

A Prospective Evaluation of Early Eczema and Risk of Childhood Asthma At a Tertiary Care Hospital

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ABSTRACT

Background: Childhood eczema carries a heavy burden for the affected child and the family. The present prospective study was conducted to evaluate early eczema and risk of childhood asthma at a tertiary care hospital.

Materials & Methods: The present study was conducted among 150 children for evaluating early eczema and the risk of childhood asthma. The parents of children at age 2 (baseline) were given questionnaires. A detailed questionnaire concerning the child's health, with an emphasis on allergy-related diseases, was also administered. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis using SPSS software.

Results: In the present study 150 children were included in which 53.33% were boys and 46.66% were girls. 60% were of age group 2-4 years and 40% were of age group 4-6 years. 20% children had eczema, 8% children had asthma and 30% children had wheezing.

Conclusion: The study concluded that eczema in infancy is

associated with risk of asthma in childhood.

Keywords: Early Eczema, Childhood Asthma, Allergy-Related Diseases.

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INTRODUCTION

The most frequent inflammatory condition in childhood, eczema affects physiological and psychological wellbeing of affected children and results in substantial costs.^{1,2} It has been suggested that early life eczema is a risk factor for the development of asthma later in life.³ Atopic eczema (AE) and food allergies have the highest incidence in the first 2 years of life. Sensitization to inhalant allergens is rare during these early years. In later childhood, the prevalence of AE, food allergies, and food allergen sensitization decreases and the prevalence of asthma, allergic rhinitis, and sensitization to inhalant allergens rises.^{4,5} The term atopic march is commonly used to describe this typical progression from AE in young children to asthma at school age, not only in population studies but also in individual patients.^{3,6} Reported risks of asthma in children with AE vary greatly, from 25% in some sources to 80% in others.⁷⁻⁹ The present prospective study was conducted to evaluate early eczema and risk of childhood asthma at a tertiary care hospital.

MATERIALS & METHODS

The present study was conducted among 150 children for evaluating early eczema and the risk of childhood asthma. The parents of children at age 2 (baseline) were given questionnaires concerning environmental exposures and the family history of different allergy-related diseases in the parents and siblings were enrolled.

A detailed questionnaire concerning the child's health, with an emphasis on allergy-related diseases, was also administered. "Has your child ever had eczema?" and "Has your child ever experienced a recurrent, itchy rash that lasted at least six months?" required to be responded in the affirmative in order to be given the title of "history of eczema" at the age of two.

"Has your child during the last 12 months used any kind of medication, ointment, cream, tablets, or herbal medicines against eczema?". A yes response to the query, "Has your child ever been diagnosed as having asthma by a doctor?" indicated a history of

asthma. The first question was paired with a yes response to the follow-up inquiry, "Has the child during the last 12 months used tablets, inhalation medications, or other treatments for wheezing, tightness in the chest, or asthma?" in order to determine the child's current asthma status.

The standard prick test (SPT) and specific IgE (sIgE) readings

were used to assess sensitization, and the Scoring of Atopic Dermatitis (SCORAD) index was used to quantify the severity of the disease. Positive sensitization was indicated by a child's positive sIgE or positive SPT. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

Table 1: Demographic data

Variable	N(%)
Gender	
Boys	80(53.33%)
Girls	70(46.66%)
Age groups (years)	
2-4	90(60%)
4-6	60(40%)

Table 2: Prevalence of allergy-related diseases and sensitization in children

Variable	N(%)
Eczema (ever)	30(20%)
Asthma (ever)	12(8%)
Wheezing (ever)	45(30%)

RESULTS

In the present study 150 children were included in which 53.33% were boys and 46.66% were girls. 60% were of age group 2-4 years and 40% were of age group 4-6 years. 20% children had eczema, 8% children had asthma and 30% children had wheezing.

DISCUSSION

A mechanism that explains the association between childhood eczema and asthma is not established. There is evidence supporting both genetic and environmental factors as links between eczema and asthma. Beyer et al¹⁰ found evidence for linkage and allelic association with atopic dermatitis (AD) on chromosomes 13q12-14 and 5q31-33. The marker D5S436 on chromosome 5q31-33, which showed evidence for association with AD in the study by Beyer et al,¹⁰ was the same marker associated with bronchial hyperresponsiveness and atopy in a study by Postma et al.¹¹

In the present study 150 children were included in which 53.33% were boys and 46.66% were girls. 60% were of age group 2-4 years and 40% were of age group 4-6 years. 20% children had eczema, 8% children had asthma and 30% children had wheezing.

Saunes M, et al did a study and results showed that the estimate for the association between eczema at 2 years and current asthma at 6 years was OR=1.80 (95% CI 1.10-2.96). Four of ten children with eczema at 6 years had the onset of eczema after the age of 2 years, but the co-existence of different allergy-related diseases at 6 years was higher among those with the onset of eczema before 2 years of age.¹²

Bisgaard H et al analyzed the effect of environmental exposures in early life and genetic predisposition on the development of eczema before age 3 years. The Copenhagen Study on Asthma in Childhood is a prospective clinical study of a birth cohort of 411

children born of mothers with asthma. Eczema was diagnosed, treated, and monitored at the clinical research unit, and complete follow-up for the first 3 years of life was available for 356 children. Risk assessments included filaggrin loss-of-function mutation; parent's atopic disease; sex; social status; previous deliveries; third trimester complications and exposures; anthropometrics at birth; month of birth; duration solely breast-fed; introduction of egg, cow's milk, and fish; time spent in day care; cat and dog at home; feather pillow; nicotine in infant's hair; and temperature and humidity in bedroom. Eczema developed in 43.5% of the infants. Filaggrin mutation (odds ratio [OR], 3.20; 95% CI, 1.46-7.02; P = .004), mother's eczema (OR, 2.80; 95% CI, 1.70-4.63; P < .0001), and father's allergic rhinitis (OR, 1.91; 95% CI, 1.09-3.33; P = .02) were directly associated with risk of eczema. Risk of eczema was significantly reduced by birth length (OR per cm increase, 0.87; 95% CI, 0.78-0.97; P = .02), increased bedroom temperature (probably inverse causality; OR, 0.80; 95% CI, 0.66-0.97; P = .02), and dog living in the home (OR, 0.44; 95% CI, 0.23-0.87; P = .02). Dog exposure reduced the risk of eczema, whereas short length at birth, filaggrin mutation, and parental atopy increased the risk of eczema by age 3 years.¹³

van der Hulst AE et al did a systemic review with thirteen prospective cohort studies, with 4 representing birth cohort studies and 9 representing eczema cohort studies. The pooled odds ratio for the risk of asthma after eczema, compared with children without eczema, in birth cohort studies was 2.14 (95% CI, 1.67-2.75). The prevalence of asthma at the age of 6 years in eczema cohort studies was 35.8% (95% CI, 32.2% to 39.9%) for inpatients and 29.5% (95% CI, 28.2% to 32.7%) for a combined group of inpatients and outpatients. This review concluded that although there is an increased risk of developing asthma after eczema in early childhood, only 1 in every 3 children with eczema develops asthma during later childhood. This is lower than previously assumed.¹⁴

CONCLUSION

The study concluded that Eczema in infancy is associated with risk of asthma in childhood.

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