

DOI: 10.36648/2471-805X.6.3.47

# Atopic Dermatitis: A Review about the Treatment of the Disease and Relationship on the Impact on the Quality of Life of Patients

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**Citation:** Mendonca LP, Freitas GMA, Liguori BEV (2020) Atopic Dermatitis: A Review about the Treatment of the Disease and Relationship on the Impact on the Quality of Life of Patients. J Pediatr Care Vol.6 No.3: 47.

**Received date:** June 18, 2020; **Accepted date:** July 02, 2020; **Published date:** July 10, 2020

## Abstract

**Objective:** Analyze the relation about the treatment lines from atopic dermatitis taking into consideration the relation on the quality of life of patients.

**Data sources:** An in-depth search was carried out in SciELO, PubMed, LILACS and UpToDate databases, looking for articles between 2010 and 2020 with the selected key words and 17 articles were chosen.

**Data synthesis:** Due to the chronicity of the pathology, treatment involves pharmacological e non-pharmacological measures. Non-pharmacological treatment involves keep the skin intact avoiding irritations and contaminations and the pharmacological treatments have focus on act to fight inflammation and reduce symptoms. At the same time that continuous treatment is important to avoid crises, having to perform it every day causes poor adherence, which worsens the crisis and disturb the patient's quality of life. Atopic dermatitis attack other than pruritus is related to irritability, decrease the quality of sleep and even delay development.

**Conclusion:** Continuous treatment is the best way to avoid exacerbations, and it is responsibility to familiars and the patient to create a routine including educational measures about the disease, and to seek ways to avoid factors that cause exacerbations. In addition, if the use of pharmacotherapy is necessary, it is up to the doctor to individually analyze the cases, choosing the best option for the patient.

**Keywords:** Atopic dermatitis; Topical eczema; Treatment

## Introduction

Atopic dermatitis is a chronic inflammatory skin disease, consider one of the most prevalent pathologies in the pediatric population, especially in industrialized countries. Occurs with

evolution in attacks, predominantly in childhood, whose main symptom is intense itching [1,2].

In addition to pruritus, it presents cutaneous xerosis and eczematous lesions. Cutaneous xerosis is a very significant finding, demonstrating the clinical expression of skin barrier abnormality, and may be immunological, genetic, neurological, environmental and emotional, being a parameter for diagnosis and follow-up [1,3-5].

It is a disease that affects the quality of life of patients and their families, since pruritus and skin lesions can cause sleep disorders, anxiety, depression and low self-esteem. Low adherence to Atopic Dermatitis treatment is one of the reasons for failure to control symptoms, so it is important to analyze the relationship between treatment lines for atopic dermatitis and the relationship of treatment in the quality of life of patients and their guardians [5-8].

Atopic dermatitis is still often associated with others atopies, such as allergic rhinitis and asthma. Its immune response is characterizing by a biphasic inflammation. At the beginning there is an immune response with Th2 lymphocytes, promoting the release of Interleukin-4, Interleukin-13 and eosinophils, which predominates during the acute phase. However, when the lesions are chronic, the dominant response becomes Th1 lymphocytes, with release of Tumor Necrosis Factor- $\gamma$ , Interleukin-12 and Interleukin-5 [1,3,6].

## Methods

Bibliographic review based on the research on the platforms SciELO, PubMed and UpToDate. From all articles found, some inclusion criteria were used for the selection of articles fundamentally directed to the theme. As inclusive criteria for the selection of the bibliography were used the following references: free access to the theme, titles and abstracts associated with the theme and published since 2010 from the descriptors "Atopic dermatitis", "topical eczema" and

“treatment” in Portuguese, English and Spanish. Finally, 17 articles were selected for reading and analyses.

