

# Appreciation of the Quality of Life of Patients with Atopic Dermatitis. Clinical and Laboratory Study

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**Abstract** Atopic dermatitis (AD) is an inflammatory disease of the skin that by evolution has autoimmune characters. The quality of life of patients with AD is an important objective in assessing the evolution and treatment of AD. Severity degrees were appreciated using diagnostic scores (SCORAD). Laboratory examinations come to complete the clinical diagnosis by determining total IgE, specific IgE, IL-31. These parameters allow us to appreciate the allergic component in AD.

**Keywords:** atopic dermatitis, quality of life, allergic component

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## 1. Introduction

Atopic dermatitis (AD) is a complex skin inflammation disease with immune immunity elements that are presented in different clinical forms [1]. The importance of studying this disease is necessary for the following reasons: it is a chronic disease with repercussions on the quality of life of patients. It has a fairly high prevalence representing 15-30% among children, it has a sometimes unpredictable evolution with exacerbations and remissions and not always the applied treatments bring the expected results [2]. In the etiopathogenesis of dermatitis, the dysfunction of the immune system with the predominant Th 2 occur, with the production of IL-4, IL-5, IL-13. The dysfunction of the epidermal barrier with the production of proinflammatory cytokines and lesions that favor bacterial colonization with *Staphylococcus Aureus* is another important mechanism of the disease [3,4,5,6].

Genetic research has shown that certain mutations that encode filaggrin lead to the appearance of ichthyosis vulgaris and at the same time AD. A very important thing in dermatitis is to ensure the quality of life is as close to normal as possible, if not normal [7,8,9]. The disease begins around the age of two months, but there are also cases with a later onset. For assessing the quality of life, anamnesis and clinical examination are important tools, but some questionnaires manage to establish the degrees of severity of the disease. Determination of parameters that more target the allergic aspect such as total IgE, specific IgE, eosinophils, IL-31 [10,11].

The diagnosis of AD is largely based on clinical

symptomatology. There are also laboratory parameters that help establish the diagnosis and severity of the disease. An important desideratum in the follow-up of patients with YES is their quality of life. This essential parameter is influenced by several factors but is potentiated at the same time by a diagnostic framing and an adequate treatment [2,12]. In assessing the severity of the disease, in addition to the expressive clinical symptoms, we also used correlations between these symptoms and total IgE, eosinophils and we determined interleukin 31. It is known that this IL-31 is the one that generates and maintains itching, the essential symptom in AD. We found that the 3 parameters mentioned are significantly increased in moderate and severe AD [13,14,15].

## 2. Working Hypothesis

The research assesses the quality of life of the diseases with AD by correlating the 3 parameters with the severity of the disease. In assessing the severity of the disease, we used the SCORALD score.

## 3. Material and Method

The study is an observational analytical one performed in Pediatric Clinic II, during the period 2018-2020. In our study were included 65 patients aged between 0-18 years.

The criteria for inclusion in the study were:

- age 3 months-18 years
- the presence of skin lesions typical for AD at the time of inclusion in the study

Diagnostic criteria for dermatitis

- The major criterion is represented by itching which is mandatory

- Minor criteria

- √ History of flexural lesion, especially at the elbow fold, at the level of the popliteal fossa, lateral cervical
- √ Onset of symptoms under the age of 2 years
- √ History of skin, xerotic, in the last year
- √ History of other allergic manifestations: rhinitis or asthma
- √ Injuries to the forehead and cheekbones

For the diagnosis of AD it is necessary the presence of the major symptom and another 3 minor criteria.

Criteria for exclusion from the study

- Infectious-contagious diseases
- Autoimmune diseases
- Skin manifestations secondary to other diseases
- Lack of informed consent

The lot was divided into 3 age groups

- 2 months- 4 years
- 5-9 years
- 10-16 years old

The questionnaires used are those corresponding to the ages that targeted the quality of life of the patients: IDQOL and CDLQI. The questionnaires include 10 questions adapted by age. In the age category between 2 months-4 years, the parents answered the questionnaire. These include questions related to itching, sleep disturbances, sleep duration, mood, play intervals, family activities, nutrition, bath schedules, and treatment. In the age groups of 5-9 years, 10-18 years, the meetings were more complex and referred to the presence of itching and its intensity, the limitation of activity and play, dressing, the existence of friends, free time, sports, school activities, sleep, school activities, sleep, bullying behavior and treatment schedule.

