Recently, the VapoMeter has been increasingly used for evaluating the results of treating primary hyperhidrosis. It consists of a closed measurement chamber capable of quantifying the loss of water vapor through the skin. This equipment is sensitive and capable of detecting differences in palmar evaporation rates in patients with hyperhidrosis [10].

The objective evaluation of the patients with hyperhidrosis revealed evaporation rates four times greater than those of the CONs before the treatment. Operative success with complete bilateral remission of the palmar sweating (anhydrosis) was achieved for all patients in both groups over the year of evaluation.

CH is the side effect most frequently reported in this type of surgery (87.5% of our patients after one year of follow-up) and is probably caused by destruction of the reflex arc between the sympathetic trunk and the hypothalamus [11]. Among our patients, CH occurred most frequently in the back region (19 out of 40 patients) and chest region (21 out of 40).

The high incidence of CH is probably related to the fact that Brazil is a tropical country in which temperatures are high during most seasons. Consequently, there is a physiological response that causes a greater amount of sweating.

There seems to be a correlation between the severity of CH and the extent of the resection and between its severity and the ganglion level treated during the sympathectomy [12]. In our service, we perform resection on only one thoracic ganglion [13]. As in previous studies [14], the incidence of CH in the present study was greater in group G3 (100%) than in group G4 (75%) after one year of follow-up ($P=0.047$).

The QoL protocols have now become important tools for measuring the psychosocial aspects of the results of treatment [15]. In our study, the questionnaire described by Amir et al. [6]. Before the operation, all patients in both groups presented with a very poor QoL (93.1 for G3 and 93.4 for G4). One week after the surgery, the QoL was much better, both in group G3 (24.05) and in group G4 (24.85). This change remained stable until the end of the study (26.94 for G3 and 28.4 for G4).

Despite the high incidence of CH in both groups, which was worse in group G3 after one year of follow-up (100% in G3 vs. 75% in G4; $P=0.047$), we did not observe any difference in QoL after the operation between groups G3 and G4. Therefore, among our patients, the factor that was really associated with postoperative clinical satisfaction was the resolution of the PH.

5. Conclusions

Bilateral thoracic sympathectomy is an effective method for treating PH, both at the G3 and G4 levels. It generates an objective reduction in the palmar evaporation rate (TEWL) soon after the procedure, and this reduction is maintained throughout the follow-up.

CH appears more frequently in patients undergoing sympathectomy at the G3 level than at the G4 level.

VATS gives rise to a large improvement in the QoL, both in patients undergoing G3 resection and in those undergoing G4 resection.

References

[1] Baumgartner FJ, Bertin S, Konecny J. Superiority of thoracoscopic sympathectomy over medical management for the palmoplantar subset of severe hyperhidrosis. Ann Vasc Surg 2009;23:1–7.
[2] Cetindag IB, Boley TM, Webb KN, Hazelrigg SR. Long-term results and quality-of-life measures in the management of hyperhidrosis. Thorac Surg Clin 2008;18:217–222.
[3] Dumont P. Side effects and complications of surgery for hyperhidrosis. Thorac Surg Clin 2008;18:193–207.
[4] Tetteh HA, Groth SS, Kast T, Whitson BA, Radosevich DM, Klopp AC, D'Cunha J, Maddaus MA, Andrade RS. Primary palmoplantar hyperhidrosis and thoracoscopic sympathectomy: a new objective assessment method. Ann Thorac Surg 2009;87:267–275.
[5] Krogstad AL, Skymne A, Pegenius G, Elam M, Wallin BG. No compensatory sweating after botulinum toxin treatment of palmar hyperhidrosis. Br J Dermatol 2005;152:329–333.
[6] Amir M, Arish A, Weinstein Y, Pfeffer M, Levy Y. Impairment in quality of life among patients seeking surgery for hyperhidrosis (excessive sweating) (preliminary results). Isr Psychiatry Relat Sci 2000;37:25–31.
[7] De Campos JR, Kauffman P, Werebe EC, Andrade Filho LO, Kusniek S, Wolosker N, Jatene JB. Quality of life, before and after thoracic sympathectomy (report on 378 operated patients). Ann Thorac Surg 2003;76:886–891.
[8] Wolosker N, Munia MA, Kauffman P, de Campos JR, Yazbek G, Puech-Leão P. Is gender a predictive factor for satisfaction among patients undergoing sympathectomy to treat palmar hyperhidrosis? Clinics (Sao Paulo) 2010;65:583–586.
[9] De Campos JR, Wolosker N, Takeda FR, Kauffman P, Kuzniec S, Jatene FB, de Oliveira SA. The body mass index and level of resection: predictive factors for compensatory sweating after sympathectomy. Clin Auton Res 2005;15:116–120.
[10] Krogstad AL, Skymne BS, Göran Pegenius BS, Elam M, Wallin BG. Evaluation of objective methods to diagnose palmar hyperhidrosis and monitor effects of botulinum toxin treatment. Clin Neurophysiol 2004;115:1909–1916.
[11] Lin TS, Kuo SJ, Chou MC. Uniportal endoscopic thoracic sympathectomy for treatment of palmar and axillary hyperhidrosis: analysis of 2000 cases. Neurosurgery 2002;51:S84–S87.
[12] Licht PB, Pilegaard HK. Severity of compensatory sweating after thoracoscopic sympathectomy. Ann Thorac Surg 2004;78:427–431.
[13] Yazbek G, Wolosker N, Kauffman P, Campos JR, Puech-Leão P, Jatene FB. Twenty months of evolution following sympathectomy on patients with palmar hyperhidrosis: sympathectomy at the T3 level is better than at the T2 level. Clinics (Sao Paulo) 2009;64:743–749.
[14] Wolosker N, Yazbek G, Ishy A, de Campos JR, Kauffman P, Puech-Leão P. Is sympathectomy at T4 level better than at T3 level for treating palmar hyperhidrosis? J Laparoendosc Adv Surg Tech A 2008;18:102–106.
[15] Boley TM, Belangee KN, Markwell S, Hazelrigg SR. The effect of thoracoscopic sympathectomy on quality of life and symptom management of hyperhidrosis. J Am Coll Surg 2007;204:435–438.

