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Should we perform objective assessment of nasal obstruction in children with chronic rhinitis?

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Nasal obstruction is one of the most common symptoms in pediatric practice. Although a wide global variation in the prevalence of current chronic rhinoconjunctivitis symptoms has been reported, the overall prevalence appears to be about 15% for young adolescents.[1] An increase in several countries has been recorded in recent years, mostly in older age groups. The increase is more pronounced in low and mid-income countries.[2,3]

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While acute viral infections constitute a daily problem, usually without diagnostic difficulties, "chronic rhinitis" is also a frequent diagnostic label. Diagnostic accuracy as well as determination of the degree of nasal obstruction in everyday pediatric practice, but also by ear, nose, and throat (ENT) specialists, primarily depends on the patient's – even the parents' – subjective description. Still, the complaint of a blocked nose can be a complex clinical problem involving mucosal, structural, and even psychological factors.[4] Thus, in several cases, an issue of reliability of the clinical information does exist, and verification is required.

In this issue of the Jornal de Pediatria, Mendes et al.[5] report on the correlation between subjective and objective assessments of nasal obstruction in children and adolescents with allergic rhinitis. The authors used both active anterior rhinomanometry for total nasal airway resistance measurement and acoustic rhinometry for each nostril separately. They found no correlation between objective and subjective measurements when the nasal cavity was assessed as a whole, but interestingly, a significant negative correlation between subjective obstruction score and nasal airflow resistance was detected when each nostril was individually assessed. These observations lead to a number of very useful clinical points that are worth commenting on.

According to the Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines, clinical history is essential not only for an accurate diagnosis of rhinitis but also for the assessment of its severity.[6] Patients with allergic rhinitis suffer from sneezing, anterior rhinorrhea, and very often bilateral nasal obstruction. Nasal fullness is usually the most

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bothersome symptom, although the perception of nasal mucosal heaviness or blockage described by subjects may vary.[4] Adults and children with allergic rhinitis may also suffer from significant loss of smell (hyposmia or anosmia), snoring, sleep problems or sedation, postnasal drip, and of course asthma. The concept of "one way one disease" has been highlighted as a result of the link between the upper and lower airways.[6] Specific clinical information may strengthen or weaken the possibility of underlying allergy. Moreover, acute and chronic rhinosinusitis is a common, primarily clinical, diagnosis.[7]

The clinical approach should be structured and systematical, at both the clinical interview and physical examination. As clearly stated in the European Academy of Allergy and Clinical Immunology position paper for diagnostic tools in rhinology,[8] adequate attention should be paid and time spent in order to take a complete and accurate history of rhinitis symptoms and of potential comorbidities. History should include specific symptom-related questions for the timing and severity of symptoms, of triggering factors, response to treatments used in the past and associated oral allergy symptoms. And last but not least, the value of the physical examination should not be underestimated. History and clinical examination of the nose and nasopharynx may suggest further diagnostic evaluation in order to obtain the proper diagnosis.

The evaluation of nasal patency can be performed objectively by measurement of nasal airflow, as assessed by nasal peak flow, or by airway resistance/conductance, as evaluated by rhinomanometry. This can be performed mainly through three methods: measurement of peak nasal inspiratory flow (PNIF), active anterior rhinomanometry, and acoustic rhinometry.[8,9] PNIF evaluates the nasal function as a whole, as it takes measurements from both nostrils. It is considered the most broadly validated technique for the evaluation of nasal flow, is inexpensive and easy to use, and correlates nicely with the subjective feeling.[10] However, it requires patient cooperation, and therefore its use is limited in younger children. Anterior rhinomanometry specifically measures nasal resistance and can collect information from each nostril separately, but is impossible to perform in cases of total obstruction of one nostril. Furthermore, measurements can show intra-individual variability, and their correlation with subjective symptoms is a matter of debate.[8] Children of younger ages are poor performers, as a degree of cooperation is needed. Acoustic rhinometry is comparable to rhinomanometry regarding the great range of measurement variability and poor correlation with subjective symptoms. Its great advantage is that it requires minimal patient cooperation and therefore is useful in pediatric patients.[8]

Further testing can add value to the information obtained by the above mentioned objective measurements. Nasal challenge tests, such as histamine challenge, are a safe and reproducible method in determining the presence and degree of upper airway hyperreactivity.[11] The nasal decongestion test is a further objective evaluation of nasal airflow from a functional standpoint.[12] Lastly, skin prick testing (SPT) is a simple and quick diagnostic approach to identifying IgE sensitization to various relevant aeroallergens.

