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Original article

Assessment of facial pain and headache before and after nasal polyposis surgery with the DyNaChron questionnaire

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ABSTRACT

Objectives: Facial pain/headache is reported in 16–67% of nasal polyposis (NP) patients. This wide range may be due to differences in assessment methods. The present prospective study assessed facial pain/headache and quality-of-life (QoL) impact before and after NP surgery.
Methods: Pain was assessed on the DyNaChron self-administered questionnaire in patients undergoing NP surgery, the day before the procedure (V0) and 6 weeks (V1) and 7 months (V2) after. All patients underwent the same nasalization procedure, sparing the middle turbinates when possible. The questionnaire extract comprised 1 item assessing pain, 13 assessing physical impact and 4 assessing psychosocial impact, with responses on visual analog scales (VAS) graded 0 (no discomfort) to 10 (unbearable discomfort).
Results: Sixty-three patients (mean age: 50.6 ± 12.8 years; 32 male [50.8%], 31 female [49.2%]) were included. Thirty-seven patients (58.7%) had history of NP surgery. Fifty-two percent reported moderate to severe pain before surgery, 17.5% at 6 weeks, and 22.2% at 7 months. One-third reported no pain preoperatively, versus a half at 6 weeks and 7 months. Scores for the physical and psychosocial impact of pain were improved after surgery.
Conclusion: Headache/facial pain is frequent in patients for whom NP surgery is indicated. Endoscopic surgery relieves the symptom and its physical and psychosocial impacts. However, one-fifth of patients reported residual postoperative pain.

1. Introduction

Nasal polyposis (NP) is a chronic inflammatory pathology of the ethmoid mucosa. Despite clinical differences between NP and non-polypoid chronic rhinosinusitis, studies often group the two together, making treatment outcome difficult to interpret.

Facial pain or sensation of pressure is a major diagnostic criterion of chronic rhinosinusitis according to Lanza and Kennedy [1], but was counted as a secondary criterion by the European Position Paper on Rhinosinusitis and Nasal Polyps in 2012 [2]. According to Ryan and Kern [3], nasal polyps are one of the 5 main causes of facial pain. About one-fifth of NP patients report headache or facial pain: 18% according to Fahy and Jones [4], and 16% of patients with grade II polyps or higher (on the Lund-Mackay classification [5]) according to Eweiss et al. [6]. The rate, however, would seem to be higher when surgery is indicated: 36% according to Garrel et al. [7], and 67% in our own previous study [8]. These differences may be due to assessment methods. Garrel et al. used subjective assessment on closed dichotic questions, whereas our study used the DyNaChron 0–10 visual analog scale (VAS). Headache associated with NP was clearly improved by endoscopic nasalization in our study but about 20% of patients reported residual pain 6 weeks postoperatively [8]. In case of headache or facial pain, patients and physicians often mistakenly implicate sinonasal factors [9–11]. Schreiber et al. [9], in a series of 2991 patients with "pain of sinonasal origin" (according to patient or physician), found that 80% of patients fulfilled the criteria for migraine. Moreover, patients with "sinus pain" without obvious signs of infection showed 58–88% incidence of migraine headache [12].

The present study sought to assess facial pain/headache and its physical and psychosocial impact before and after 6 weeks and, especially, 7 months after NP surgery, using the DyNaChron questionnaire.

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2. Materials and methods

2.1. Study population

Eighty-one patients undergoing NP surgery in our department between January 2010 and January 2011 were prospectively assessed. Surgery was indicated when well-conducted medical treatment had led to little or no improvement in sinonasal symptoms. Exclusion criteria comprised: age < 18 years, and inability to answer the DyNaChron questionnaire (dementia, language barrier, non-cooperation, etc.). All patients were managed by nasalization [13] sparing the superior and middle turbinates when possible. Olfactory cleft polyps were also resected, after ethmoidectomy. Septoplasty was performed when necessary. Nasal cavity polyps were staged according to Benamara et al. [14] during endoscopic examination before surgery, without vasoconstriction, to avoid mucosal retraction.

No systemic corticosteroid nor antibiotic treatment was systematically given before or after surgery. However, short-course (5-day) oral administration of corticosteroids was prescribed in some rare cases at around 1–2 weeks after surgery when necessary. Final postoperative pain assessment was performed at more than 1 month. Nasal corticosteroids were prescribed ahead of surgery, and again at discharge (day 1 or 2). Patients were recommended to perform at least 4 to 6 nose washes per day, using a syringe of physiological saline.

Pain and its physical and psychosocial impacts were assessed on the DyNaChron questionnaire [15]. The pain assessment domain comprised 1 main item (Do you feel any discomfort due to a stuffy head or facial tension, or facial pain, or headaches?), 13 items assessing physical impact, and 4 items assessing psychosocial impact. Responses were made on an 11-point VAS, from 0 (no discomfort) to 10 (unbearable discomfort). Patients filled out the questionnaire, alone, free from any influence by medical or paramedical staff or accompanying persons, on the eve of surgery (V0), then at 6 weeks (V1) and 7 months (V2), during postoperative consultations.

