was seen that did not require immediate intervention. Following the resorption of the pneumothorax by means of oxygen treatment, patient was discharged on the first day after the operation. Another potential side effect of hyperhidrosis surgery is recurrent hyperhidrosis. The incidence rate is between 0% and 65% and shows changes in different studies to a larger extent. The reason might be related to different techniques used, sympathetic chains levels and results of follow-ups [21]. In our follow-ups, recurrent hyperhidrosis on the left side of one of our patients was observed after 33 months.

Number of cases is limited in our study. Multiport VATS could not be compared with uniportal VATS. Recurrence rates between two groups, duration of hospital stay and patient satisfaction rates are not evaluated. Thereby, the advantages of uniportal VATS are not presented.

Conclusion

Endoscopic thoracic sympathectomy is a method that can be applied easily and effectively to patient groups that do not respond to medical treatment and do not have any underlying disease history. In our experience, uniportal bilateral sympathectomy could be easily done to treat palmar and axillary hyperhidrosis. We think that this operation is a reliable method with high level of patient satisfaction that does not have many potential complications.

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