The scoring of the questions was from 0-3 points, 0- lack of manifestations, 1- mild manifestations, 2- moderate manifestations, 3- severe manifestations. The maximum score obtained in the questionnaire is 30 points. To assess the severity in the children included in the study, we used the SCORAD index, which evaluates the presence and severity of injuries such as erythema, edema, the presence of crusts, abrasions, xerosis, the assessment of the intensity of itching and sleep disorders. The severity assessment is made using a scoring scale from 1-10, depending on the score obtained; the forms of severity can be obtained.

- <15 mild form
- 15-40 moderate form
- >40 severe form

Continuous variables were expressed by standard deviation, and categorical variables were valued by frequency and percentages. For the differences between the variables, the Student test and the Kruskal-Wallis test were used. The correlation between scores and the severity of AD (SCORAD index) was evaluated using Pearson correction coefficients. For the correlation with age, the multiple linear regression analysis was used. In the study, the dependent variants were the scores indicated, and the independent variables were age, the presence of

atopic disease, the family history of atopy, and the severity of the disease. The statistical significance was considered as a value of  $p < 0.05$ . Statistical analyses were performed with a statistical package for the Social Sciences, variant 20.0 for windows.

To assess the severity of the disease, laboratory determinations were also used, which allowed us a correlation in assessing the stage of the disease and the severity. These determinations consisted of specific Ig E, eosinophils, total Ig E. Itching was analyzed by the determination of IL-31 by ELISA sandwich.

## 4. Results

In our study were included 65 patients aged between 0-18 years (Table 1, Table 2).

**Table 1. The characteristics of the study group**

Variable	Ages	P
Number of patients	65	
Age (average $\pm$ SD)	7,38 $\pm$ 4,18	
Sex		0.185
Male	39 (60%)	
Female	26 (40%)	
Atopy		<0.001
Only AD	28 (43%)	
Atopic disease concomitantly	37 (57%)	
Index SCORAD		0.003
Mild	33 (50.7%)	
Moderate	23 (35.8%)	
Severe	9 (13.5%)	
Index SCORAD (the average value )	22.5 $\pm$ 0.04	

**Table 2. The characteristics of the study group grouped by age**

Variable	0-4 ani	5-9 ani	10-18 ani
Number of patients	44 (68,7%)	12 (18,8%)	9 (12,5%)
Age (average $\pm$ SD)	1,94 $\pm$ 0,96	7,08 $\pm$ 1,38	13,12 $\pm$ 1,32
Sex			
Male	29 (65,9%)	6 (50%)	4 (50%)
Female	15 (34,1%)	6 (50%)	5 (50%)
Atopy			
Only AD	30 (81%)	3 (8%)	4 (10%)
Atopic disease concomitantly	14 (50%)	9 (32.2%)	5 (17.8%)
Index SCORAD			
Mild	33 (94%)	1(3%)	1(3%)
Moderate	8 (18,2%)	10 (83,3%)	5 (62,5%)
Severe	1 (2,3%)	2 (16,7%)	4 (37,5%)
Index SCORAD (the average value)	16,4 $\pm$ 10,9	21,4 $\pm$ 9,8	20,9 $\pm$ 10,6

In our study, the male sex was predominantly represented 60.9%, and the sex of women 39.1%. The 3 groups do not differ significantly depending on the sex. The severity score (Figure 1) appreciated with the SCORAD index was higher groups 5-9 years and 10-18 years. The most common form of severity was mild form 54.7%, followed by moderate form 35.9% and severe form 9.4%. The severe form was found in patients aged > 5 years.