2.2. Statistical analysis

Quantitative variables were expressed as mean ± standard deviation, and qualitative variables as frequency and percentage. The Shapiro-Wilk test found non-normal distributions, and comparison between values at V0, V1 and V2 were therefore made by non-parametric Mann-Whitney-Wilcoxon test. Pain was analyzed quantitatively (0 to 10) and qualitatively (absent, VAS = 0; mild, 1–3; moderate, 4–6; or severe, ≥ 7). Intergroup comparison of qualitative variables used Chi^2 or Fisher tests. Analyses were performed on SAS software v9.1 (SAS Inst., Cary, NC). The significance threshold was set at $P < 0.05$.

3. Results

Eighty-one patients were included in the study. All completed the questionnaire at V0 (D1) and V1 (+6 weeks), but only 63 completed V2, 18 being lost to the 7-month follow-up; analysis was therefore restricted to these 63 patients.

Mean age was 50.6 ± 12.8 years (range, 18–75 years), with 32 male (50.8%) and 31 female patients (49.2%). Thirty-seven patients (58.7%) had a history of NP surgery: polypectomy, functional ethmoidectomy, or nasalization. Eighr patients (12.7%) had grade I polyps, 20 (31.7%) grade II, and 35 (55.6%) grade III.

Fig. 1 shows pre- and postoperative pain intensity. Preoperatively (V0), about one-third of patients reported no pain and one-third severe pain (VAS ≥ 7). There was significant alleviation at

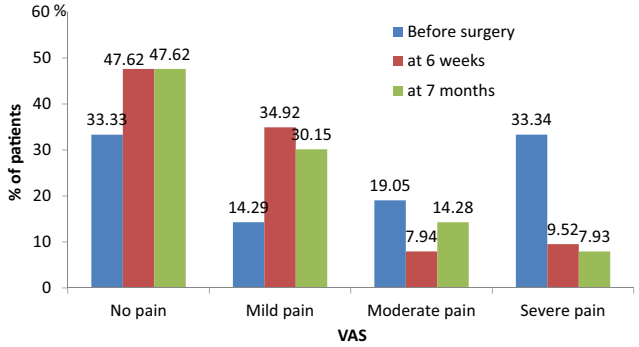

Fig. 1. Pre- and post-operative pain intensity distribution: no pain, VAS = 0; mild pain, 1–3; moderate pain, 4–6; severe pain, ≥ 7.

V1 and V2 ($P < 0.0001$; Table 1), with about 48% of patients reporting no pain and none with pain ≥ 9 on VAS. Physical and psychosocial impacts were likewise significantly improved (Fig. 2 and Table 1). Intensity of pain and of physical and psychosocial impact did not differ significantly between V1 and V2 (Table 1).

Table 2 shows change in pain intensity before and after surgery according to subgroup. Preoperatively (V0), 52% of patients reported moderate to severe pain (VAS ≥ 4), compared to 17.46% at V1. Pain tended to worsen at V2 in females ($P = 0.059$). Associated septoplasty and/or history of NP surgery did not significantly affect incidence of pre- or post-operative pain. At 6 weeks (V1) and 7 months (V2), about 20% of patients reported VAS scores ≥ 4.

4. Discussion

Patients and even their doctors often attribute a sinonasal origin to facial pain or headache. They are, however, often mistaken. Daudia and Jones [16] found that 12% of patients consulting for headache in a rhinology center had migraine on IHS (International Headache Society) criteria. In a series of 2991 patients consulting for "sinus pain", 80% of patients met IHS criteria for migraine with or without aura [9]; 84% of these reported a sensation of "sinus tension", 82% "sinus pain", 63% nasal congestion, 40% rhinorrhea, 38% lacrimation, and 27% nasal "itch". Etiological diagnosis of headache and facial pain is further complicated in case of clinical or imaging sinonasal abnormalities or neurologic, dental or articular pathology. Pain attributed to chronic or recurrent rhinosinusitis was added to the 3rd edition of the IHS classification in 2013 (see Box 1) [17].

Box 1: Diagnostic criteria for headache attributed to chronic or recurrent rhinosinusitis (IHS, 2013) [17].

A. Any headache fulfilling criterion C;
B. Clinical, nasal endoscopic and/or imaging evidence of current or past infection or other inflammatory process within the paranasal sinuses;
C. Evidence of causation demonstrated by at least two of the following:
   1. headache has developed in temporal relation to the onset of chronic rhinosinusitis,
   2. headache waxes and wanes in parallel with the degree of sinus congestion, drainage and other symptoms of chronic rhinosinusitis,
   3. headache is exacerbated by pressure applied over the paranasal sinuses,
   4. in the case of a unilateral rhinosinusitis, headache is localized ipsilateral to it;
D. Not better accounted for by another ICHD-3diagnosis.

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