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Growth parameters in children with atopic dermatitis in Erbil City, Kurdistan Region-Iraq



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ABSTRACT

Background: Atopic dermatitis is a chronic inflammatory skin condition that significantly impacts patients' quality of life. A disturbed sleep pattern, frequent potent topical and sometimes systemic corticosteroid use, and diet restriction, all of which could affect child's growth.

Objective: This study determined height and weight impairment in children with atopic dermatitis.

Patients and Methods: A cross-sectional study took children with atopic dermatitis ≤ 18 years, which was conducted in the "Erbil Dermatology Teaching Center." The patients' data included sociodemographic information, family history, drug history, and present complaints. The severity of the disease evaluated using SCORAD score. The weight was recorded using a medical electronic weighing machine, and standing height was recorded using a stadiometer.

Results: Among 100 children with atopic dermatitis, their mean of age was 6.84 ± 1.8 years. Males and Females frequencies were 54 and 46, respectively. The family history of atopic dermatitis was positive in 73%. Generally disturbed sleep pattern was dominant, and almost all severe AD patients had disturbed sleep (87.5%). The severity of AD was classified by SCORAD score to mild (23%), moderate (69%), and severe (8%). Patients having their growth percentile for weight and height for age below 3rd percentile were 10% and 3%, respectively. Patients' weight and height for age below 25th percentile were 15% and 9%, respectively.

Conclusions: Atopic dermatitis can affect the height and weight of the children inversely. The study sample's most dominant character was sleep pattern disturbances, which can affect both weight and height.

Keywords: atopic dermatitis, SCORAD score, weight percentile, height percentile

Cite this Article: Hamid, A.M., Qurtas, D.S. 2020. Growth parameters in children with atopic dermatitis in Erbil City, Kurdistan Region-Iraq. *Bali Medical Journal* 9(3): 685-688. DOI: [10.15562/bmj.v9i3.1949](https://doi.org/10.15562/bmj.v9i3.1949)

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Received: 2020-08-21
Accepted: 2020-11-05
Published: 2020-12-01

INTRODUCTION

Atopic dermatitis (AD) is a common chronic inflammatory skin disorder that usually has a relapsing and remitting course with increasing prevalence worldwide, making it a major health problem.¹⁻⁴ Atopic dermatitis is characterized by pruritus and specifically age-related distribution of papules (sometimes vesicles in infants), which become lichenified due to their excoriation by the patient.^{2,3} It is resulting from a complex interaction between genetic and environmental factors.⁴ AD is often accompanied by other allergic disorders like asthma, allergic rhinoconjunctivitis, food allergies, and less commonly eosinophilic esophagitis.^{1,2}

Growth retardation in AD might result from asthma, steroid use (systemic or topical in large amount), diet restriction, defect in gastrointestinal dealing with some proteins, partial villous atrophy, and bad sleep pattern due to pruritus, which by itself affects growth hormone release.²⁻⁵

Some previously performed studies demonstrated that children with AD have

significantly shorter stature than those without dermatitis. However, some reports reject any association.⁵ Sleep disturbances resulting from pruritus in children with AD are of great concern because growth hormone secretion is highly regulated by regular sleep pattern.⁶⁻⁷

A longitudinal growth study revealed that atopic prepubescent children were not shorter than the normal control group. Instead, they did have decreased stature velocities consistent with constitutional growth delays as they hit puberty.⁵⁻⁶

This study investigated the growth parameters of children who suffered from mild to moderate AD in our locality and compared it with the global reports' results.

METHODOLOGY

This cross-sectional study was conducted in the Erbil Dermatology Teaching Center in Erbil city- Kurdistan Region- Iraq. The proposal of the study was submitted to Kurdistan Board for Medical Specialties ethical and scientific committees. This

study was cleared and obtained approval. The period of collecting data was from January 2018 – December 2018. A total of 100 child patients with AD were randomly enrolled. These patients were attending the outpatient department of the “Erbil Dermatology Teaching Center.” Atopic children along with any systemic diseases were excluded from the study.

For every patient, a detailed history was taken regarding the age at onset, residency, personal and/or family history of atopic disorders (allergic rhinitis, bronchial asthma), diet restrictions, steroid intake were recorded in a special case record form.

The severity of the AD was evaluated by using SCORAD score system. Growth parameters status of patients was evaluated by measuring weight and height, and then the records were matched with weight and height percentile of the (RCPCH UK–WHO Growth chart NICM). Weight was recorded using electronic weighing scales; standing height was recorded using a stadiometer. Data entered and analyzed using Statistical Package for Social Sciences version 25 (SPSS Inc., IBM Company,

Chicago, Illinois, USA). Descriptive analyses were expressed as frequencies and percentages. The inferential results were compared between the subjects with different variables using a statistical significance level of ≤ 0.05 and analyzed using Pearson Chi-square or Fisher’s exact tests if necessary, in addition to Pearson correlation coefficient (r).

