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Editorial

Impact of Videothoracoscopic Sympathectomy in Thoracic Surgery. Future Considerations

Impacto de la simpatectomía dorsal videotoracoscópica en la cirugía torácica. Implicaciones futuras

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Surgery of the sympathetic nervous system has gained importance in recent times basically due to the good results of videothoracoscopic surgery for primary hyperhidrosis. It has gone from being an operation performed sporadically to one of the most requested in our area of expertise. With minimally invasive surgery, the morbidity has been reduced considerably and it has generated a call effect, which has filled the theatres of thoracic surgery in our hospitals. This increased demand is due to the operation being very effective and efficient and has proven to be the best therapeutic option in patients with palmar and bilateral axillary hyperhidrosis.[1] This demand, although to a lesser extent, also stems from patients affected by other disorders such as Raynaud's disease, flushing,[2] abdominal pain due to cancer of the pancreas or chronic pancreatitis, reflex sympathetic dystrophy, arrhythmias or anginal syndromes.[3]

It has not only generated great expectation in the general public, but has also aroused a high interest in the scientific community, in such a way that, for example, on performing a bibliographic search on PubMed about this topic, results returned 428 studies in the last 9 years as opposed to the 269 studies found in the last decade of the twentieth century. A scientific society has been created for surgery of the sympathetic nervous system, the International Society of Sympathetic Surgery (ISSS); and in the most recent thoracic surgery and related specialities congresses it fills up a considerable percentage of the programme.

Therefore, we are faced with an emerging disease that has generated great interest on the part of thoracic surgeons and has greatly increased its presence in the operating theatre. There is a continuous attempt at standardising the technique and nomenclature of the operation and the creation of clinical practices as to where the sympathetic chain should be interrupted to achieve the best result with the least number of side effects.[4] There is even discussion as to whether the nerve should be excised, dissected, ramicotomy performed or clamped.[5] In the last international ISSS symposium on hyperhidrosis, it was recommended that all the groups performing this type of surgery follow a unified protocol with regards to the operation performed, the follow-up, recording of complication and side effects. New terminology was proposed, so that it is referred to as G (1, 2, 3, 4 or 5) if the corresponding sympathetic ganglion was excised or dissected and R (1, 2, 3, 4 or 5) if the nervous interruption is performed on the corresponding costal arch ("R" from "rib"). Equally, although there is no consensus, it was indicated that the sympathectomy or sympathicotonia should be performed in R2 or G1 for facial rubefaction, in R3 or G2 for palmar hyperhidrosis and in R4-R5 or G3-G4 for axillary hyperhidrosis. This recommendation is based on group of very wide series, although there are no scientific studies that have found significant statistical differences neither with the results nor with the incidence of the side effects.[6]

On the other hand, this surgery, especially for hyperhidrosis and facial reddening, is the one that on a percentage basis generates more demands and complaints from the patients, even with medico-legal connotations.[7] Despite that the majority of the patients show a very high degree of satisfaction, the presence of a patient operated for hyperhidrosis with important compensatory sweating that repeatedly manifest their dissatisfaction to the surgeon is a very annoying situation with an intractable solution. There are even forums on the Internet that constantly manifest their discomfort with this type of surgery in a violent and insulting tone, for example, the World Against Sympathectomy Website.

It is therefore, of great importance and should be the norm to perfectly inform sympathectomy candidates of all the possible side effects of surgery, especially compensatory sweating, which is the basic cause of insatisfaction.[8] On this point, supposedly reversible techniques are being developed, such as the use of clipping instead of dissecting the nerve. This technique has gained many followers all over the world despite that there are still few studies that consistently endorse the reversibility of the operation once the clip is removed from the sympathetic ganglion.[9] Published experiences regarding removing of the clip is varied. Most authors have obtained improvement results ranging from 52 to 100%; however, other authors do not achieve an improvement at all with the removal.

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Something similar occurs with the reconstruction of the thoracic sympathetic chain; there are few studies and with varied results, although Telaranta, Resifeld or Lin, through the use of the sural nerve or grafting with the intercostal nerve have reported good results.

In summary, we are faced with a new disorder that is being attended massively in our hospitals and needs a moment of contemplation. What are we doing? Are we doing it properly? What are the future implications in these patients of dorsal sympathetic denervation? For the first 2 questions, we could find the answer in the new clinical guidelines and scientific society norms and with the publication of linger series, randomised systematic studies, reviews and meta-analyses. However, it is perhaps the latter of these that implies greater consideration. To date, sufficient importance has not been placed on the long term effects that could cause dorsal sympathectomy, and the effects on lung function, heart function, skin colouring and psychological state are being studies, among others;[10] the most important being the first 2.

The consequences of sympathetic denervation after a dorsal sympathectomy on lung function have been studied on several occasions[11] and reductions in forced vital capacity, forced expiratory flow in the first second and maximum mesoexpiratory flow have been found, but with no clinical significance. It therefore seems that, despite sympathetic innervation being scarce, it directly influences motor tone, especially of the fine respiratory tracts, which cause a light obstructive pattern after the operation and favours bronchial hyperreactivity.[12] It is of great interest to know the results of the research being carried out to recognise the long term effects.

