



# What is New in Atopicdermatitis?



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**Submission:** February 05, 2017; **Published:** June 08, 2017

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## Atopic Dermatitis

Atopic dermatitis is a chronic inflammatory skin disease that is more common in childhood. The prevalence of atopic dermatitis is 10-20% in children and 1-3% in adults. There has been an increase in the number of publications related to atopic dermatitis in recent years. We screened publications in PubMed with the keyword "Atopic Dermatitis" and found 1273 publications that had been published between 18th September 2015 and 18th September 2016. The number of the publications in atopic dermatitis in pediatrics is 296. These publications were reviewed under the title of epidemiology, pathogenesis-risk factors, treatment, prevention and protection.

## Epidemiology

Cohort studies have been carried out in different countries such as Turkey, Denmark, South Korea in the last year regarding the prevalence of atopic dermatitis [1-3]. The results of the Danish cohort study are remarkable. In this study, 673.614 children born between 1997-2007 were included. 85.743 children had atopic dermatitis in the first 5 years of their lives. Neonatal risk factors which may affect the development of atopic dermatitis are evaluated, it has been found that there is a negative relationship between low birth weight (incidence rate ratios (IRR) IRR 0.68, (95% CI 0.61-0.75), preterm delivery (IRR 0.77 (95% CI 0.71-1.26) and atopic dermatitis, however neonatal jaundice (IRR 1.13 (95% CI 1.06-1.21)), being born in cold seasons (for autumn IRR=1,12 (95% CI 1.09-1.14), for winter IRR=1,09 (95% CI 1.07-1.11) and post-term delivery (>40 gestational weeks) (IRR=1,16 (95% CI 1.07-1.26) are shown to increase the risk of atopic dermatitis [1].

Dogruel et al. [2] from Turkey conducted a study including 1377 children born in Cukurova University between February 2010 and February 2011. These children were evaluated at birth, 3rd, 6th, and 12th months. The rate of atopic dermatitis was found to be 4.3% at 12th month. Allergic disease in mother (Odds Ratio (OR)=6.28, (1.03-8.30); p=0.046), an infection during pregnancy (OR=3.73) (1.25-11.09); p=0.018) a food allergy (OR=13.7, (3.07-61.0); p=0.001) are risk factors for the development of atopic dermatitis.

In Korean cohort study, high income (OR=1,35 (1.02-1.79)) was found to be a risk factor for the development of atopic dermatitis, however, a negative relationship was found between age (OR=0,96 (0.95-0.98) and atopic dermatitis [3].

## Pathogenesis and Risk Factors

Several factors have been investigated in the pathogenesis of atopic dermatitis. In various studies, Syndecan-4 [4] a proliferation-inducing ligand (APRIL) [5], brain-derived neurotrophic factor [6], clusterin [7], alpha-defensins [8,9] and gelsolin levels were investigated in patients with atopic dermatitis. Decreased fermented food consumption [10], neonatal obesity [11], exposure to prenatal air pollutants [12] and increased numbers of eosinophils in early infancy [13] are found relevant as risk factors. Microbiomes, the popular subject of recent years, are also studied in atopic dermatitis. In study [14], 50 children randomly selected from the Cork BASELINE cohort.

Four different microbial specimens were taken in the first 6 months from four different atopic dermatitis related regions (antecubital, popliteal, nasal and cheek). At 12th month, atopic dermatitis developed in 10 children and these patients were compared with children who did not develop atopic dermatitis in terms of microbiological sample results. As a result children with atopic dermatitis were found to have no dysbiosis or *S. aureus* colonization before or during illness at 12th month. Differences were found in terms of bacterial populations in the antecubital region of 2-month-old children with and without atopic dermatitis. Particularly, commensal Staphylococci were found to be significantly lower at 12-month-old children with atopic dermatitis. It has been stated that commensal staphylococci may be protective against atopic dermatitis, but additional work is needed in this regard. In the other article about microbiomes; it has been shown that skin microbiomes of adults and children with atopic dermatitis are different [15].

## Treatment

Treatment of atopic dermatitis includes avoidance of triggering agents, maintenance of skin barrier function, and anti-

inflammatory drugs. Clinical studies related to phosphodiesterase type-4 inhibitors drew attention in the studies of treatment for atopic dermatitis in the last year. E6005 [16], crisaborole [17], apremilast [18] are phosphodiesterase type-4 inhibitors that have been studied for this purpose. In addition, clinical studies on dupilumab (anti-IL4RA) [19] and CIM331 (Anti-IL31RA) [20] have been conducted. Treatment of severe atopic dermatitis with autologous immunoglobulin [21], cord blood stem cell [22], pan-immunoglobulin, and immunoglobulin E extracorporeal immunosorption [23] have been published as case reports or case series.

Montelukast, used in the treatment of asthma and allergic rhinitis, has been shown in Korean study that it is ineffective in the treatment of atopic dermatitis [24]. Several meta-analyses about atopic dermatitis have been published in this period. One of them is regarding the use of omalizumab in patients with atopic dermatitis. This meta-analysis has resulted in the absence of concrete evidence that it is effective in patients with atopic dermatitis [25]. The efficacy of allergen immunotherapy in patients with atopic dermatitis has been assessed in the Cochrane meta-analysis which has resulted in limited evidence [26]. Symbiotic/Probiotics have been shown to be effective in the treatment of atopic dermatitis in various studies [27,28].

### Prevention and Protection

Although there is no new study of Probiotic/symbiotics use in atopic dermatitis that has been shown to be effective in the prevention of atopic dermatitis in the past years, a meta-analysis has examined this theory and concluded that further studies are needed to evaluate the effectiveness of Probiotics in the primer prevention of atopic dermatitis [27]. One meta-analysis examined the effect of house dust avoidance alone or in combination with additional allergen avoidance modalities on the development of atopic dermatitis. It has been shown that these measures do not prevent the development of atopic dermatitis [29]. It is also shown in the study Turati et al. [30] of that early start of solid food reduced the risk of atopic dermatitis development.

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DOI: [10.19080/AJPN.2017.05.555707](https://doi.org/10.19080/AJPN.2017.05.555707)

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