

# Headaches and hyperhidrosis: clinical features and outcomes after surgery

## Dores de cabeça e hiperidrose: características clínicas e os resultados após a cirurgia

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### ABSTRACT

Both headache disorders and hyperhidrosis are debilitating conditions. Several primary headache syndromes have prominent autonomic features; the main therapeutic option for severe, focal hyperhidrosis addresses the autonomic system (thoracoscopic sympathectomy). Accordingly, herein we assessed headache outcomes in patients with hyperhidrosis after sympathectomy. Sample consisted of 53 patients (43 women and 10 men) with hyperhidrosis and headaches. Headache clinical features and outcomes were assessed at baseline and after surgery. Mean age of sample was 27.1 years; 29 patients had palmar-plantar hyperhidrosis, 17 had palmar-axillary, 9 had craniofacial and 4 had purely axillary hyperhidrosis. Twenty four (54.8%) patients had migraine; 20 (37.7%) had probable migraine and 4 (7.5%) had tension-type headache. Headache onset occurred after hyperhidrosis onset in 37 (69.8%) patients. Anxiety was reported by 94% of patients. Twenty four (45.3%) patients reported improvement of headache symptoms after surgery, 23 (43.4%) reported no change and 6 (11.3%) had worsening of symptoms after surgery. Overall headache frequency was significantly reduced after surgery, as contrasted to baseline. Hyperhidrosis may be comorbid to migraine, through shared autonomic dysfunctions.

**Key words:** Hyperhidrosis; headache; sympathectomy.

### RESUMO

Cefaleias e hiperidrose são doenças comuns e incapacitantes. Várias cefaleias primárias têm proeminente envolvimento do sistema nervoso autônomo. A principal opção terapêutica para a hiperidrose focal grave aborda o sistema nervoso autônomo (simpatectomia toracoscópica). Avaliamos os resultados das características das cefaleias em pacientes com hiperidrose antes e após a simpatectomia. A amostra foi composta de 53 pacientes (43 mulheres e 10 homens) com hiperidrose e dores de cabeça. As características clínicas e os resultados foram avaliados no início e após a cirurgia. A média de idade da amostra foi de 27,1 anos, 29 pacientes apresentaram hiperidrose palmar-plantar, 17 tinham palmar-axilar, 9 tiveram craniofacial e 4 apresentavam hiperidrose axilar pura. Vinte e quatro (54,8%) pacientes preencheram critérios para diagnóstico de enxaqueca, 20 (37,7%) tinham provável enxaqueca e 4 (7,5%) apresentaram cefaleia do tipo tensional. Cefaleia ocorreu após o início da hiperidrose em 37 (69,8%) pacientes. A ansiedade foi relatada por 94% dos pacientes. Vinte e quatro (45,3%) pacientes relataram melhora dos sintomas de dor após a cirurgia, 23 (43,4%) não relataram nenhuma mudança e 6 (11,3%) tiveram piora dos sintomas após a cirurgia. A frequência de crises de cefaleia foi significativamente reduzida após a cirurgia. A hiperidrose pode ser uma comorbidade da enxaqueca, que compartilham uma disfunção autonômica.

**Palavras-chave:** Hiperidrose; cefaleia; simpatectomia.

## INTRODUCTION

Both primary headache syndromes and hyperhidrosis are common and debilitating disorders. Taking migraine as an example, it affects around 10% of men and 20% of women from the general population.<sup>1-3</sup> Primary focal hyperhidrosis is a disorder of idiopathic excessive sweating that typically affects the axillae, palms, soles, and face.<sup>4,5</sup> Although epidemiologic data on hyperhidrosis are scarce and insufficient to provide precise prevalence or impact estimates, the condition seems to affect up to 9% of the population, in the U.S., a prevalence of 2.8% was found, of which 0.5% were intolerable.<sup>6,7</sup> Hyperhidrosis is associated with significant psychosocial impact.<sup>8</sup>

Comorbidity is one of the most challenging areas in the headache field,<sup>9</sup> relevant to epidemiology,<sup>10-12</sup> mechanisms,<sup>13</sup> and management.<sup>14</sup> Hyperhidrosis and migraine have features in common. First, autonomic features are prominent in both conditions,<sup>15,16</sup> although with different magnitude of effect. Second, therapeutic interventions targeting the autonomic system are first line for the treatment of both conditions. Beta-blockers are approved for the preventive treatment of migraine,<sup>17</sup> while thoracoscopic sympathectomy is the first-line treatment for hyperhidrosis.<sup>18</sup> Finally, both conditions have common comorbidities, including anxiety and obesity.<sup>10,19-21</sup>

Although the many similarities, headache disorders and hyperhidrosis have not been studied in detail. Accordingly, herein we aimed to study, in patients with migraine and hyperhidrosis, headache outcomes after thoracoscopic sympathectomy.