Subjective analysis of nasal patency is generally based on patient self-assessment, preferably via one-to-one interviews, with or without the aid of a questionnaire and/or visual analogue scale (VAS). In relatively recent publications, validated questionnaires have been described with the specific goal to evaluate nasal symptoms, including subjective obstruction, but these are pertinent only to adults.[13]

As option to simplify the approach to patients with nasal obstruction without engaging special equipment, VASs are used in both adults and children.[14] Some modifications of VAS for children, with different colors or happy and sad faces, have also been introduced. It has been stated that children under 7 years are not able to complete VAS accurately; they mainly use only the endpoints or the endpoints and middle of the scale.[15] Haavisto et al.[16] from Finland reported that VAS shows potential as a subjective tool to investigate nasal obstruction in children over 7 years of age. In that study, children were asked to gently close the opposite side with a finger, and to evaluate the amount of nasal obstruction on the left and right sides separately. Children found it quite easy to evaluate the obstruction of the nose and carefully completed the scale. At about the same time with the Finish study, Mendes et al.,[5] in this issue, confirm that subjective nasal obstruction assessment expressed as an obstruction score exhibits satisfactory correlation with the objective method when each nostril is measured separately. Interestingly, in the Brazilian study, no difference was noted regarding this correlation when patients were subjected to acute nasal obstruction via histamine challenge. Although nasal challenge tests are not always practically applicable, they may be of specific interest in children on long-term treatment for chronic rhinitis, as these patients are known to under-report their symptoms of nasal stuffiness.[17]

When a practicing pediatrician faces the question of reliability of clinical information, it is not uncommon to base his/her diagnosis on the response to the therapeutic intervention. Nevertheless, in a number of patients, further diagnostic workup clearly should be performed. Patients should be referred to an ENT specialist for nasal airway resistance measurement and nasal endoscopy. Sometimes, the point of the clinical course at which one should engage into objective assessment is a matter of clinical decision, but it should not be unnecessarily delayed.

Unilateral sensation of fullness or loss of patency occurs with severe septal deviation or other anatomical abnormalities, foreign bodies, choanal polyp, or even malignancies. The nasal cycle and recumbent posture may

also make the sensation of fullness or blocked airflow more apparent. In mouth-breathing children, apart from allergic rhinitis, hyperplasia of adenoids and tonsils and other anatomical disorders should also be considered.[18,19]

The clinician's responsibility should not only focus on ensuring the correct diagnosis but also on the efficient management of chronic rhinitis. Persistent nasal blockage-fullness may be a serious symptom, with potentially significant effects on the child's development and quality of life, e.g., learning impairment, inability to integrate with peers, anxiety, and family dysfunction. Comorbid disorders can result in a vicious cycle of worsening the patient's quality of life.[20]

In conclusion, we strongly agree with the authors' view that the symptom of nasal blockage is multidimensional in nature and that a new combined instrument has to be developed for a reliable assessment of these patients.[5] Such an instrument should probably involve validated subjective assessment (i.e., VAS, questionnaires) and objective tests. Clinical applicability of this instrument, as well as the definition of which group of patients is most likely to benefit from its use, are matters of future research. It is obvious that, in order to embed such an instrument in everyday practice, we will need to simplify it, by recognizing and defining its strongest elements. From a different standpoint, we should keep in mind that persistent nasal blockage requires a multidisciplinary approach, with each colleague adding valuable contributions.

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