eComment: Primary palmar hyperhidrosis: double-stage three levels clipping

Authors: ***Maria Letizia Vita***, *Department of Thoracic Surgery, Catholic University, Rome, Italy;* ***Stefano Cafarotti***, ***Giovanni Leuzzi***, ***Pierluigi Granone***

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We have read with great interest the article by Ishy et al. concerning the video-assisted treatment of hyperhidrosis [1].

Primary palmar hyperhidrosis (PH) is a condition characterized by oversecretion of the eccrine sweat glands, resulting in heavy sweating in the palms. PH has a strong negative impact on social and professional life. The therapeutic options for the management of hyperhidrosis have traditionally been non-surgical. These include topical antiperspirants, anti-cholinergic drugs, iontophoresis and, more recently, botulinum toxin injections. These methods seldom give sufficient relief, their effects are transient, compliance rates are low and they are not without associated side-effects. Since the open surgical procedures are unattractive [2], there is interest in improving

surgical management using modern minimally-invasive techniques [3]. Thoracoscopic sympathectomy is, actually, a safe and effective method of managing these patients but controversy remains regarding surgical procedures as follows:

1. Sympathectomy level: sectioning at the level of the second (T2), third (T3) and fourth (T4) posterior costal arches.
2. Techniques for VATS: chain resection, transection, cauterization or clipping.
3. The occurrence of postoperative compensatory hyperhidrosis (CH) which remains an untoward and common problem.

Irrespective of the level of sympathectomy, clipping allows a potential advantage in terms of reversibility in case of compensatory oversecretion, although this was not observed in our series of 25 patients. In our institution, unlike the resection procedures reported by Ishy et al. [1], in all cases we performed a three-level clipping sympathectomy, as the axillary and palmar hyperhidrosis were always associated. Moreover, we prefer double-stage surgery, due to potentially lethal complications reported in the literature with the single-stage technique [4]. In conclusion, based on our complications rate and CH of 0% at 24 months, we support the hypothesis that the best treatment for PH is double-stage three level clipping.

References

[1] Ishy A, de Campos JRM, Wolosker N, Kauffman P, Tedde ML, Chiavoni CR, Jatene FB. Objective evaluation of patients with palmar hyperhidrosis submitted to two levels of sympathectomy: T3 and T4. Interact CardioVasc Thorac Surg 2011;12:545–549.
[2] Kux M. Thoracic endoscopic sympathectomy in palmar and axillary hyperhidrosis. Arch Surg 1978;113:264–266.
[3] Georghiou GP, Berman M, Bobovnikov V, Vidne BA, Saute M. Minimally invasive thoracoscopic sympathectomy for palmar hyperhidrosis via a transaxillary single-port approach. Interact CardioVasc Thorac Surg 2004;3:437–441.
[4] O'Connor K, Molin F, Poirier P, Vaillancourt R. Cardiac arrest as a major complication of bilateral cervico-dorsal sympathectomy. Interact CardioVasc Thorac Surg 2009;8:238–239.