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Review

Chronic nasal dysfunction

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ABSTRACT

Chronic nasal dysfunction is a clinical concept in the diagnostic and therapeutic management of sinonasal diseases, based on the evo-devo theory of formation of the nose according to which the nose is not a single organ but rather an association of three organs: olfactory nose, respiratory nose and paranasal sinuses. In chronic nasal dysfunction theory, etiological diagnosis takes account of the possible pathophysiological independence of nasal symptoms, in accordance with the different origins and physiology of the three organs constituting the nose. The diagnostic approach of the chronic nasal dysfunction concept breaks down the pathology so as to propose treatment(s) adapted to the diseased organ(s) and to the capacity for physiological resolution of dysfunction induced in one organ by pathology in a neighboring nasal organ. The ethmoid is not a sinus according to evo-devo, and therefore functional endoscopic endonasal surgery (FEES) cannot be restricted to functional endoscopic sinus surgery (FESS). Evo-devo theory and the chronic nasal dysfunction concept offer an alternative to the concept of chronic rhinosinusitis with or without polyps for the management of sinonasal diseases.

1. Introduction

In rhinology, medical language is the vehicle for the state of knowledge of the physiology and pathology of the nose and sinuses.

The recent international consensus statements [1,2] use the term “chronic rhinosinusitis” to cover chronic functional pathology of the nose and sinuses, with the implication that these form a single organ in which inflammation is the common denominator of non-tumoral pathologies.

The aim of the present review is to set forth a contrary view: that the “rhinosinus” organ is in fact a combination of three organs, which are the olfactory nose, the respiratory nose and the paranasal sinuses [3,4], each with its own functional pathologies, which are not necessarily inflammatory.

Chronic nasal dysfunction describes the profile of symptoms of nasal origin and their specific impact on quality of life as reported by the patient. Medical etiological diagnosis is founded on the tripod of interview, nasal endoscopy and facial CT scan. Treatment is determined by our understanding of the pathophysiology of the symptoms, and efficacy is to be assessed in terms of improvement in symptoms and in the specific quality of life reported by the patient [5].

2. Nasal obstruction and anosmia

The diagnostic approach used to analyze a case of chronic nasal dysfunction and orient treatment can be presented by means of a concrete illustration.

A 14 year-old girl, accompanied by her mother, presented a year ago with olfaction loss. She had noticed this one day 6 months before, but could not say whether it had come on suddenly or gradually, or following some particular event (cold, trauma, etc.) Since then, she had tested her sense of smell regularly, with her mother, hoping it would come back.

She had filled out the DyNaChron© questionnaire [6] alone in advance; her responses were shown on the computer screen in consultation (Fig. 1), and testified to the unbearable impact (10 on a scale from 0 to 10) of this anosmia on her quality of life. They also showed discomfort related to the nasal obstruction, rated as 8/10. This nasal obstruction had in fact been going on for several years, inducing a sniffing tic that annoyed people she was with. She had a sensation of damp nose (rated 2/10), but nothing came from trying to blow her nose. She also complained of frontal pain, rated 6/10.

Facial CT, performed ahead of the consultation, showed gaseous transparency in all mid-facial cavities, with pronounced septal deviation in the left nostril and asymmetric hypertrophy in the inferior turbinates, with right predominance. There was notable opacity in the two olfactory recesses, which were not enlarged, and indeed perhaps narrower than normal (Fig. 2a–d).

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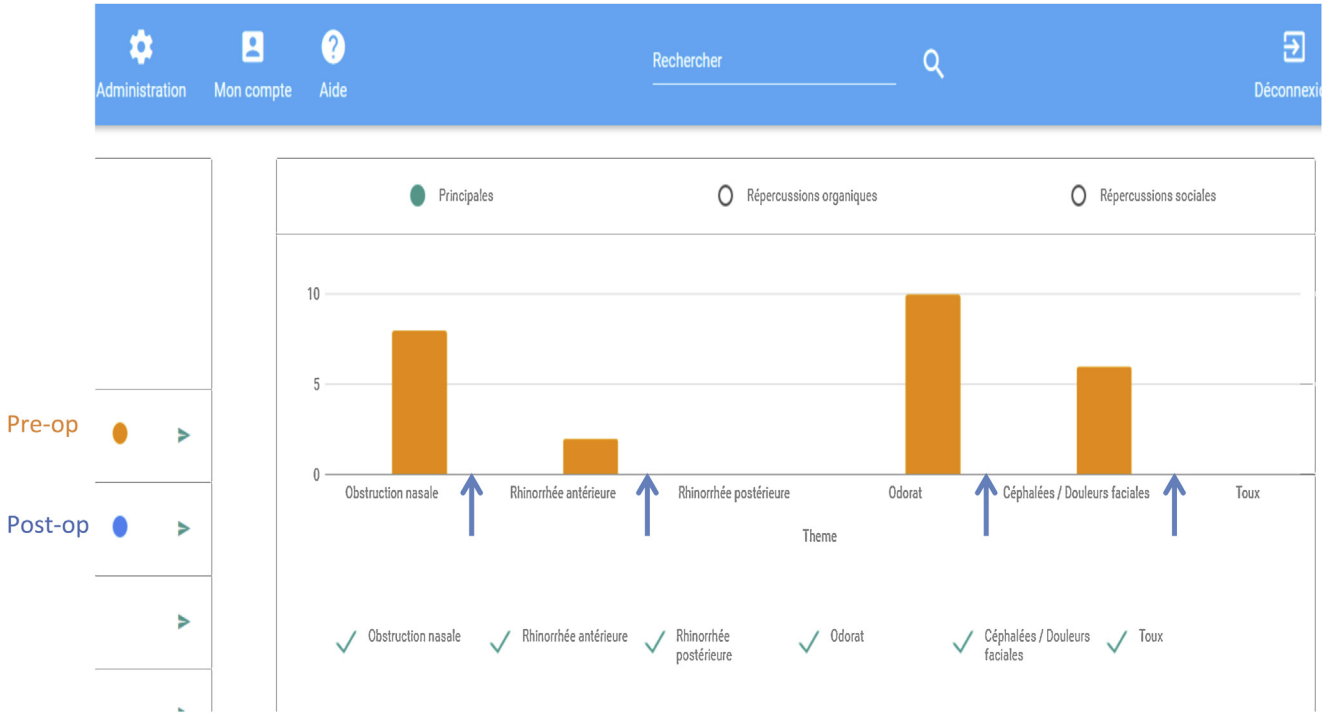