## PATIENTS AND METHODS

Our sample was identified from a pool of 1,119 patients with hyperhidrosis, referred to surgical intervention from 1995 to 2004. Since this study is retrospective, we identified 53 patients that had spontaneously reported migraine headaches in the pre-surgical assessments.

All patients were evaluated in detail before the surgery, and information was documented. Data on age, gender, time of onset of hyperhidrosis, hyperhidrosis location and subtype, headache diagnosis, headache frequency 3 months before and after surgery, level of surgery (G2, 3, 4), and improvement or worsening of headaches after surgery were collected.

Headache diagnosis was made according to the International Headache Society diagnostic criteria

(2004)<sup>22</sup> and reviewed by one of the authors (MFP). Anxiety levels were also ascertained before surgery. Anxiety was categorized in absent, mild, moderate, or severe.

Data were summarized using descriptive statistics. Pre-post analyses were conducted using the paired t-test. A significance level of 0.05 was defined a priori.

## RESULTS

Our sample consists of 43 women and 10 men, with mean age of 27.1 years.<sup>16-52</sup> Of them, 29 had palmar-plantar hyperhidrosis, 17 had palmar-axillary, 9 craniofacial and 4 pure axillary hyperhidrosis symptoms.

All patients were submitted to surgery, 10 at the G2 level, 5 at G2 and G3, 20 at G3, and 18 at G3 and G4. All procedures involved thermal ablation. A total of 24 (54.8%) patients had migraine, 20 (37.7%) had probable migraine and 4 (7.5%) had tension-type headache.

Headache onset preceded onset of hyperhidrosis in 16 (30.2%) patients; it appeared after hyperhidrosis onset in 37 (69.8%). Anxiety was reported by 50 patients (94%), being mild in 2, moderate in 17, severe in 24 and very severe in 7.

Twenty four (45.3%) patients reported improvement of headache symptoms after surgery, 23 (43.4%) reported no change and 6 (11.3%) reported worsening after surgery. Comparing headache frequency reported 3 months before and after surgery, 28 (53%) patients reported no change in frequency; 13 (24.5%) were headache free; 7 (13.2%) reported reduction of 50% or more, and only 5 (9.3%) reported increased headache frequency.

Mean headache frequency was  $7.9 \pm 1.6$  headache days before surgery, and was significantly reduced after surgery ( $4.8 \pm 2.1$ ,  $p < 0.01$ ). Both migraine and tension-type headache equally improved after surgery.

## DISCUSSION

Herein we assessed headache outcomes in patients with headache and hyperhidrosis submitted to thoracoscopic sympathectomy. Since autonomic dysfunctions are of importance in both conditions,<sup>15,16,23</sup> the topic is of relevance, although poorly studied.

The sample size of our study was neither large nor selected to be representative of the population. It is indeed a convenience sample of patients with hyperhidrosis who spontaneously complained about headaches to the

thoracic surgeon. Since the prevalence of primary headache disorders is much higher than the 5% rate found in our sample,<sup>2,24,25</sup> we acknowledge the existence of an enrollment bias and issues of non-representability. The proportion of individuals with anxiety (94%) supports this assumption. Accordingly, we emphasize that this is not a study designed to evaluate headache prevalence in individuals with hyperhidrosis, but to investigate headache outcomes in individuals submitted to autonomic surgical intervention, who were unaware of the potential benefit of the intervention to the headaches.

Our data collection is retrospective, not obtained from headache diaries. Although the obtained information may not be precise, the subjective perception of improvement after surgery should be real. Since improvement of hyperhidrosis after surgery is high,<sup>8,26</sup> and patients satisfaction with surgery is higher than 90%, the observed headache response after surgery could be secondary to improvement in self-image and reduction of overall burden due to hyperhidrosis. Few patients reported worsening of headaches after surgery. Accordingly, although our data suggest headache improvement after thoracoscopic sympathectomy, putative mechanisms (autonomic ablation versus decrease in anxiety or stress) need to be further studied.

Headache is commonly reported by individuals with hyperhidrosis. In a study of 388 patients, most frequent associated features were facial blushing (60.3%), palpitations (52.3%), muscle contraction (48%), hand tremors (31.8%) and headaches (30.8%), although headache diagnosis was not performed.<sup>27</sup>

Anxiety disorders are also highly associated with hyperhidrosis<sup>28</sup> and with headache disorders.<sup>14</sup> After surgery, patients with hyperhidrosis are less likely to report anxiety and other symptoms including headaches (29% before versus 9% after surgery).<sup>20</sup> Causality is still to be determined, and it may be that headache response is explained by autonomic regulation after sympathectomy. Indeed, hyperhidrosis and headache disorders may share common pathophysiologic mechanisms included altered sympathetic nervous system and hypothalamic dysfunction.

## CONCLUSION

In patients with hyperhidrosis, migraine was the most common primary headache type. Headaches usually started after the onset of hyperhidrosis symptoms. Most but not all patients reported headache improvement after thoracic sympathectomy.

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