Original Article

ATOPIC DERMATITIS IN PEDIATRIC POPULATION: EFFECT OF RISK FACTORS ON AGE AT ONSET AND SEVERITY

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ABSTRACT

OBJECTIVES:

To study the effect of family history of atopy, maternal education and duration of breast feeding on age at onset and severity of atopic dermatitis

PATIENTS AND METHODS:

Study design: observational study, cross-sectional survey

One hundred pediatric patients with atopic dermatitis (AD) attending Dermatology or Pediatrics departments of Madinah Teaching Hospital, Faisalabad, from Jan to March, 2014 were enrolled using convenience sampling. Information regarding demographics, family history of atopy, maternal education and breast feeding were recorded on a structured questionnaire. The children were examined by a consultant Dermatologist, for clinical signs of atopic dermatitis. Severity of AD was calculated for each patient using SCORAD index

RESULTS:

Patients with a family history of atopy had significantly less severe disease at presentation (p= .048) than those with no family history of atopy. Patients who were breast fed for less than 6 months and 6 months to 1 year developed AD earlier than those who were breast fed for 13-24 months (p=.033). The effect of maternal education on age at onset and severity of AD was not significant.

CONCLUSION:

Children with AD may present earlier with a relatively mild disease if they have a positive family history of atopy. Breast feeding for more than one year may have a protective effect by delaying the age of onset. Maternal education has no effect on age of onset and severity of AD.

KEY WORDS: atopic dermatitis, atopic eczema, pediatric patients, Pakistan, developing countries

INTRODUCTION:

Atopic dermatitis is an itchy, chronic or relapsing, inflammatorv chronically skin disease, significantly affecting patients and their family`s quality of life^{1,2}. It is frequently associated with personal and family history of other atopic disorders such as allergic rhinitis and bronchial asthma³. Atopy can be defined as 'a personal or familial tendency to produce IgE antibodies in response to low doses of allergens, usually proteins, and to develop typical symptoms such as asthma, rhinoconjunctivitis or eczema⁴.

In the absence of a confirmatory lab test, diagnosis of atopic dermatitis is based on

diagnostic criteria; UK party's diagnostic criteria being the most validated one⁵. SCORAD index is used to determine the severity of AD^6 .

Atopic dermatitis is a disease of both developing and developed countries⁷. Population based prevalence studies reveal that atopic dermatitis is more common in developed countries as compared to

Corresponding Author: Dr. Tanzeela Khalid, 317-A, Gulberg Colony, Faisalabad E-mail: tanzeelakhalid@yahoo.com developing ones. The prevalence varies from 0.7% in Tanzania to 22.9 % in a Danish study¹. An increased incidence of atopic dermatitis in the last three decades has also been reported by many studies across the world⁸.

A combination of genetic and environmental factors is implicated with the immune dysregulation that leads to atopic dermatitis⁹. Many studies have been conducted on the effect of breast feeding particularly during the first six months on AD with varying results. Some report breast feeding as a protective factor while others even consider it a risk factor¹⁰. Family history of atopy is strongly predictive of prevalence of atopic dermatitis¹¹. Very few studies have been conducted in Pakistan to establish the effect of various factors particularly family history, maternal education and duration of breast feeding on age at onset and severity of the disease. Generation of data representing our local population will help us establish better services and awareness programs for families and patients of atopic dermatitis.

METHODOLOGY:

Study design: observational study, cross-sectional survey.

Study population and sampling:

One hundred atopic patients up to 16 years of age attending Dermatology or Pediatrics departments of MTH, Faisalabad from Jan to March, 2014, were included in the study. Nonpurposive, convenience sampling was used.

The study was approved by institutional ethical review committee. Patients were diagnosed as having atopic dermatitis according to UK diagnostic criteria-Table 1.

Patients with concomitant systemic disease were excluded. After taking informed consent from the parent or attendant, information regarding demographics, family history of atopy, maternal education and breast feeding were recorded on a structured questionnaire. The children were examined by a consultant Dermatologist, for clinical signs of atopic dermatitis. Severity of AD was calculated for each patient using SCORAD index.

Data was analyzed using SPSS version 17. Descriptive statistics were used to study the frequencies of clinical features and mean age of onset. Chi square test was used to compare the effects of risk factors on age at onset and SCORAD. P value < .05 was taken as significant with 95 % confidence interval.

