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ORIGINAL ARTICLE

Prevalence and factors linked to atopic eczema in 10- and 11-year-old schoolchildren. Isaac 2 in Almeria, Spain

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Abstract
Background: Atopic eczema affects 5–10% of the Spanish paediatric population, and has increased in frequency over the last few decades, probably due to changes in the environment and lifestyle. Phase II of the ISAAC *(International Study of Asthma and Allergies in Childhood)* uses a standardised methodology to establish the prevalence of allergic disorders and factors linked to them in each centre.
Objectives: To assess the prevalence and severity of atopic eczema, and to establish factors linked to atopic eczema in 10–11 year-old school children in the city of Almeria (South-East coast of Spain).
Material and methods: An ecological study was carried out as part of ISAAC II, using homologated questionnaires and allergic tests in 1143 schoolchildren. Statistic association was assessed by means of χ^2 test, and then logistic regression analysis was performed with the most significant variables from the univariant analysis.
Results: The prevalence of atopic eczema was 11.4%. The risk factors found in the multiple logistic regression analysis were: personal antecedents of severe asthma (OR 19 CI 95% 1.35–266) and severe rhinitis (OR 7.7 CI 95% 1.79–33), fungi in bedroom during the first year of life (OR 4.2 CI 95% 1.17–15.1) and atopic eczema in one parent (OR 5.2 CI 95% 2.69–10.1).
Conclusions: The prevalence of atopic eczema is similar to that found in other studies within ISAAC Phase I. The most important risk factors for atopic eczema are family and personal history of other atopic diseases and the presence of fungi in the home.
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Introduction

In recent decades there has been a global increase in allergic diseases.[1] Specifically, a continuous increasing of eczema and eczema medication has been reported in developed countries.[2] However, variability in the methodology and the diagnostic criteria used in the numerous studies on prevalence of allergic disorders complicate their comparison.

The ISAAC[3] (*International Study of Asthma and Allergies in Childhood*) was created in 1991 with the aim of establishing and comparing the prevalence of asthmaand other allergic disorders in each country and to study tendencies in allergies over time, using a standardised methodology. To this effect, the study used a questionnaire comprising simple questions, aiming to prevent the reported differences from being attributable to variation of methodology and diagnostic criteria. As a result of various studies based on ISAAC, the incidence of atopic eczema (AE) in the infant population can be calculated at 15–20%, showing an increase in prevalence.[4] Like asthma and rhinoconjunctivitis, which it often precedes or with which it coexists, atopic eczema has important social and economic consequences.

Assessment of children with AE proves difficult due to its fluctuating nature and the existence of different corporal distribution patterns according to age. In consequence, it is difficult to predict evolution of the disease in a single examination. For this reason, a universal, simple and efficient method to assess AE has not yet been established, and given that neither specific lesions nor laboratory diagnostic or predictive markers exist, diagnosis is based on clinical examination and at present there are no internationally accepted criteria for use in epidemiologic studies, all of which explains why the aetiology and physiopathology of AE have not been studied as much as those of asthma and rhinitis. The criteria of Hanifin and Rajka[5] must be used by specialist personnel and are not useful in epidemiological studies. In 1994 the UK Working Party[6] proposed some simpler diagnostic criteria which were more operative and validatable, becoming the choice for prevalence studies as they can be identified by personnel with basic training. However, some authors consider that they are not suitable for epidemiological studies or for clinical practice because although the specificity is elevated (over 90% in all studies) the sensibility is low (10–88% in different populations).[7]

Different factors, such as high levels of IgE and eosinophilia and the coexistence with asthma and/or rhinitis support the considering of AE as an allergic disease. Moreover, association has been observed between severity (using the SCORAD method) and levels of IgE and sensitivity to pneumo-allergens and food.[8] However, although allergy is a common denominator it is not an essential requirement for disease development, in which factors such as scratching and microbial colonisation of the skin play a key role. In this way, it is relatively frequent to find children with AE who present positive cutaneous tests to food or aeroallergens, even before entering into contact with them or after having gained tolerance to them, with test positivity being a simple associated epiphenomenon. Indeed, the role of allergens in atopic eczema is controversial, with some authors even doubting the allergic nature of the disease.[9] The suggestion that AE can be divided into two types, atopic and non-atopic[10], has few practical consequences: on the one hand, there is no phenotype differentiation between them and, on the other, the presence of sensitisation depends on age and on the criteria used to establish test positivity, together with the number and quality of allergen extracts tested.

In this study, we aim to describe the prevalence and severity of atopic eczema in 10- and 11-year-old children from Almeria (South-east Spain), and investigate the factors associated with the presence of eczema in this patient population.

Population and methods

In the spring and autumn of 2001 a cross-sectional study was made to analyse the relationships between different environmental conditions, personal and familial factors, and the frequency of atopic eczema (AE). After approval of the study had been obtained from the Clinical Research Ethics Committee of Torrecárdenas Hospital, as well as from the Regional Health and Education Authority, a questionnaire was distributed together with the parental authorisation form to 2293 schoolchildren aged 10–11 years in the 29 state schools in the city of Almeria, with a final study population of 1143 (49.8%) children (Figure 1).

The methodology used was that of the ISAAC project in its Phase II, in which the parents completed homologated questionnaires on bronchial, nasal and skin symptoms manifesting in the previous year and at other times in the past. Questions were also included relating to the use of treatments and healthcare services.

After obtaining informed consent, physical examination was performed to find eczemas in any of the characteristic body locations and skin prick tests were made to establish the presence of allergic sensitisation. The battery of test allergens included the following reagents (ALK-Abelló®, Madrid, Spain): *Dermatophagoides pteronyssinus, Dermatophagoides farinae,* cat dander, Alternaria, grass pollen mixture (*Dactylis glomerata, Lolium perenne, Festuca pratensis, Poa pratensis, Phleum pratense* and *Avena eliator*), tree pollen mixture (*Betula verrucosa, Alnus glutinosa* and *Corylus avellana*), positive control (histamine) and negative control (saline solution). For the present study, atopy was taken to be synonymous of allergic sensitisation, the latter being understood as representing positivity to at least one allergen, considered as being a wheal 3 mm or greater than the negative control.

The SPSS® version 12.0 statistical package for Microsoft Windows® was used for data analysis. Calculations were made of the prevalence of symptoms and the frequency of the rest of the variables based on the ratio between the number of positive responses and the number of questionnaires completed for each question. The chi-squared test (χ^2) was used to evaluate the association between the dependent variables and dichotomic variables, while logistic regression analysis was used to assess the association with polychotomic variables – defining which factors are correlated to atopic eczema (assigning risk or protective character). Statistical significance of associations was accepted for $p < 0.05$. Later, unconditional multiple logistic regression analysis was made with all the variables yielding $p < 0.20$.