RESULTS

In this cross-sectional study, we included 100 children with atopic dermatitis; their ages were ranging from 1 year and 2 months to 18 years, with the mean age of 6.84 ± 1.8 years. Among these patients, 54 were males and 46 females, with the male to female ratio being 1.17:1. Age at the onset of the diseases sign and symptoms was ranging between 3 months and 16 years with median age of onset 3.33 ± 0.9 years old. Most of the cases were from the city (Table 1).

Family history of atopic dermatitis was positive in 73% of them (52% from the maternal, 17 % from the paternal side, and 2% both maternal and paternal). A family history of asthma and allergic rhinitis was positive in 32% and 49%, respectively (Table 2).

Irregular systemic steroid oral intake at the time of disease flare up was noticed in only 7% of the patients. Only 9 patients had diet restriction, which was advised by doctors. Disturbed sleep pattern was observed in 73% of the cases. Almost all severe AD patients had disturbed sleep (87.5%), while only 52.1% of mild AD cases had sleep disturbance (Table 3).

The severity of AD was evaluated using SCORAD score, which revealed that among our patients, 23% have mild, 69% have moderate, and only 8% have severe AD (Figure 1).

Calculation of patient’s weight & height centile according to age and sex has revealed that 10% with weight below the 3rd percentile, and 15% of them with weight below 25th centile. That means that 25% of study patients have 2 standard deviations below the normal mean for the weight.

On the other hand, 3% of them had height below 3rd percentile, and 9% had height below 25th centile. That means 13% of the cases have 2 standard deviations below mean for the normal height.

Our study found a weak negative correlation between the severity of AD and patient’s weight centile, which is equal to -0.38 (p -value < 0.001). Figure 2

Also, we found a weak negative correlation between the severity of AD and height centile of the patient, which was equals -0.39 with a significant p -value < 0.001 (Figure 3)

Table 1. Demographic characteristics of the AD patients

Characteristics		Absolut Number	Percentage (%)
Age	<2 years	7	7
	2-12 years	86	86
	> 12 years	7	7
Sex	Male	54	54
	Female	46	46
Residency	Urban	73	73
	Rural	27	27

Table 2. Family history of medical diseases among patients

Diseases		Absolut Number	Percentage (%)
Atopic Dermatitis	Paternal	53	53
	Maternal	18	18
	Both	2	2
Asthma	Yes	68	68
	No	32	32
Allergic Rhinitis	Yes	49	49
	No	51	51

Table 3. Common characteristics of the AD patients

Variable		Absolut number	Percentage (%)
Systemic Steroid intake	Yes	7	7
	No	93	93
Diet restriction	Yes	9	9
	No	91	91
Sleep pattern disturbance	Yes	73	73
	No	27	27

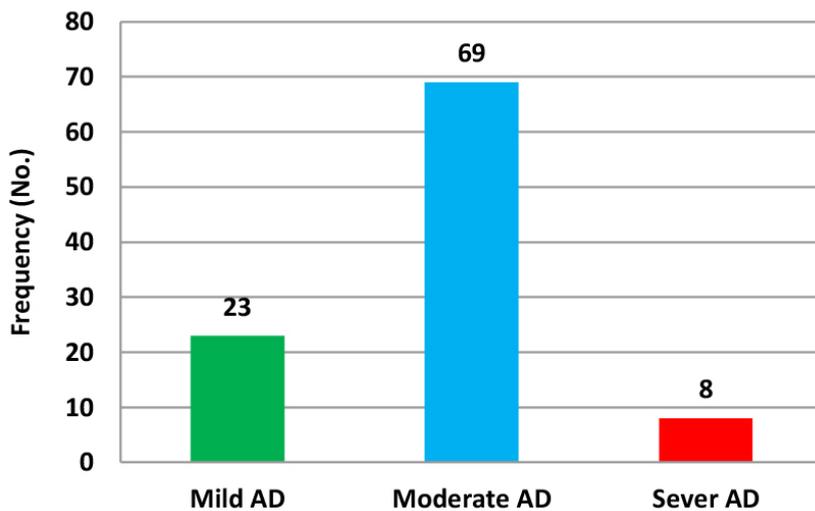


Figure 1. Distribution of AD severity among patients according to SCORAD scoring system