## Results and Discussion

The chronicity of the disease can lead to correct and continuous non-adherence to treatment, generating worsening of symptoms and quality of life of patients. Therefore, it is essential that there is an established routine of treatment by the child and the caregiver, thus avoiding exacerbations of the clinical state. Currently, there are several lines of research for the treatment with better effectiveness, with reduces symptoms and does not cause side effects, or cause the least possible negative impact.

To analyze the quality of life the patients, a cross-sectional study of 51 patients together with their guardians was analyzed, to which two quality of life questionnaires were applied, the Quality of Life Score in Children’s Dermatology and the Impact of Atopic Dermatitis on the Family. To assess the severity of the disease, the researchers applied the SCORAD (Scoring Atopic Dermatitis Index) [7].

This is a descriptive sectional study, including pediatric patients aged 5 to 16 years, of both sexes, diagnosed with classic clinical criteria of Atopic Dermatitis and assisted in the pediatric dermatology service of the Federal University of Pará (UFPA) in Brazil, from February to August 2015, and their guardians. This service serves about 120 children with atopic dermatitis per semester. Fifty-one children who attended a consultation during the period and who agreed to participate in the study with their parents were included in the investigation. Therefore, the sampling error was 10.5% [7].

The study concluded that atopic dermatitis affects the quality of life of both children and their guardians, which indicates the importance of inserting the study of quality of life in a complementary way to the clinical evaluation of patients. Skin conditions have a negative impact on emotional state, social relationships and daily activities, due to the stigma caused by the appearance of injuries. Chronic pruritus of ten in tractable, therefore, it has a great impact on the patient’s quality of life, as it is negative for sleep quality, affecting children’s behavior during the day and productivity. There is also the social, emotional and financial impact on patients’ families. The parents of the affected children report difficulties in the discipline and care of their children, generating conflict between healthy parents and children, altering the family structure [1,7].

Regarding treatment, the main point of interaction of the studies of the analyzed articles is that it should allow the family to have a life as close as possible to normality, improving the quality of life of the patient. For this are suggested some educational measures such as taking short baths, keeping the water at warm temperature to avoid dryness of the skin, use soaps with neutral pH, avoiding the use of sponges or bushings. It is important to avoid heat sources, uses of towels without rubbing the skin and keep your nails short and clean. It should be avoided the use of clothes with synthetic fabrics and closed shoes. It is not recommended to have pets at home, as well as carpets and curtains [8,9].

The basis for treatment, also related to educational measures, is to prevent the skin from suffering dryness, which in addition to worsening symptoms would facilitate infection by resident *Staphylococcus aureus*. From this, skin hydration for skin barrier recovery is the first line of treatment for atopic dermatitis. Moisturizers are composed of variable combinations of emollients, humectants and occlusive substances. With these emollients fill the spaces between the corneocytes, humectants increase the hydration of corneal layer and occlusive substances from a hydrophobic film on the epidermis, delaying the evaporation of water and the penetration of irritant agents. Emollients are also a source of exogenous lipids, improving the properties of the skin barrier, being a safe and effective method, further reducing the incidence for up to 6 months [10-12].

Studies indicate that daily therapy with emollients from birth can prevent atopic dermatitis. The morbidity of atopic dermatitis and the increased prevalence and potential toxicity of current immunosuppressive therapies make disease prevention an important goal [12].

For the control of inflammation itself are used different medications, depending on the clinical picture of the patient. Currently the most commonly used medicines are corticosteroids and calcineurin inhibitors [10].

Topical corticosteroids act on dendritic cells, monocytes, macrophages and T lymphocytes, preventing Interleukins, thus controlling itching and eczematous lesions. However, they can generate side effects depending on their use. Treatment with corticosteroid based cream is sufficient to normalize the cutaneous microbiota in atopic dermatitis lesions. After treatment, bacterial communities in the injured skin resemble not injured skin [10,13].

Side effects of corticosteroid use include suppression in adrenal function, appearance of stretch marks, telangiectasia, thinning of the skin, perioral dermatitis, rosacea, allergic contact dermatitis and secondary infections. Therefore, the lowest dose required should be used, in the shortest time required, reducing the dose gradually in withdrawal to avoid rebound effect [9-11].

