EDITORIAL

Exercise induced asthma, still much to learn

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The expression "Exercise Induced Asthma" (EIA) is used when describing asthmatic patients who experience bronchoconstriction with exercise. In lung function laboratories this condition is defined by at least a 15 % decrease in forced expiratory flow in the first second (FEV_1) after a standardised exercise challenge.[1] Although it is considered characteristic of asthmatic patients, it is also present in about 3-6 %[2,3] of non-asthmatic children, and up to 40 % of children with documented Exercise Induced Bronchospasm (EIB) have no asthma symptoms.[4] Bronchoconstriction induced by exercise in asthmatic patients is called Exercise Induced Asthma (EIA) as opposed to EIB, which is reserved for non-asthmatic children. It is not clear whether this EIB group of children is composed of non-diagnosed asthmatics, or whether they are future asthmatics, or if they are at the higher limit of bronchial responsiveness in the normal population. The study by Ulrik[5] did not find that EIB was a risk factor for developing asthma in the future.

EIB is frequent. Data referring to its prevalence vary from one study to another, with the difference in methodology, thus making comparisons very difficult. In Spain, using the same methodology, the prevalence in the general population varies from 5.5 to 17 %,[2,6,7] in the age range of 13-14 years. In the case of asthmatics this is much higher.[2]

Adults usually programme their exercise and, consequently, certain strategies employed to control EIB are very effective (for example inhaling ?-agonists minutes before starting). However, exercise in children is usually non-programmed and asthma control is probably the best method to avoid EIA. In the British guidelines on the management of asthma, EIA is considered as uncontrolled asthma,[8] and in the vast majority of expert asthma guidelines EIA control is included as nothing more than an aim of the treatment.[8,9,10]

In recent years there has been an increase in information concerning the relationship between EIA and inflammation. The mean baseline of exhaled nitric oxide (eNO) is significantly correlated with the mean maximum % fall in FEV_1[11,12] and eNO in the EIA-positive group is significantly higher than that in the EIA-negative group.[11,13] It has been postulated that EIA could be excluded by the baseline level of eNO in asthmatics patients.[14,15] This correlation between baseline eNO and the fall in FEV_1 does not exist in non-atopic patients with EIA,[16] indicating that in these patients other mechanisms different from eosinophilic inflammation are involved.

In asthmatics with EIA, significantly higher numbers of eosinophils in induced sputum have been found, and there is a significant correlation between the baseline count and the percentage fall in post-exercise FEV_1.[17,18] It has been shown that airway vascular hyper-permeability, eosinophilic inflammation, and bronchial hyperreactivity are independent factors predicting the severity of EIA.[19]

The present issue of Allergologia et Immunopathologia contains a paper by Martin-Muñoz et al. which studies the risk factors related with EIA in controlled asthmatic children. The authors reach two main conclusions: that treatment with allergen im-

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munotherapy is a protective factor for EIA, and that exposure to indoor allergens is a risk factor for this condition.

There are very few papers in the literature in which the main aim of the study has been the ability of immunotherapy to control EIA. The vast majority of trials have studied the unspecific bronchial hyperresponsiveness to pharmacological agents. The meta-analysis by Abramsom[20] shows a moderate reduction in non-specific hyperresponsiveness with immunotherapy, yet significant heterogeneity was present when comparing different challenging agents. Thus, it could be wrong to extrapolate the improvement of responsiveness to methacoline to that of exercise. In fact, eosinophilic inflammation is correlated with a percentage fall of FEV_1 in EIA, but not with methacoline PC_{20}.[17,21]

Furthermore, treatment of inflammation with inhaled corticosteroids or montelukast is not completely effective: EIA persists in 55 % of asthmatics after 8 weeks of treatment with budesonide[21]; and montelukast significantly reduces the percentage fall of FEV_1 after two weeks of treatment, but does not afford complete protection.[22]

Further research is necessary to better understand the phenomenon of EIA, because neither bronchial hyperresponsiveness nor inflammation completely explains why it is present in many, but not all, asthmatics and also in a significant number of asymptomatic children. There is still a great deal for us to learn about it.

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