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How Significant is Family History in Atopic Dermatitis? A Study on the Role of Family History in Atopic Dermatitis in Children in Ajman, United Arab Emirates

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Abstract

This descriptive study has been conducted to evaluate the relationship between family history of atopic diseases and atopic dermatitis among children with atopic dermatitis who attended Gulf Medical College Hospital and Research Centre (GMCHRC), Ajman, United Arab Emirates (UAE). The data were collected for a period of six months from October 2009 to March 2010. A structured, pre-tested, close-ended questionnaire was used for data collection. Data analysis was carried out using PASW 17 version. A total of 54 children between three months to twelve years of age participated in the study. Subjects' age ranged between three months to twelve years with a mean age of 4.5±3.1 years. With regard to family history of atopic diseases and atopic dermatitis, 64.8% have family history of atopic diseases and among them, 50.0% first degree relatives, 14.8% second degree relatives, and remaining 35.2% did not show any familial relationship. Z test for proportion shows a statistically significant difference between those with family history of atopic diseases and those without ($p < 0.05$). The study concluded that maximum number of children with atopic dermatitis have their first degree relatives with family history of atopic disease.

Introduction

Atopic dermatitis (AD) is a chronic, relapsing, itchy, eczematous dermatologic condition occurring in individuals with a personal or family history of atopy [1]. AD, a condition of the skin affects persons of all ages but more common among children and has been reported to affect 10% of children [2]. Roughly 70% of cases of AD begin in children less than five years of age [3], but 10% of AD cases found in health care settings begin in adults [4]. Thirty five percent of children with AD are prone to develop allergic rhinitis and 30% of children develop asthma [5].

In more than half of the children affected, the manifestations will get resolved by adolescence,

and in the rest the condition can persist into adulthood. Children with family history of atopic diseases have poor prognosis [2,6]. AD commonly manifests in people who have an 'atopic tendency' and may manifest any or all the three closely linked atopic diseases, such as atopic dermatitis, asthma and allergic rhinitis. Mostly atopic diseases run in families with first or second degree relative being affected. Family history of atopic diseases plays a vital role in diagnosing atopic dermatitis in infants [7,8]. The increase in the incidence of AD in developed countries has been attributed to familial and environmental factors [9]. Familial inter marriages is quite common in the gulf regions. This study has been conducted to assess the relationship between family history of allergic diseases and atopic dermatitis among children in Ajman Emirate, United Arab Emirates (UAE).

Materials and Methods

This descriptive study was conducted among children between the age group three months to twelve years with AD attending the Department of Dermatology from October 2009 till March 2010 at Gulf Medical College Hospital and Research Centre (GMCHRC), Ajman, UAE.

Data were collected using a pre-tested, structured, close-ended, interviewer administered questionnaire after obtaining consent from parents. The purpose of the study was explained to the parents in detail and subjects willing to participate in the study were included. Anonymity was maintained by not writing their names in the questionnaire.

The questionnaire included information pertaining to socio-demographic characteristics, specific information regarding clinical features of the disease, and history of atopic diseases in the family and their degree of relation.

Data analysis was carried out using PASW version 17 (Chicago, IL, USA) to obtain descriptive information and 'p' value less than or equal to 0.05 was considered statistically significant.

Results

In the present study a total of 54 children with AD participated. Age of the subjects ranged between three months to twelve years with a mean age of 4.5±3.1 years. The age of the subjects were classified in to three broad age groups, less than or equal to one year, one to four years, and more than or equal to four years. About 46% subjects in the study were in the age group greater than or equal to four years, 30% subjects between one to four years, and 24% subjects in the age group less than one year.

Distribution of gender showed that 61.1% were males and the remaining females. Male to female ratio was 3:2. Among the total male subjects, 46% were greater than 4 years, 30.3% between 1 to 4 years, and 24.2% were less than or equal to 1 year of age. Among male participants, 48% were greater than 4 years, 29% between 1 to 4 years, and 24% were less than or equal to 1 year of age.

