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SENSITIZATION IN PATIENTS WITH ATOPIC DERMATITIS

Antônio Pedro Pinto Perez[1], Vinícius Eduardo de Oliveira[2], Natália Hurbano Teixeira[3], Pedro Henrique Moura Teixeira[4], Nicole da Silva Galina[5], Thiago Fontana Sartor[5], Isadora Pavanelli Matosinhos[6], Yasmim Scannapieco Fernandes[1], Valéria Aparecida Vieira da Silva[1], Raquel Najla de Paula Dorsch[1], Lucas José Luiz Forte Correa[1], Lara Chalita Nohra[1], Gabriel Luiz Lino[7], Gustavo Francisco Santos da Silva[7], João Pedro de Figueiredo Camargo[8], Henrique Victor Belini da Silva[9], Ana Isa Oliveira de Azevedo[10], Analice Godoi Silva Raymundo[11], Scyonara Cordeiro de Carvalho[12], Keyla Poliana da Silva Oliveira[13]

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ORIGINAL RESEARCH ARTICLE

ABSTRACT

This study aimed to identify the allergic sensitization profile, as well as sociodemographic and socioenvironmental factors, of adults and adolescents with atopic dermatitis (AD). Sociodemographic and socioenvironmental aspects were not prominent among individuals with allergic diseases in this study. Among adults with AD, the allergic phenotype was not as clearly evident as the non-allergic phenotype, in which individuals presented normal IgE levels and no hypersensitivity to the allergens tested.

Keywords: Sensitization; Atopic Dermatitis; Allergy.

SENSIBILIZACIÓN EN PACIENTES CON DERMATITIS ATÓPICA

RESUMEN

Este estudio tuvo como objetivo identificar el perfil de sensibilización alérgica, así como los factores sociodemográficos y socioambientales, de adultos y adolescentes con dermatitis atópica (DA). Los aspectos sociodemográficos y socioambientales no fueron prominentes entre los individuos con enfermedades alérgicas en este estudio. Entre los adultos con DA, el fenotipo alérgico no fue tan evidente como el fenotipo no alérgico, en el cual los individuos presentaron niveles normales de IgE y no presentaron hipersensibilidad a los alérgenos estudiados.

Palabras clave: Sensibilización; Dermatitis atópica; Alergia.

Instituição afiliada – [1]UNIVERSIDADE ANHEMBI MORUMBI, [2]UNIVERSIDADE FEDERAL DE GOIÁS, [3]UNIVERSIDADE ESTADUAL DO AMAZONAS, [4]UNIVERSIDADE ESTADUAL DO RIO DE JANEIRO, [5]UNIVERSIDADE DE CUIABÁ, [6]CENTRO UNIVERSITÁTIO INTEGRADO, [7]UNIVERSIDADE ESTADUAL DE MARINGÁ, [8]UNIVERSIDADE DO OESTE DE SANTA CATARINA, [9]CENTRO DE MEDICINA TROPICAL DE RONDÔNIA, [10]UNIVERSIDADE ALTO VALE DO RIO DO PEIXE, [11]UNIVERSIDADE ESTADUAL PAULISTA, [12]SECRETARIA MUNICIPAL DE SÃO JOSÉ DO POVO/MT, [13]UNIVERSIDAD NACIONAL ECOLÓGICA

Autor correspondente: *Alex Moreira Souza* med.alexmoreira@gmail.com

INTRODUCTION

Atopic dermatitis (AD) is a disease that usually begins in childhood, with a prevalence ranging from 11.4 to 24.2% in this population, but can emerge in adulthood (1), where its prevalence ranges from 7 to 10% (1). Among allergic diseases, AD is more common than food allergy and less common than asthma and rhinitis, but it is very frequently associated with these diseases in the same individual (2).

Its pathophysiology results from structural alterations in the skin, such as keratinocyte dysfunction, alterations in the lipid layer, and the consequent increase in transepidermal water loss, combined with a Th2-type immune response pattern, which affects keratinocytes and impairs the skin's barrier function (3,4). Recent studies demonstrate that AD can have at least two main phenotypes: allergic and non-allergic. Each phenotype has its own peculiarities. For example, in the pathophysiology of allergic AD, the Th2 type response predominates, with production of IL-4, IL-5 and IL-13 and high levels of IgE. The non-allergic phenotype presents a different pathophysiology, where cutaneous T cells produce high amounts of IL-5 and Interferon gamma, but lower amounts of IL-4 and IL-13. This pattern has a cause and effect relationship with the reduced levels of IgE in this phenotype (5,6).