Calcineurin inhibitors are also used to control atopic dermatitis exacerbations, but are not the first line of choice. By inhibiting calcineurin, a cytoplasmic protein present in lymphocytes and dendritic cells, lymphocyte action is minimized, ensuring the improvement of the crisis without compromising immune function. They are available in the form of Cyclosporine, Pimecrolimus, indicated from 3 months of age and Tacrolimus, from 2 years. Side effects are burning and itching at the application site [3,10].

Cyclosporine, which acts as an immunosuppressant, is the first option, being of rapid onset. It is a calcineurin inhibitor that inhibits Interleukin-2 and the activation of T lymphocytes, decreasing immune reactivity [10,14].

Other immunosuppressant used are Mycophenolatemofetil, Azathioprine, Methotrexate. New therapies based on the most effective and less harmful atopic dermatitis pathogenesis have been developed, such as Dupilumab, and will likely change the

future approach of patients with moderate to severe atopic dermatitis [10,14].

Mycophenolatemofetil is a pro-drug mycophenolic acid, being a metabolic that blocks cell proliferation of T and B lymphocytes. Dupilumab is a monoclonal human antibody directed against the alpha subunit of Interleukin-4 and 13. These cytokines are involved in the Th2 immune response prolife, in other words the drug reduces atopic inflammation and allergic sensitization by reducing itching [10,14].

The first case reported in Brazil using Dupilumab was a patient with severe condition and SCORAD of 45. The SCORAD, Scoring Atopic Dermatitis Index, is the tool used to assess the severity of atopic dermatitis, ranging from zero to 103, but above 40 is already considered severe. After treatment the patient's SCORAD reduce to 16 [14].

Despite being a promising treatment, there is yet another front of studies based on the use of probiotics, since there is growing evidence that suggests the important role of the intestinal microbiota in regulating the immune system. Probiotics are living microorganisms with immunomodulatory effect, possessing beneficial action in their host, competing with harmful intestinal flora, toxins and unwanted products, improving the function of the intestinal barrier. They still mimic Th1 cytokines and suppress Th2, having a positive effect on the inflammatory response and reducing itching, acting on T lymphocytes by regulating the immune response and reducing eosinophil levels [15,16].

Another case report analyzed shows a patient also severe, with SCORAD of 60 who underwent treatment with probiotics once day and was already with significant improvement of the lesions after 2 weeks, reducing his SCORAD to 5 [15].

Only the two clinical pictures presented are not enough to evidence a qualitative comparison between the treatments, but the two cases were effective, which can give the patient more treatment options, and it is up to the doctor to identify the specificities of each and positive and negative effects on his patient.

Another line of treatment is also based on homeo therapeutic remedies. Homeopathy is an alternative medicine and its principle is based on reestablishing the balance of vital energy. It appears as a complement to the basic treatment with corticosteroids and hydration, focused on improving the quality of life of patients with emphasis on emotional stress, being an individualized treatment. According to studies, 79.3% of patients who complained of itching or sleep alteration reported a significant improvement. There is no scientific evidence of the benefits of homeopathy, as well as there are no studies showing deleterious effects associated with it [2,17].

## Conclusion

Continuous treatment of atopic dermatitis is the best way to avoid exacerbations, which negatively influence the patient's quality of life due to its symptoms. The lines of research on possible treatments are broad, since side effects can be harmful in the long run. With this, it is even more important use non-

pharmacological control measures to avoid the use of such medications.

It is up to the caregivers and the patient organize their time, create a routine including educational measures about the disease, and to seek ways to avoid stress and anxiety, triggering factor of exacerbations, practicing physical exercises, reading and even meditating. In addition, if the use of pharmacotherapy is necessary, it is up to the physician to analyze the cases individually, choosing the best choice for the patient.

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