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Which clinical indicators for the control of allergic rhinitis?

Quels indicateurs cliniques de contrôle de la rhinite allergique ?

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Abstract

The treatment of allergic rhinitis (AR) is now clearly established and appropriate treatment can improve the symptoms of AR. Furthermore, analogous to those available for asthma, treatment-related improvements in symptoms and quality of life (QoL) can be graded. There is no universally agreed indication that AR control should be measured directly. However, indicators of AR control have been formulated in multitude ways with both objective and subjective measurements. Evaluation of AR control can be based on a number of criteria, including: nasal and ocular symptoms (congestion, rhinorrhea, sneezing, pruritus, post-nasal drip); a patient-reported metric of QoL (i.e., impairment in sleep or daily activities) and satisfaction, objective measurements (e.g., peak nasal inspiratory flow, rhinomanometry, increased use of rescue medication). Many instruments, such as The Control of Allergic Rhinitis and Asthma Test (CARAT), Rhinitis Control Assessment Test (RCAT), Allergic Rhinitis Control Test (ARCT) and Visual Analog Scale (VAS) and other new questionnaires requiring validation have appeared and have been used in the assessment of the patient's clinical symptoms. Here, we review the criteria use for the assessment of AR control as well as the existing validated instruments. Specifically, we provide insight into their use in clinical practice.

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Keywords: Allergic rhinitis; Control; Severity; Score; Treatment

Résumé

Le traitement de la rhinite allergique (RA) est maintenant clairement établi et un traitement approprié doit amener une amélioration symptomatologique importante. Comme pour l'asthme, cette amélioration des symptômes ainsi que de la qualité de vie (QdV), liée au traitement, peut être mesurée. Il n'y a pas de recommandations précises et reconnues universellement à ce sujet. Néanmoins, des indicateurs pratiques du contrôle de la RA peuvent être formulés de diverses manières, au moyen de mesures subjectives et objectives. Ainsi, l'évaluation du contrôle de la RA peut être faite sur différents critères, y inclus : scores nasal et oculaire (congestion, rhinorrhée, éternuements, prurit, jetage postérieur) ; questionnaires d'évaluation de la QdV ou global de satisfaction (retentissement sur le sommeil et les activités quotidiennes) ; mesures objectives (débit de pointe inspiratoire nasal, rhinomanométrie, traitement symptomatique de secours). Plusieurs outils, tels le test de contrôle de la RA et de l'asthme (Control of Allergic Rhinitis and Asthma Test [CARAT]), test de l'évaluation du contrôle de la RA (Rhinitis Control Assessment Test [RCAT]), test de contrôle de la rhinite allergique (Allergic Rhinitis Control Test [ARCT]) et l'échelle visuelle analogique, ainsi que d'autres questionnaires nécessitant encore une validation ont émergé et ont été utilisés dans l'évaluation des symptômes de RA et de la réponse au traitement. Cet article se propose de revoir les critères utilisés et les outils validés dans l'évaluation du contrôle de la RA, avec plus précisément leur implémentation dans la pratique clinique.

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Mots clés : Rhinite allergique ; Contrôle ; Gravité ; Score ; Traitement

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1. Introduction

Allergic rhinitis (AR) is a common disease worldwide affecting over 25% of the population [1,2] and its prevalence is increasing. The direct and indirect health-care costs incurred by AR are substantial [3]. AR as a non-life threatening disease, affects quality of life (QoL), school performance and work productivity [4]. Moreover, nearly 40% of AR patients combine or will develop asthma [5], whereas almost 85% of asthma patients have rhinitis [6]. Despite the fact that approximately 50% of AR patients visit their doctor for their symptoms present at least 4 months a year [7], over half of AR patients do not seek medical advice in Europe [8].

In order to enhance the effectiveness and quality of management for AR, a number of international guidelines and consensus statements have been developed [9]. Allergic Rhinitis and its Impact on Asthma (ARIA) workshop (organized by the World Health Organization), was the first evidenced-based guidelines. It was published in 2001 and updated in 2008 and 2010 [6,10,11]. ARIA focuses on the assessment and treatment of AR based on QoL. It introduced a classification of AR (“intermittent” vs. “persistent” and “mild” vs. “moderate/severe”) and AR management including allergen avoidance, pharmacotherapy, patient education, allergen immunotherapy and occasionally, surgical treatment.