Age group	Gender				Total	
	Male		Female		No	%
	No	%	No	%		
Less than 1 year	8	24.2	5	23.8	13	24.1
1-4 years	10	30.3	6	28.6	16	29.6
Greater than 4 years	15	45.5	10	47.6	25	46.3
Total	33	100	21	100	54	100

Table 1: Distribution of subjects according to Age and Gender

Variables	Group	Degree of relationship					
		First degree		Second degree		No relationship	
		No	%	No	%	No	%
Age group in years	< 1 year	5	38.5	2	15.4	6	46.2
	1-4 years	7	43.8	3	18.8	6	37.5
	> 4 years	15	60	3	12	7	28
Gender	Male	17	51.5	6	18.2	10	30.3
	Female	10	47.6	2	9.5	9	42.9

Table 2: Distribution of subjects according to family history of atopic diseases

In the present study the degree of relationship was assessed to obtain role of family history in the development of AD among children. Degree of relationship was categorized in to first degree, second degree, and third degree based on talking glossary of genetic terms. First degree relative includes parents and siblings, second degree relatives are grandparents, uncle and aunty, and third degree relatives are first cousins [10]. Among the total subjects, 64.8% have family history of atopic diseases and among them, 50.0% of the subjects have their first degree relatives with atopic disease, 14.8% with second degree relatives having atopic disease, and remaining 35.2% did not show any familial relationship. Z test for proportion shows a statistically significant difference, observed between those with family history of atopic diseases and without ($p < 0.05$).

Table 3 shows the familial relationship and atopic dermatitis. Of the children with family

history of atopic diseases, 53.7% had their mother affected with atopic diseases, 29.3% of the children with family history had their brother and sister affected respectively and 19.5% of the children had their grandmother affected with atopic disease.

Relationship	Family history-Yes	
	No	%
Brother	12	29.3
Sister	12	29.3
Father	5	12.2
Mother	22	53.7
Grandfather	5	12.2
Grandmother	8	19.5
1 st Cousin	1	2.4
Aunt	2	4.8

Table 3: Distribution of children with AD according to familial relationship

Discussion:

The present study has shown a male:female ratio of 3:2. Other studies conducted by Selcuk et al [11] and Schultz et al [12] also reported a male predominance. Peroni et al [13] in their study observed a positive family history of atopy as significant risk factors for AD among children. Bohme et al [14] conducted a study to investigate the relation between atopic family history and development of AD among children up to 4 years observed that of the children without atopic parents, 27.1% developed AD. Of those with single or double parental atopic history, the relative percentage was 37.9% and 50.0% respectively. A study conducted in Spain [15] observed that a family history of atopic disease was significant risk factors for AD. The study also observed that the prevalence of AD in first degree relatives was 39% and that in second degree relatives was 19% [15]. A study conducted in Argentina [16] also reported that AD was significantly associated with a family history of atopy, the chance of getting AD among those with family history of Atopic disease is 5.7 times more compared to those with out a family history of atopic disease. Dold et al [17] in his study observed that in families with one allergic parent, the risk of the child developing atopic dermatitis was 1.7 compared to those with out family history of AD. The study also reported that children with parental atopic dermatitis had 3.4 times more chance compared to those without.

A study in Spain reported that the incidence was higher in maternal than paternal lines [15]. Purvis et al [18] conducted a study to examine factors associated with a diagnosis of AD observed that those with maternal atopy only, adjusted odds ratio was 3.83, paternal atopy only, adjusted OR was 3.59 both parents atopic, adjusted OR was 6.12. Wang et al [19] evaluated the influence of genetic factors for atopic dermatitis (AD) show that maternal history of AD, maternal grandparents' history of AD, increased the risk of pediatric AD. Fukiwake et al [20] reported that maternal history of rhinitis, atopic dermatitis among siblings, are significant factors associated with AD.

Conclusion

AD is a complex disease with significant genetic influence. The observation was that family history of atopic diseases is highest among first degree relatives as compared to second degree relatives. Among first degree relatives atopic diseases was more prevalent among mother compared to father. This study concludes that family history seems to be a significant factor in the etiology of AD among children in this part of the world, where familial inter marriage is quite common.

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