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FREQUENCY OF SCABIES IN PEDIATRIC ALLERGY CLINIC AND EVALUATION OF DEMOGRAPHIC CHARACTERISTICS OF AFFECTED PATIENTS

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Abstract

Objective: There has been an increase in the number of cases as pediatricians mistakenly refer scabies to an allergy clinic, misdiagnosing it as allergic illnesses, particularly atopic dermatitis (AD), because of the presence of symptoms such as itching and eczematous lesions. The objective of our study was to examine the prevalence of scabies in children who were referred to the pediatric allergy clinic after being misdiagnosed with AD. We also aimed to determine the clinical and demographic distinctions between individuals with AD and scabies.

Methods: The files of 610 patients those referred to Sakarya Training and Research Hospital Pediatric Allergy Clinics between February-December 2022 with complaints of 'itching and rash' were documented retrospectively. Cases of acute urticaria, chronic urticaria, mastocytosis, insect bite, maculopapular rash with viral infection, drug-induced reactions were excluded. Patients whose final diagnosis was AD and who were diagnosed with 'definite scabies' were included in the study.

Results: A total of 404 patients were included in the study. The rate of definite diagnosis of scabies was 18.5% (n:75/404). The median age at presentation was 19 months (IQR 8-51) in patients diagnosed with AD and 53 months (IQR 17-117) in patients diagnosed with scabies (p<0.005). The median time from symptom onset to diagnosis was seven months (IQR 2.5-24) in the AD group and two months (IQR 1-4) in the scabies group (p<0.005). Only 20% (n:15/75) of patients with scabies had family history, 16% of patients (n:12/75) had received one or more treatments before. Pruritis was present in only 72% (54/75) of children. Hospitalization rate was 0.05% (n:4/75).

Conclusion: We recommend that scabies should be considered as a potential diagnosis for patients who visit to any clinic with symptoms of itching and a skin rash. Timely identification and medical intervention for scabies in children is crucial in order to minimize the spread of the disease throughout the community and prevent potential complications.

Keywords: *Scabies, atopic dermatitis, allergy.*

Introduction

The condition scabies occurs globally and is caused by the mite *Sarcoptes scabiei var hominis*, a highly contagious, itchy, parasitic skin infestation that affects all races and social classes in all climates.[1] The incidence of scabies has increased significantly in Türkiye, as it has around the world, in recent years.[2,3] Dermatologists, pediatricians, and family physicians frequently encounter this condition in daily practice, however scabies can be both one of the most straightforward and difficult conditions to diagnose.[4] It can be difficult in a pediatric clinic due to the wide range of differential diagnoses of childhood skin diseases. Although it is easy for dermatologists with dermoscopy and microscopy, unfortunately, in practice, scabies is primarily diagnosed based only on the clinical picture, which may lead to a misdiagnosis.[5,6] In its 2020 report, the International Alliance for the Control of Scabies (IACS) divided the diagnosis of scabies into three classes: definitive diagnosis level A, clinical diagnosis level B, and suspicious diagnosis level C, according to physical examination, anamnesis, and laboratory features. A diagnosis of clinical (IACS B) or suspected scabies (IACS C) should only be made if other differential diagnoses are considered less likely than scabies.[7]
Due to manifestations, including itching and eczematous lesions, it has recently become more common for pediatricians to refer scabies to an allergy clinic with the misdiagnosis of allergic disorders, mainly a misdiagnosis of atopic dermatitis (AD). The aim of this study was to investigate the frequency of scabies in children referred to the pediatric allergy clinic via 'green field' by pediatricians. We also aimed to identify clinical and demographic differences between the patients with AD and scabies.

Methods

Patients who referred with complaints of 'itching and rash' to Sakarya Training and Research Hospital Pediatric Immunology and Allergy Clinics between February 2022 and December 2022 were taken into consideration. The files of 610 patients were reviewed retrospectively with ICD diagnosis codes of B89 (Scabies), L20.8 (Atopic other dermatitis), L20.9 (Atopic dermatitis unspecified), L30.8 (Dermatitis other unknown) and L30.9 (Dermatitis unspecified). Cases of acute urticaria, chronic urticaria, mastocytosis, insect bite, maculopapular rash with viral infection, and drug-induced reactions were excluded. We consulted patients with a preliminary diagnosis of scabies to different dermatology clinics. Finally 404 patients, diagnosed with 'AD' by us and 'definitive scabies' by dermatologist, were included in the study. Thus, we aimed to determine the frequency of scabies in pediatric allergy clinics and clinical differences with atopic dermatitis, as it is the most confused dermatological disease. Ethics committee approval was received (No:E-71522473-050.1.04-285287-287).

Statistical Analysis

All statistical analyses were performed using IBM SPSS for Windows version 20.0 (IBM Corp., Armonk, NY, USA) and MedCalc 14 (MedCalc Software, Ostend, Belgium). Kolmogorov-Smirnov and Shapiro-Wilk's tests were used to assess the assumption of normality. Numeric variables were presented with mean±standard deviation or (in case of non-normal distribution) median (IQR: Interquartile range). Categorical variables were summarized as counts (percentages). Comparisons of numeric variables between groups were carried out using Mann-Whitney U test since the normality assumption did not hold.

Results

A total of 404 patients were included in the study, of whom 45.7% were female. The rate of definite diagnosis of scabies was 18.5% (75/404). The median age at presentation was 21 (IQR 8.2-57.7) months, and the median time from symptom onset to diagnosis was five (IQR 2-12.7) months. The median age at presentation was 19 (IQR 8-51) months in patients diagnosed with AD and 53 (IQR 17-117) months in patients diagnosed with scabies (p<0.005). The median time from symptom onset to diagnosis was seven (IQR 2.5-24) months in the AD group and two (IQR 1-4) months in the scabies group (p<0.005) (Table 1).