Something similar occurs with heart function, the sympathectomy in the short term causes bradycardia due to a lack of sympathetic stimulation to the heart. Several cases of myocardial infarction[13] and chronotropic heart failure requiring the insertion of a pacemaker[14] have been reported. In the long term, dorsal sympathetic interruption causes an effect similar to beta blockers on the heart, and produced a decrease in average heart rate, but with no significant changes in the electrocardiogram (normal Q-T).[15] It may be good to know through long term prospective studies which effects it truly has on heart function and what it could mean for the daily lives of the operated patients. For the time being, those individuals who practice aerobic sports (for example, long distance runners and cyclists) should be informed that with sympathectomy their heart rate may be reduced in situations of maximum effort and lower their performance.[16]

As a final consideration, it is vital that the physicians treating patients affected by hyperhidrosis unify their criteria and definition of the degree of severity of the disorder,[17] the surgical technique description, complications and side effects, in such a way that results can be compared, clinical studies performed and multicentre prospective studies carried out, as well as advancing in the knowledge base for better patient selection, the ideal surgical technique and a minimisation of complications and side effects. It is also imperative to research the long term effects that dorsal sympathetic denervation has to comprehensively inform patients so they can take on the secondary consequences of the operation.

References

1. Callejas MA, Grupo Cooperativo de Cirugía Endoscópica del Simpático Torácico de la SEPAR. Estudio multicéntrico en pacientes afectos de hiperhidrosis primaria: experiencia de un grupo cooperativo español. Rev Patol Respir. 2008;11:7-12.
2. Callejas MA, Rubio M, Iglesias M, Belda J, Canalís E, Catalan M, et al. Simpatectomía torácica por videotoracoscopia para el tratamiento del rubor facial: bisturí ultrasónico frente a diatermia. Arch Bronconeumol. 2004;40:17-9.
3. Atallah J, Fynn-Thompson F, Cecchin F, DiBardino DJ, Walsh EP, Berul CI. Video-assisted thoracoscopic cardiac denervation: A potential novel therapeutic option for children with intractable ventricular arrhythmias. Ann Thorac Surg. 2008;86:1620-5.
4. Tetteh HA, Groth SS, Kast T, Whitson BA, Radosevich DM, Klopp AC, et al. Primary palmoplantar hyperhidrosis and thoracoscopic sympathectomy: a new objective assessment method. Ann Thorac Surg. 2009;87:267-74.
5. Rodríguez PM, Freixinet JL, Hussein M, Valencia JM, Gil RM, Herrero J, et al. Side effects, complications and outcome of thoracoscopic sympathectomy for palmar and axillary hyperhidrosis in 406 patients. Eur J Cardiothoracic Surg. 2008;34:514-9.
6. Moya J, Ramos R, Morera R, Villalonga R, Perna V, Macia I, et al. Resultados de la simpaticólisis y la simpatectomía torácica superior bilateral endoscópica en el tratamiento de la hiperhidrosis primaria. Estudio de 1.016 procedimientos. Arch Bronconeumol. 2006;42:230-4.
7. Kopelman D, Hashmonai M. The correlation between the method of sympathetic ablation for palmar hyperhidrosis and the ocurrence of compensatory hyperhidrosis: a review. World J Surg. 2008;32:2343-56.
8. Loscertales J, Arroyo Tristán A, Congregado Loscertales M, Jiménez Merchan R, Girón Arjona J, Arenas Linares C, et al. Tratamiento de la hiperhidrosis palmar por simpatectomía torácica. Resultados inmediatos y calidad de vida postoperatoria. Arch Bronconeumol. 2004;40:67-71.
9. Henteleff HJ, Kalavrouziotis D. Evidence-based review of the surgical management of hyperhidrosis. Thorac Surg Clin. 2008;18:209-16.
10. Koskien LO, Blomstedt P. Sympathicotomy affects cutaneous blood flow, temperature, and sympathicus-mediated reflexes. Acta Neurol Scand. 2008;118:402-6.
11. Ponce González MA, Julia SG, Santana RN, Rodríguez SP, Pérez PG, Freixinet GJ, et al. Long-term pulmonary function after thoracic sympathectomy. J Thorac Cardiovasc Surg. 2005;129:1379-82.
12. Vigil L, Calaf N, Codina E, Fibla JJ, Gómez G, Casan P. Video-assisted sympathectomy for essential hyperhidrosis: effects on cardiopulmonary function. Chest. 2005;128:2702-5.
13. Sihoe AD, Liu RW, Lee AK, Lam CW, Cheng LC. Is previous thoracic sympathectomy a risk factor for exertional heat stroke?. Ann Thorac Surg. 2007;84:1025-7.
14. O'Connor K, Molin F, Poirier P, Vaillancourt R. Cardiac arrest as a major complication of bilateral cervico-dorsal sympathectomy. Interact Cardiovasc Thoracic Surg. 2009;8:238-9.
15. Cruz J, Sousa J, Oliveira AG, Silva-Carvalho L. Effects of endoscopic thoracic sympathectomy for primary hyperhidrosis on cardiac autonomic nervous activity. J Thorac Cardiovasc Surg. 2009;137:664-9.
16. Dumont P. Side effects and complications of surgery for hyperhidrosis. Thorac Surg Clin. 2008;18:193-207.
17. Chou SH, Kao EL, Lin CC, Chang YT, Huang MF. The importance of classification in sympathetic surgery and a proposed mechanism for compensatory hyperhidrosis: experience with 464 cases. Surg Endosc. 2006;20:1749-53.