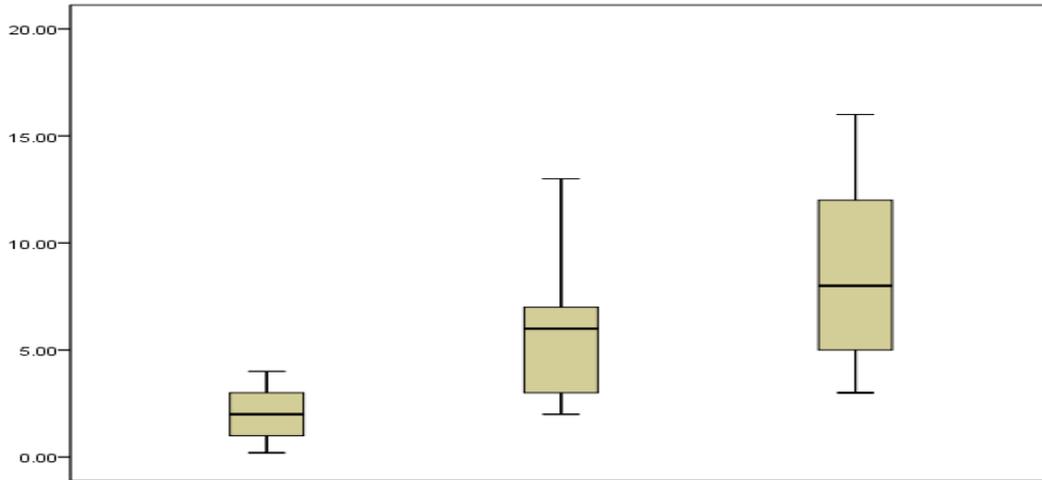


Figure 1. Distribution of cases with AD depending on age and severity

Table 3. Correlation between quality of life (IDQOL/CDLQI) and severity of AD (SCORAD), depending on age groups

Groups of age	0-4 years	5-9 years	10-16 years old	5-16 years old	All ages
Correlation coefficient Pearson	0,49	0,78	0,51	0,49	0,52