Although the treatment guidelines are now well established, treated patients may report poor levels of satisfaction, with a frequent search for a combination of medications to better reduce their nasal/ocular symptoms [12]. Many patients with AR continue to be undertreated and are at risk for acute exacerbations, resulting in reduced productivity at work, school performance and QoL, triggering increased health-care costs and the use of oral corticosteroids. The fact that the level of AR control is often overestimated by both patients and physicians indicates that AR treatment guidelines alone are not enough to determine the assessment of AR control. The overestimation of AR control can result in failure to make the necessary adjustments to medication.

A measure of AR control should be used to evaluate treatment outcomes and simplify monitoring. As for the management of asthma following the introduction of the Global Initiative for Asthma (GINA) guidelines [13], the generalization of the “control” is now being considered as a trend in the management of patients with AR, chronic rhinosinusitis, chronic urticaria and atopic dermatitis [14]. There is currently no single definition of AR control, since its determination depends on the variables taken into account by the different available tools. Nevertheless, rhinitis control is essentially “absence of symptoms”. Most of the control tools developed so far focus on measurements of daily or nocturnal symptoms, symptom magnitude (i.e., the patients’ perception of how bothersome their symptoms are) and impairment in everyday activities. This article reviews the criteria utilized for the assessment of AR control as well as the existing validated instruments. Specifically, we provide insight into their use in clinical practice.

2. Allergic rhinitis control

Currently, there is not a standardized definition of AR control. The concept of disease control is only applicable in treated patients [15]. Based on an analogy with GINA [13] the concept of overall AR control may be considered as the degree of symptom reduction and of achievement of the treatment’s goals. From this point of view, AR control can be measured in a multitude of ways, with both objective and subjective measurements and using patient-reported vs. physician-reported outcomes. Patient-reported metrics are growing in importance in clinical research and, increasingly, in patient care [16], although there is debate as to whether it is the physician or the patient that is best placed to judge disease control [17].

Therefore, evaluation of AR control can be based on a number of criteria, including: nasal and ocular symptoms (congestion, rhinorrhea, sneezing, pruritus, post-nasal drip); a patient-reported metric of QoL and satisfaction (i.e., impairment in sleep or daily activities); objective measurements (e.g., peak nasal inspiratory flow, rhinomanometry); the necessity for increased use of rescue medication and how much. The last is also important as it has been suggested that a patient’s degree of control could simply correspond to the “strength” of the medication necessary to suppress symptoms [18]. Therefore, any increment in medication could indicate loss of control. Finally, presence of rhinitis comorbidities could also affect control, as 10% to 40% of rhinitis patients have comorbid asthma [19]. Practical tools are needed for patients and physicians to determine whether optimal AR care is provided or whether treatment strategies needed to be adjusted.

3. Instruments for assessing AR control

Several composite instruments, mainly self-administered questionnaires, have been developed over the years. The time period of assessment ranges from 1–4 weeks prior to the consultation, long enough to assess changes and short enough to avoid recall bias.

3.1. The Control of Allergic Rhinitis and Asthma Test (CARAT)

CARAT is a self-administered questionnaire (including 17 questions in a questionnaire with a Likert scale), initially developed by Nogueira-Silva et al. [20] for assessing control of both AR and asthma in patients with comorbid diseases, as recommended by ARIA. Subsequently, a simply 10-item version of CARAT (CARAT10) was validated in a cross-sectional study of 193 adults with AR and asthma from 15 outpatient clinics in Portugal [21]. The range of possible scores for CARAT10 is 0 (absence of control) to 30 (complete control), and the reference/evaluation period is 4–6 weeks. Fonseca et al. [22] observed good correlations between CARAT10 and Asthma Control Questionnaire (ACQ5), symptoms’ visual analogue scales (VAS) and a simple binary yes/no physician’s assessment of control. CARAT10 has adequate test-retest reliability

and internal validity. It can be used in clinical practice to compare groups and to guide patient management.

3.2. Rhinitis Control Assessment Test (RCAT)

RCAT is a 26-item instrument developed by Nathan et al. [23] for the assessment of control of nasal and ocular symptoms the previous week. It was finally refined to a 6-item self-administered questionnaire (including frequency of nasal congestion, sneezing, watery eyes, sleep interference, activity avoidance and self-assessed control) after testing the RCAT in 410 AR patients [24]. RCAT questions are measured on a 5-point scale with total score ranging from 6 (poor control) to 30 (complete control). A longitudinal study in 402 patients in 29 sites of allergists and otolaryngologists showed that RCAT demonstrated adequate reliability and validity, and confirmed the items to be relevant and easy to answer. Moreover, RCAT provided an accurate picture of the severity of the symptoms of AR and non-AR [25]. Based on its sensitivity and specificity, a cut-point score of 21 or less was suggested to identify AR control [25].