Fig. 1. Screen-shot of pre- (orange) and postoperative (blue) responses on the DyNaChron© questionnaire. This page shows only the trouble caused by each "principal" symptom, on a 0–10 numerical scale; detailed questionnaire responses are available for analysis by clicking on "répercussions organiques" (organic repercussions) and "répercussions sociales" (social repercussions). The blue arrows point to postoperative zero responses (no trouble) for each principal symptom, including sensation of damp nose (anterior rhinorrhea), sniffing tic (organic repercussion of nasal obstruction), and chronic frontal pain.

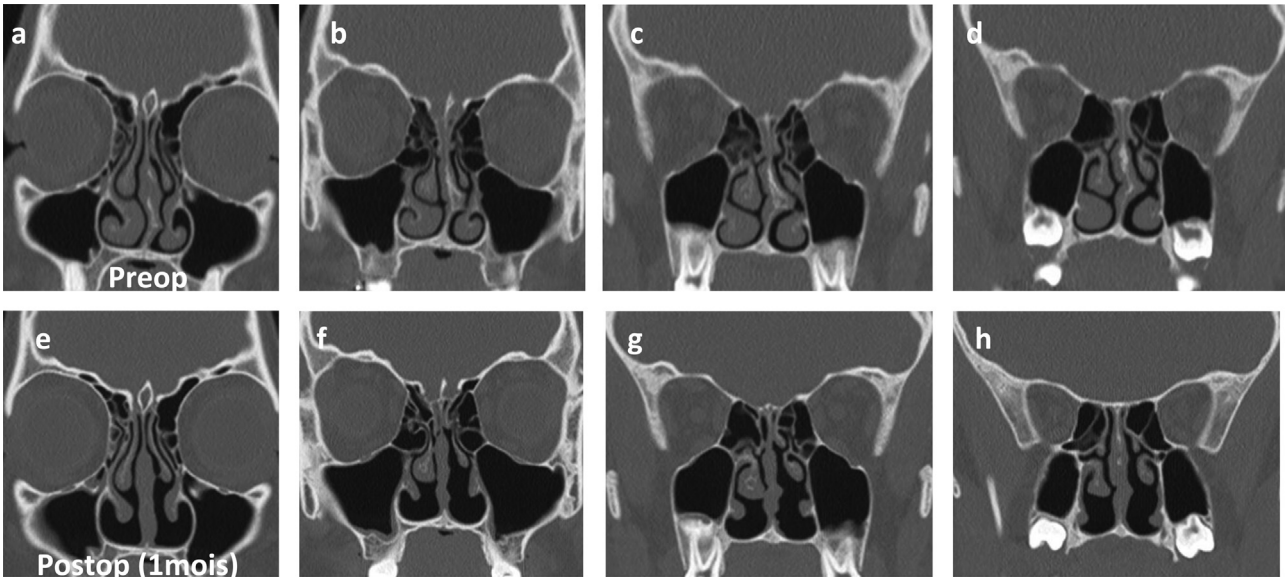

Fig. 2. CT slices of chronic nasal dysfunction associating anosmia and nasal obstruction (a–d), relieved by surgery (e–h); a: anterior olfactory clefts, each bordered by the cribriform plate above, septum within and anterior ethmoturbinate outside, with gaseous content; b–d: posterior olfactory clefts, each bordered by the cribriform plate above, septum within and posterior ethmoturbinate outside, forming the olfactory cleft recesses, which have lost their gaseous content on these three scans; e: unchanged postoperative anterior olfactory cleft aspect and conserved inferior meati after inferior turbinate reduction turbinoplasty and correction of preoperative septal deformity; f–h: the olfactory cleft recesses have recovered gaseous content, inferior meati are present, and septal deformity correction is confirmed on these three scans.

Flexible endoscopy, guided by the CT findings, confirmed the septal deviation and hypertrophy of the inferior turbinates and suggested, although it was difficult to examine and assess, stenosis in the posterior and superior part of the olfactory clefts, with close contact between the superior turbinates and the septum.

The short Threshold, Identification (TI) form of the Sniffin' Sticks test [7] showed no threshold (T) for n-butanol detection

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