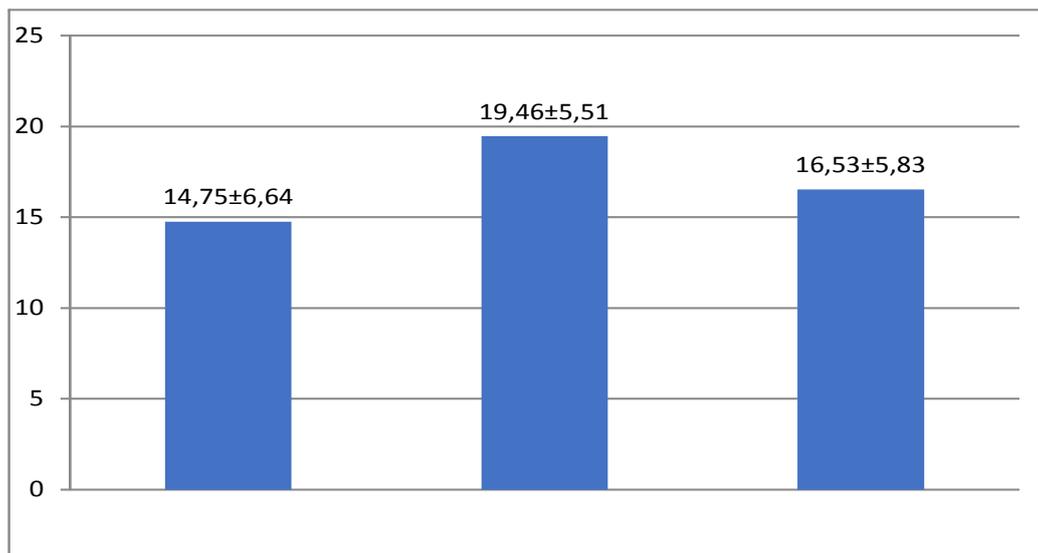


Figure 2. QOL score in the 3 age groups

The assessment of the patients' quality of life was made by analyzing several parameters in the questionnaires both at young and high age. The most bothersome symptoms were itching, the child's mood and treatment problems. The lowest scores were related to sleep and the possibility of falling asleep (Table 3). Figure 2 shows a significant difference,  $p < 0,001$ , between the total average QOL score in the 3 age groups. Analyzing the scores by age group we notice that the highest score was detected in children between 5 and 9 years ( $19,46 \pm 5,51$ ). The lowest score was recorded in the age group 0-4 years.

In the larger groups, most of the problems were related to problems during school, vacations and the presence of itching and injuries to the face. Low scores were found in this category in problems related to sleep and treatment.

Significant differences between the groups 5-9 and 10-18 years, the questions related to teasing, intimidation and the tendency to isolate were obtained.

## 5. Discussion

The objectives of the treatment of AD are aimed at obtaining the quality of normal life or as close to normal as possible. For a correct treatment, we must know the mechanisms of the disease and implicitly the degrees of severity [2,5]. The associated conditions can degrade the quality of life, both through evolution and through psycho-emotional disorders. During some lectures, the great surgeon Christian Barnard appreciated that the diseases that are not to be found to be more easily borne than those that can be found knowing that he suffered from rheumatoid arthritis. If appropriate treatment is not applied due to the consequences of the disease, social isolation, school dropout may occur. From this point of view, we will have to take into account all the aspects that determine an unfavorable evolution [11,12].

We found in our study that mild forms predominate that can be better treated and monitored. Severe forms that accounted for 10% create serious adaptation problems. By the way, our study on the quality of life was conceived, it is among the first studies undertaken in our country [4]. The study allowed us to study the quality of life by age groups, so it turned out that the most affected age group is the one between 5-19 years (19.46 +/-5.5), followed by the age group 10-18 years (16.53+/-5.83). Correlations between IDQOL and CDLQI were analyzed and the SCORAD index was calculated, and the most significant correlation was found in the age group 5-9 years, and the Pearson correlation coefficient was 0.89, and in the other groups, it was 0.59 at 0-4 years and 0.43 at 10-18 years [5].

Studies in the literature show that there are notable correlations between indications of appreciation of the quality of life and the age of the child (the study of Campos). Other studies by Chernyshov and collaborators show that there are correlations between CDLQI and children's age [3]. It has also been found that not all the symptoms used in the questionnaires have the same weight in influencing the quality of life. The most common symptoms were itching, the mental and physical disposition of the child, as well as free time and hobbies. The most common and the most upsetting were itching in all age groups. This symptom had a negative repercussion on the quality of life. There was a need for grating with the appearance of lesions that were superinfected. Nocturnal awakenings with the induction of scratching with impaired sleep and finally affecting the quality of life [1,2,11].

Sleep shows some studies undertaken can be disturbed up to 60-80% during periods of exacerbation. In our study, sleep disturbances affected up to 50% of patients and we thought this was also due to a well-conducted treatment. Our study made correlations between the quality of life and the manifestations of AD. It can serve as a guide for assessing the severity of yes [13].

Our study also proved that there are correlations between severity and biological parameters such as total IgE, specific IgE, eosinophils, IL-31. He also found that the severity of the disease increases with age and correlates with the listed parameters. The association of allergies with AD was made by the determination of specific IgE and we found that allergies are more common in the age group 0-4 years, in particular food allergies.

The highest total IgE values we found in moderate and severe severity forms. These total IgE can also be correlated with allergic associations and with the atopic terrain.

In our study, we managed to determine The 31 in a 30 cases of moderate and severe forms. We found that they were significantly increased, over 2 times compared to the control group in cases with AD in activity. The determination showed us that in the future you can intervene on this IL31 to reduce and even eliminate itching.

## 6. Conclusions

Combining the clinical parameters of AD severity with biological ones is a correct way of assessing the severity of AD.

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