3.3. Allergic Rhinitis Control Test (ARCT)

Demoly et al. [26] developed the ARCT including 5 items by working with a multidisciplinary group associating allergists, pulmonologists, ENT physicians and methodologists. Similar to the Asthma Control Test (ACT) [27], measuring AR control with the ARCT is multidimensional. The 5 items include the impact on professional/personal activities, sleep disturbance, medication and overall assessment of the disease. A 2-week recall is used in ARCT. The questionnaire was validated by testing it in 902 patients selected by 411 primary care physicians and allergists, before the treatment and 2 weeks after the treatment. It appears to be correlated to the clinical status of the AR, as well as to the evolution after treatment. A score higher than or equal to 20, as a marker of well-controlled AR, is the most efficient (sensitivity: 67%, specificity: 82%).

3.4. Visual Analog Scale (VAS)

Initially developed as a simple tool to measure AR severity, VAS has turned out to be a possible tool to assess AR control, with a score for total nasal symptoms of 5 or greater as the cut-off for uncontrolled AR during treatment [15]. It was estimated that 20% of patients with AR are still uncontrolled despite adequate medical treatment of AR in a retrospective analysis [15]. In a post-hoc analysis assessing VAS at inclusion and after 15 days of treatment, the change of VAS greater than 30 mm was considered significant in relation to the improvement of quality of life and of symptom score [28]. The exact cut-off may still need to be worked out because it was shown to be of 23 mm based on a multi-centre prospective study [29].

4. Allergic rhinitis control instruments in clinical practice

Despite the availability of effective therapies, total control of AR is difficult to achieve for many patients. The ARIA guidelines state that “treatment should be tailored according to the severity of the disease, comorbidities, treatment availability and affordability and patients’ preference” [6]. Recent papers developed under the aegis of ARIA indicate that disease control is being considered for future initiatives and methods for measuring severity and control in allergic disease must be uniform [30]. AR severity is not equivalent to the level of control.

Some cases of severe disease might respond well to treatment (i.e., good control), whereas some cases of mild disease might not (i.e., poor control). Likewise, a totally controlled patient taking an H1 antihistamine combined to a nasal corticosteroid and relapsing every time he/she stops treatment probably has a severe underlying disease [31]. Furthermore, poor disease control may also be related to poor treatment compliance and psychosocial factors rather than high disease severity. Mild disease may be a problem for some patients but not for others. Conversely, severe disease may bother some patients far less than others.

The CARAT, RCAT and ARCT are multi-item questionnaires that require the patient to provide a fair amount of information on his/her recent condition. It should help treatment decisions. However, since control is largely a patient-led concept, remote measurements (by phone or over the Internet) could conceivably reduce the frequency of face-to-face consultations. Applications on cellular phones (i.e., e-health technology) could help. Nevertheless, as noted by Glasziou et al. [32], the benefits of monitoring the response to treatment, detecting adverse effects and gauging the need to adjust treatment must be balanced against inconvenience, cost and the potential impact of false positives and false negatives of disease control. Measurements of control must therefore be reproducible, easy to perform, easy to interpret and should focus on the disease’s impact in everyday life. For the patient, measures should be easily obtained and allowing patients to self-medicate. For the physician, tools must have a low burden in a busy clinical practice and should guide clinical action following the test result.

5. Discussion

Although the traditional goal of treatment has been to reduce the symptoms of AR, current opinion suggests that management should be aimed at achieving long-term, stable control, corresponding to minimal or even no symptoms, no limitations in daily activity, minimal use of rescue medications and infrequent exacerbations. The variables that are closely related to both physiologic measurements and appearance of symptoms have been explored. Several tools (particularly CARAT10, RCAT, ARCT and VAS) have been validated and used in the assessment of the patient’s clinical symptoms and new therapeutic methods. AR control is multidimensional and, a single item or question may not be enough to capture clinical pictures. Thus, tools with multidimensional measurements are likely the best choice to quantify AR control and guide therapeutic decisions although they need to

be validated prospectively in real life studies. The tools reviewed here are easily manageable, even allowing self-adaptation of treatment. This should empower patients to seek medicine if they do not achieve good control of their AR. Unfortunately, head-to-head comparisons of these various control-based tools have not been reported. Current questionnaires used in the evaluation of AR control have been developed and validated in adolescents and adults. There is a need to extend/develop these questionnaires in children with AR. Future research should be focused on the applications of these instruments in clinical practice and answer to the question as to whether their use can improve clinical outcomes.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

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