Table 1. Demographic data of patients (n=404)

	Atopic dermatitis (n=329)	Scabies (n=75)	*p*
Sex (female), n (%)	151 (45.9)	34 (45.3)	0.93
Median (IQR) age at diagnosis, months	19 (8-51)	53 (17-117)	<0.005
Median (IQR) symptom duration, months	7 (2.5-24)	2 (1-4)	<0.005

Although only 20% (15/75) of patients with scabies had a family history, 16% of patients (12/75) had received one or more treatments previously (Table 2). Pruritis was present in 72% (54/75) of children. Due to the limited use of permethrin in patients under three months of age, treatment could not be given to three patients. Hospitalization rate was 5.3% (4/75) with disseminated bacterial skin infection secondary to scabies.

Table 2. Family history and treatment status of patients definitively diagnosed with scabies (n=75)

	Scabies (%) n=75
History of family infection	15 (20)
Pruritis	21 (28)
Previous treatment	12 (16)
Hospitalized	4 (5.3)

Discussion

Scabies is a significant problem in public health that affects people of all ages. The incidence is particularly high in children aged under two years.[8] In one study conducted in our country, it was stated that the frequency of scabies in preschool children has increased in recent years.[9] One common reason for its spreading is the prolonged diagnostic process.[10] The present study found that almost one-fifth of the patients (18.5%) referred with itching and eczematous manifestations had a final diagnosis of scabies at our pediatric allergy clinic. These patients with a preliminary diagnosis of allergic disease waste time until they make an appointment at the allergy clinic. In a crusted scabies series including pediatric patients, it was mentioned that the main risk factor of severe scabies was associated with delayed diagnosis with the use of topical or systemic corticosteroids.[11] In primary care, family physicians may miss diagnosing scabies because children are more likely to develop scabies with atypical presentation than adults.[12] At the next step, pediatricians refer these patients to allergy clinic for many skin diseases have similar pictures, including contact dermatitis, urticaria, drug-induced reactions and insect bites.[13] Still, the preliminary diagnosis in most of those referred to the allergy clinic was AD.[14] AD is the most common of the dermatides seen in infancy and childhood. It usually starts in infancy and, in most cases, heals during childhood; however, rarely, it may persist to older ages.[15] In parallel with this, the median age of patients diagnosed with AD was significantly younger than those diagnosed with scabies. Interestingly in the present study, the time to diagnose scabies was shorter than that of AD. Although the clinical findings of the two conditions may be similar, there are some distinguishing features. The itching caused by scabies is mainly confined to to the armpits, groin, palmar, and plantar areas in children, as well as to the interdigital spaces, which are not typical sites for AD.[16] Despite this, it is sometimes very challenging to diagnose scabies. Patients may only have subtle signs and may not demonstrate the typical clues, including a history of family exposure, severe pruritis at night, or close contact with a similar presentation, making the infection challenging to diagnose.[17] In the present study, only 20% of children with scabies had a history of family infection and, interestingly, 28% had no pruritis. In our experience, we realize that sometimes families who do not accept a diagnosis of scabies may be pressuring pediatricians to refer them to allergy clinics for investigation of atopic conditions.

Contrary to popular belief, scabies is not just a simple skin infection. Erosion of the skin, formation of excoriated primary scabetic papules, and secondary eczematous plaques lead to deterioration of the skin's barrier function. As a result, there is a predisposition to secondary bacterial infections. In the present study, four of 75 patients were hospitalized and treated for disseminated bacterial skin infection, secondary to scabies. *Staphylococcus aureus* and group A *Streptococcus* are the most common pathogens. These pathogens cause acute, local skin and soft tissue infections, including cellulitis, pyoderma, and skin abscesses. Group A *Streptococcus* skin infections secondary to scabies can cause complications, including acute post-streptococcal glomerulonephritis and acute rheumatic fever in at-risk minority populations.[18]

The persistence of itching in some patients diagnosed and subsequently treated for scabies causes the physician to doubt the diagnosis. Treatment failure is an essential factor in the increased incidence of scabies over the last decade.[19] In the present study, 16% of the patients had received one or more scabies treatments previously. In order to get the desired treatment response, important points in the treatment of scabies must be known, which may differ even according to age in children.[20] It should also be noted that an allergic response to scabies mites and antigens may persist for 2-6 weeks after treatment. In cases with persistent itching and eczema after treatment, continued infestation or postscabial eczema should be differentiated.[21]

To our knowledge, this is the first study researching scabies at a pediatric allergy clinic. Retrospective design is one of the limitations of our study. Our current prospective study will investigate the clinical characteristics of patients with AD versus scabies.

Conclusion

With this study, we aimed to draw attention to the frequent presentation of scabies patients at the pediatric allergy clinic. We suggest that scabies should be included in differential diagnoses of any patients presenting to any clinic with pruritus and rash. Early diagnosis and treatment of scabies in the pediatric patient population is imperative to reduce community transmission and prevent complications.

Conflict of interest

The authors have no conflicts of interest to disclose.

Compliance with Ethical Statement

Ethics committee approval of the study was received from Sakarya University Non-Interventional Clinical Research Ethics Committee (E-71522473-050.1.04-285287-287).

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Author's Contributions

M.T.Ç., Ü.D.: Study idea/Hypothesis; M.T.Ç., Ü.D.: Design; M.T.Ç., Ü.D.: Data Collection; M.T.Ç., Ü.D.: Analysis; M.T.Ç., Ü.D.: Literature review; M.T.Ç., Ü.D.: Writing; M.T.Ç., Ü.D.: Critical review.

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