The classic definition for diagnosing AD requires three or more of the following characteristics: pruritus, typical location (flexural lichenification in adults or facial and/or extensor lichenification in children), and a personal or family history of atopic disease. In addition to these, other signs/symptoms may also be present, including xerosis, ichthyosis, elevated serum IgE levels, a tendency to skin infection, cheilitis, Dennie-Morgan crease, palmar hyperlinearity, among others (7).

AD treatment follows a multifaceted and gradual approach that is adapted according to disease severity. For all patients, basic treatment and flare-up prevention consists of daily showers or baths followed immediately by the application of emollients and moisturizers, avoiding triggers such as irritants, airborne or food allergens, and extremes of heat, cold, or humidity. In mild AD, treatment involves the as-needed use of low- to medium-potency topical corticosteroids (TC); In moderate to severe AD, a medium-potency corticosteroid should be used regularly. Topical calcineurin inhibitors

(pimecrolimus or tacrolimus) may also be used proactively. (8,9).

Patients with severe or unresponsive disease should be referred to an allergist or dermatologist. These patients may require systemic treatment and more frequent regular medical follow-up. Chronic or recurrent use of systemic corticosteroids is not recommended, but these medications can serve as bridging therapies to more appropriate long-term treatment. Alternative treatments for moderate to severe AD include phototherapy, cyclosporine, methotrexate, azathioprine, or mycophenolate mofetil, and immunobiologicals such as dupilumab (10).

This study aimed to identify the allergic sensitization profile, as well as sociodemographic and socioenvironmental factors, of adults and adolescents with atopic dermatitis. Secondarily, to describe the sociodemographic and socioenvironmental characteristics of individuals with atopic dermatitis and compare them to individuals with asthma and rhinitis.

METHODOLOGY

A systematic narrative review was conducted. Evidence was collected from scientific articles published in English over the past 10 years (this being the inclusion criterion) in the following databases: PubMed, Scielo, Lilacs, and Science Direct. The search string was the combination of the words: "sensitization*" and "atopic dermatitis*." The collected data were tabulated in Excel spreadsheets and analyzed using IBM SPSS Statistics® 22.0.

RESULTS AND DISCUSSION

Epidemiological studies show a high and increasing prevalence of allergic diseases such as rhinitis, asthma, and atopic dermatitis (4,10). This study focused on AD, comparing it with the asthma and/or rhinitis groups, primarily in Brazil. In the Greater Florianópolis region, studies of adolescents show slightly higher prevalences, 13.2% and 13.3% (5,7).

Among the sociodemographic, economic, and environmental characteristics analyzed, no differences were observed between individuals with associated allergic

diseases. It was observed that AD appears to be more common in females, depending on the age group evaluated (10,11).

Regarding skin tests, individuals with asthma and/or rhinitis showed greater sensitization to epithelia, feathers ($p<0.00$) and dust mites ($p<0.001$) (4). Hypersensitivity to dust mites is known to be very common in asthmatics and rhinitis patients (10,11,12). Some allergenic proteins from dogs and cats have amino acid sequences with up to 60% similarity (3,6), which could explain a cross-reaction between these allergens and a higher frequency of sensitization observed in skin tests.

Regarding the biological characteristics of subjects with AD, one study highlighted the non-allergic AD phenotype, which is defined by the absence of positive skin tests, total serum IgE levels within normal limits, negative specific IgE levels to major allergens, and the absence of other atopic diseases (8). Although specific IgE was not investigated in this study, 5 subjects with AD had negative skin tests, and the mean value found in total serum IgE was 99.8 IU/ml, corroborating other findings of the non-allergic AD profile (12,13). The immunological mechanism of allergic AD is different from that of non-allergic AD. A predominance of a Th2 response with increased interleukin (IL)-4, IL-13, IL-5, and interferon-gamma is present in allergic AD. Elevated levels of IL-4 and IL-13 are necessary for IgE synthesis, therefore, IgE levels are elevated in this phenotype. In non-allergic AD, these cytokines, as well as IgE production, are normal (8).

FINAL CONSIDERATIONS

Sociodemographic and socioenvironmental factors were not prominent among individuals with allergic diseases in this study. Among adults with AD, the allergic phenotype was not as clearly evident as the non-allergic phenotype, in which individuals presented normal IgE levels and no hypersensitivity to the allergens tested.

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