

EDITORIAL

ASTHMA: OBJECTIVE ASSESSMENT

Asthma is a chronic disease and its progression differs in the frequency of acute exacerbations, seasonality, intensity, symptom duration after crises, and the presence of mild symptoms between crises; there may even be clinical remissions (common in adolescence) that can be definitive, although the risk of recurrence in the long-term does not disappear. Evaluation of clinical status and respiratory function during this time is essential to identify the patient's true status and treatment requirements. However, the validity of the various procedures available for performing this evaluation is debatable, although methods aiming to provide objective data on the true status of each patient are gradually being developed.

Patients usually tell their specialists about their status since the last assessment, and their subjective evaluation may reflect reality poorly. Patients not infrequently report they feel well, while clinical examination and spirometry show the opposite, an observation frequently confirmed in adolescents, who consider some limitation in their daily activity as his normality. In addition, children's perceptions of their clinical status are often more optimistic than those of their parents¹.

Sometimes, especially with the most severe asthma, patients are given a questionnaire to fill out daily, in which they note their symptoms, need for rescue medication and, sometimes, peak-flow measurements². Errors in filling out these questionnaires can result from subjective symptom interpretation, the patient's mood, dependence on the use of beta-agonists, and incorrect performance of peak flow monitoring. Moreover, this test is of limited value and consequently its utility is doubtful³, although it is widely used, even in public and private physicians' offices⁴.

With these data, as well as through clinical examination and evaluation of respiratory function, the specialist will obtain the information required to identify the patient's true status, although the criteria used in evaluating all these data and the therapeutic approach adopted may differ among specialists⁵. Spirometry is the simplest and easiest-to-use procedure providing information on airway patency, both in the thickest bronchi and in the small airways, which is where the first and main obstacle to proper ventilation lies; this information is not provided by peak flow. The possibility of using spirometry to evaluate the degree of bronchial reactivity (methacholine or histamine tests) and the reversibility of obstruction (bronchodilator test)⁶ increase the utility of this procedure. Airway resistance as-

assessment through interrupter resistance (*Rint*) measurements or plethysmography provides further objective data on the degree of bronchial obstruction⁷.

However, none of these procedures provides information on the severity of the inflammatory reaction – the pathogenic basis of the disease – knowledge of which can guide the therapeutic strategy to be followed, especially the need for inhaled corticosteroids, optimal doses, and treatment duration. Bronchoalveolar lavage (BAL), the induced sputum test, and bronchial biopsy provide useful information for cellular study but these techniques are reserved for cases of severe asthma and are not necessary in most patients.

Two non-invasive and easily performed procedures have been developed in the last few years and could form the backbone of investigation in many patients. Exhaled nitric oxide fraction (FeNO) is a marker of eosinophilic inflammation that could even be used in preschool children⁸. Although not free of difficulties, such as the normal limits of environmental or nasal and sinus NO, FeNO measurement seems to be highly useful, especially since the publication of recommended standards for performing this technique^{9,10}. Reduction of FeNO after inhaled corticosteroid therapy is an excellent guide to the need for this medication or to the correct dose in each patient¹¹. Another, more recent technique is exhaled breath condensate (EBC), in which distinct elements involved in the inflammatory reaction – mainly cytokines and leukotrienes – can be determined¹². The pH of EBC samples seems to be a good marker for assessing airway inflammation, since airway acidity increases in acute asthma exacerbations and decreases after several days of corticosteroid therapy. Likewise, low pH seems to be a predictive marker of disease progression, as well as of the risk of asthma in children with allergic rhinitis and atopic dermatitis¹³.

Objective evaluation of the true status of asthmatic patients can be based on either of these two markers. However, due to the high price of equipment and amount of time required, these techniques are not useful in daily clinical practice, and are even less so in private practice. Hence spirometric evaluation of respiratory function¹⁴ continues to be the mainstay of objective asthma follow-up, while the new techniques are reserved for patients with the greatest severity.

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