Table 1: The UK refinement of Hanifin and Rajka's diagnostic criteria for atopic dermatitis

In order to qualify as a case of atopic dermatitis with the UK diagnostic criteria, the child must have:						
•An itchy skin condition (or parental report of						
scratching or rubbing in a child)						
Plus three or more of the following:						
1	Onset below age 2 years (not used if child is					
	under 4 years)					
2	History of skin crease involvement (including					
	cheeks in children under 10 years)					
3	History of a generally dry skin					
4	Personal history of other atopic disease (or					
	history of any atopic disease in a first degree					
	relative in children under 4 years)					
5	Visible flexural dermatitis (or dermatitis of					
	cheeks/forehead and outer limbs in					
	children under 4 years)					

Table 2:Demographic profile of patients

	Male	Female	Total						
	n=58	n=42	N=100						
Age									
0-23	28(48.27)	18(42.85)	46						
2-5 years	21(36.20)	20(34.48)	41						
6-10 years	6 (10.34)	3(7.14)	9						
11-16	3 (5.17)	1(2.38)	4						
Residence									
Urban	28(48.27)	23(54.76)	51						
Rural	30(51.72)	19(45.23)	49						
Socioeconomic status									
Upper	3(5.17)	1(2.38)	4						
Middle	33(56.89)	24(57.14)	57						
Lower	22(37.93)	17(40.47)	39						
Severity as	per SCORAI)							
Severe	9(15.51)	3(7.14)	12						
Moderate	38(65.51)	24(57.14)	62						
Mild	11(18.96)	15(35.71)	26						
Age at onset									
0-12	30(51.72)	20(47.61)	50						
13-24 months	15(25.86)	14(33.33)	29						
2-5 years	13(22.41)	8(19.04)	21						

RESULTS:

Demographic profile of the patients is presented in table 2. Age of the patients ranged from 1 month to 16 years with a mean of 34 months. Majority of the patients were of an urban background belonging to middle class and had moderate disease. Majority developed their disease in the first year of life. Family history of atopy was present in 50 patients. Patients with a family history of atopy had significantly less severe disease at presentation (p= .048) than those with no family history of atopy (Table 3). Patients who were breast fed for less than 6 months and 6 months to 1 year developed atopic dermatitis earlier than those who were breast fed for 13-24 months (p=.033). The effect of maternal education on age at onset and severity of AD was not significant.

	Age at onset			P value	Severity - SCORAD			P value
	0-12 months	13-24 months	2-5 vears		Severe >50	Moderate 25-50	Mild <25	
Family history of atopy				.922		1		.048*
Yes	24	15	11		2	34	14	
No	26	14	10		10	28	12	
Duration of breast feeding				.033*				.896
13-24 months	11	14	11		4	22	10	
6-12 months	13	6	5		3	14	7	
< 6 months	18	4	3		5	14	6	
Maternal education								.255
> 14 yrs	6	0	0		0	4	2	
11-14 yrs	7	2	3		2	6	4	
5-10 yrs	19	11	7		1	27	9	
<5 yrs	18	16	11		9	25	11	

Table 3:.Effect of family history, duration of breast feeding and maternal education on age
at onset and severity of atopic dermatitis

DISCUSSION:

Majority of patients (50%) in this study developed AD in the first year of life. This is in accordance with other studies that state that up to 60% of the patients develop AD in the first year of life^{12,13}.

Early life exposures play an important role in the pathogenesis of AD, with nutrition being an important environmental influence. The role of breastfeeding in allergic diseases remains controversial. Previously, manv studies reported a modest protective effect of breastfeeding on allergic diseases, especially for children with a genetic predisposition to such diseases¹⁰. However, during the last few studies vears, several have reported breastfeeding to be associated with an increased risk of asthma, atopy and atopic dermatitis¹². In the recent past some systematic reviews and meta- analyses report that there is no overall effect of partial or

exclusive breast feeding on the risk of $AD^{14,15}$. In our study duration of breast feeding has no effect on the severity of AD but a significant effect on age of onset is evident (p= .033). Children who were breast fed for 13-24 months developed AD later than those who were breast fed for 6 months or 6-12 months. Since many environmental exposures including different foods taken by the child in the early years influence development of AD, it is difficult to interpret this finding in isolation.

Patients with a family history of atopy had significantly less severe disease at presentation than those with no family history of atopy in our study. A logical explanation can be that parents who have AD or other allergic conditions probably seek medical advice earlier, when the disease is relatively mild. In our study the family history did not have a significant association with age at onset. This is in contradiction to studies with large cohorts that claim a strong association between family history of allergies and early onset AD¹². A small sample size in our study could have been a limiting factor affecting this finding.

In this study the effect of maternal education on age of onset or disease severity was not significant. A study with 480 mothers of atopic children revealed an increased risk of allergic rhinitis and asthma with maternal education more than 15 years. However the risk of atopic dermatitis was not increased with higher maternal education¹⁶.

CONCLUSION:

Children with AD may present earlier with a relatively mild disease if they have a positive family history of atopy. Breast feeding for more than one year may have a protective effect by delaying the age of onset. Maternal education has no effect on age at onset and severity of AD.

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