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Long-lasting effect of sublingual immunotherapy in children with asthma due to house dust mite: a 10-year prospective study

V. Di Rienzo, F. Marcucci*, P. Puccinelli†, S. Parmiani†, F. Frati*, L. Sensi*, G. W. Canonica‡ and G. Passalacqua‡

*Clinica Villa Benedetta, Rome, *Clinica Pediatrica, University of Perugia, Perugia, †ALK-Abellò, Lainate, Milan and ‡Allergy and Respiratory Diseases, DIMI, University of Genoa, Genoa, Italy*

Summary

Background Subcutaneous immunotherapy for respiratory allergy has shown a long-lasting efficacy after its discontinuation, whereas this evidence is still lacking for sublingual immunotherapy, despite the fact that it is widely used.

Objective We aimed to evaluate whether a long-lasting effect of SLIT occurs, in a prospective parallel group controlled study.

Methods Sixty children (mean age 8.5 years) suffering from allergic asthma/rhinitis due to mites were subdivided into two matched groups: 35 underwent a 4- to 5-year course of SLIT with standardized extract and 25 received only drug therapy. The patients were evaluated at three time points (baseline, end of SLIT and 4 to 5 years after SLIT discontinuation) regarding presence of asthma, use of anti-asthma drugs, skin prick tests and specific IgE.

Results We found that in the SLIT group there was a significant difference vs. baseline for the presence of asthma ($P \leq 0.001$) and the use of asthma medications ($P \leq 0.01$), whereas no difference was observed in the control group. The mean peak expiratory flow result was significantly higher in the active group than in the control group after 10 years. No change was seen as far as new sensitizations were concerned. Specific IgE showed a near-significant increase (baseline vs. 10 years, $P = 0.06$) only in the control group.

Conclusion Our study demonstrates that sublingual immunotherapy is effective in children and that it maintains the clinical efficacy for 4 to 5 years after discontinuation.

Keywords asthma, children, long-lasting effect, respiratory allergy, rhinitis, sublingual immunotherapy

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Introduction

Allergen-specific immunotherapy (IT) is widely used in the treatment of respiratory allergy and it is presently recognized as a biological response modifier as it is capable of affecting at the earliest stages the immune response to the offending allergen. In fact, the term 'allergen vaccination' has been proposed for this practice [1]. The mode of action of IT is complex, but recent experimental data suggest that IT redirects the lymphocyte response towards the Th1-type and reduces the production of cytokines, such as IL-4, IL-5 and IL-13 [2–5]. These mechanisms of action make IT unique, and different from any other pharmacological treatment. First, at variance with drugs, IT is capable of modifying the natural history of allergic disease. This fact was demonstrated in a clinical paediatric study as early as 1968 [6]. The mentioned study raised some criticisms because of its methodological limits, but the observation was then confirmed in more rigorous trials, such as the PAT study [7]. Secondly, IT is capable of preventing the onset of new sensitizations, as clearly demonstrated in children and adults in several studies [8–10]. Finally, IT maintains its clinical efficacy even for 3 to 5 years after its discontinuation, as confirmed by several studies conducted with different evaluation criteria [11–13]. The aforementioned characteristics (long-lasting effect, preventive effect) have been demonstrated only for the subcutaneous route of IT (SCIT).

Sublingual IT (SLIT) is presently widely used, especially in European countries; it has the main aim of reducing the risks of severe adverse events, and of making the treatment more acceptable to the patient. The short-term clinical efficacy of SLIT has been repeatedly demonstrated and confirmed in pollen-induced allergy, in patients with either rhinitis or asthma (for review see [14]). Concerning respiratory allergy due to mites, there are seven controlled studies [15–21]; four out of them were performed in children [15, 16, 19, 21] and only one reported unsatisfactory results [16], but no data are available on the long-term outcome. On the other hand, SLIT showed an excellent safety profile in both adults and children, as testified by the controlled trials [22] and the post-marketing surveillance studies [23, 24]. Noteworthy is that no severe systemic side-effect has ever been reported in more than 15 years. It is conceivable that

Correspondence: Giovanni Passalacqua, Allergy and Respiratory Diseases – DIMI, Padiglione Maragliano, Largo R. Benzi 10, 16132 Genoa, Italy. E-mail: giovanni.passalacqua@hsanmartino.liguria.it