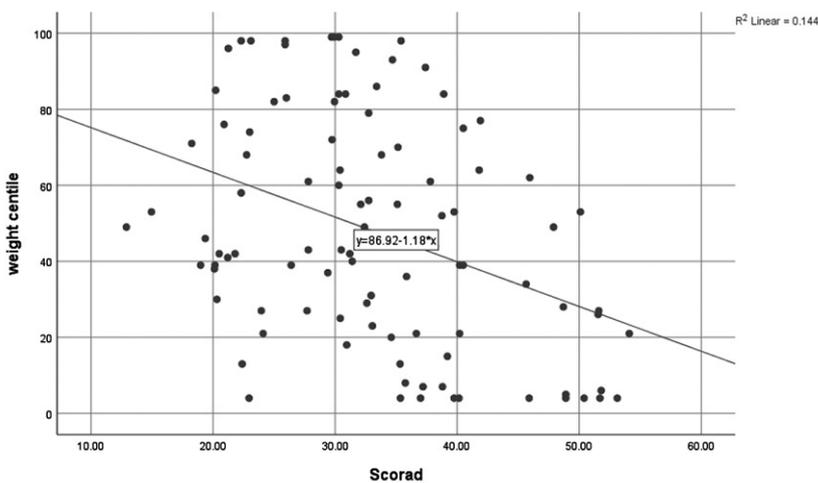


Figure 2. Correlation between SCORAD score & weight centile of the AD patients

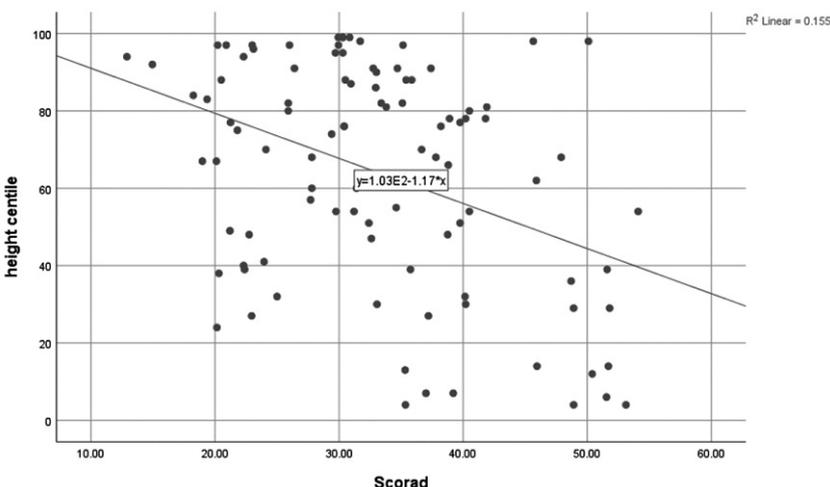


Figure 3. Correlation between SCORAD score height centile of the AD patients

DISCUSSION

AD is a chronic multifactorial skin disease that can affect the growth of child at prepubertal age. Both height (stature) and weight of the child could be affected due to the disease itself by exerting biological stress upon frequent flare-ups. Treatments like excessive topical steroids, systemic steroids, and diet restriction have a negative effect on this concern.⁶

In this study, children under 18 years old were taken. The sample male:female ratio was 1.17:1. This finding was not consistent with known literature in Iraq⁸ or other countries,⁹ where they reported more female predilection for AD.

The genetic background of atopy was found to be quite positive among our AD patients. The majority (73%) had positive family history of AD. That supports the genetic etiology of AD.²

Disturbance in sleep pattern or insufficient sleep is one of the factors which can affect linear growth. This problem was dominant among our patient (73%). Also, we observed that among cases with severe AD almost all have sleep disturbance. This problem can be one of the causative factors in the short stature or underweight of our study's AD children. Both systemic steroid intake and diet restrictions can also contribute to growth of children with AD, which was observed only in the minority.³

We observed that severe AD present only in minority of our patients (8%). This finding was significantly lower than the observation of Jiang Y et al. where they reported that severe atopic dermatitis was 32.5% in their study.¹⁰ This difference may be due to the genetic background and environmental factors of our locality.

A proportion of our patients had their weight and height below the 3rd percentile (10% and 3%, respectively). That means they were severely retarded for these parameters, but the weight was more affected (p -value <0.001). That explained the severity of AD is affecting their weight and height inversely. A study did by Dhar et al. found out that children with AD who had their weight below 3rd percentile were 42%. This percentage is much higher than our study sample results. The same study revealed that 34% of their patients had their height below 3rd percentile.³ This is maybe due to the severity of AD in their patients is more. In another study done in England they found that 10% of AD children had their height below 3rd percentile, and their weight affected only by 1%.¹¹ This result confirms that AD is mild in its presentation in our region.

CONCLUSIONS

Severe AD cases are not common in our local sample, even though the disease affects the height and weight of children inversely. Patients with their weight and height below the 3rd percentile were 10% and 3%, respectively. Sleep disturbance was a dominant character among child patients with AD in our study.

AUTHOR CONTRIBUTION

All authors have contributed to all process in this research, including research design, data collection, and its analysis, writing the manuscript for article publication

FUNDING

The authors are responsible for all of the study funding without grants or any external source of funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest regarding the publication of this article.

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