

Can the Probiotics Change the Spectrum of Atopic Dermatitis?

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Atopic Dermatitis

Atopic dermatitis is a pruritic disease of unknown origin that usually occurs in early infancy. [1] It is the first manifestation of allergic march, which also includes allergic rhinitis and asthma [2,3]. It is known under several names: eczema, dermatitis, atopic eczema, atopic dermatitis.

The primary immune dysfunction hypothesis invoke an imbalance in the T cell with Th2 cells predominating and Th2 cytokines IL4, IL5, IL13 causing an increase in IgE and decreased interferon gamma levels. The epidermal barrier dysfunction hypothesis say that patients develop AD as a result of skin barrier defect and the antigen penetration, this barrier resulting in the production of inflammatory cytokines. Antigens can also be absorbed from the gut (from food) and lungs (house dust mites) [4].

Mutations in a gene encoding filaggrin, a key epidermal protein, cause ichthyosis vulgaris and it is the strong known genetic risk for development AD. Filaggrin mutations are associated with early onset of AD. Filaggrin defect may influence inflammation via family of cytokines including thymic stromal lymphopoietin (TSLP), IL25, IL33 known in the epithelial barrier dysfunction. These cytokines are potent promoters of Th2 cytokine response. AD is a complex genetic disease that results from an assay of gene-gene and gene-environment interaction. Most experts believe that atopic dermatitis has a genetic basis. Chromosome studies suggest that the maternal gene is located on chromosome 11 [5].

The prevalence of AD is 10-12% in children and 0.9% in adults in USA. Worldwide the prevalence of AD is rising and affects 15-30% of children and 2-10% of adults. Most people (90%) get AD before age 5. About half of people who get AD during childhood continue to have signs and symptoms as on adult [6].

Signs and Symptoms

Vary depending on the age. Manifestations of atopic dermatitis in infant appear at 2-3 months. Rash on the face is somewhat characteristic – red and rough and appears suddenly. Skin is dry, scaly and itchy. Rubbing and scratching lesions may lead to skin infections. Atopic dermatitis can produce sleep disorders. In children clinical manifestations may occur between 2 years and puberty. The lesions include rash in the creases of the elbows and knees, the neck, wrists, ankles, buttocks and legs, and itch. In teenagers skin with AD is like permanent goose bumps. Lighten or darken thickened skin develop knots. Patients have itch all the time on the thickened skin, and eczema on back and knees. Adults with AD have rash in the creases of the elbows or knees and neck. Lesions can be especially on the face and neck, around the eyes, covernude of the body and cause a very dry skin, continuous itching, and scaly skin. [7,8]

History of the patient is very important for diagnostic AD. It will consider the onset of AD, rash appearance, itching. No chemical marker for diagnosis is known. Laboratory testing is seldom necessary. Allergy and radio allergosorbent testing is a little value.

Probiotics are live microorganism which, when administered in adequate amounts, confer a health benefit of the host. The hygiene theory suggests that the collective composition of the microbial gut colonization early in life is very important maturation of immune system. Some studies shown that atopic children have less bifidobacteria and lactobacilli in their gut flora than non-atopic children. Several studies have shown that oral Lactobacillus supplementation given prenatally to mothers who had at least one first degree relative with allergic disease reduces the occurrence of AD. Some studies recommend giving probiotics in children in the first 6 months of life to prevent AD occurrence. The evidence for the effectiveness of probiotics in the treatment or prevention of atopic dermatitis (AD) is now encouraging. Studies showed that probiotics administration can reduce the incidence of AD and in the same time weaken the clinical manifestations in almost half of patients. In January 2015 the World Allergy Organization plans to release the first section of the Guidelines for Allergic Disease Prevention which will recommend the use of probiotics by pregnant and lactating women and their breastfed infants to prevent the development of AD. The recommendation was based on a Meta analysis of 29 studies by pregnant women that administration of probiotics has reduced the incidence of AD in children. In the relevant randomized controlled trials (RCTs) was a statistically significant decrease in SCORAD (Scoring Atopic Dermatitis) after probiotics administration to infant or children with AD in 1 or 2 months compared with placebo. They were also found to reduce the severity of atopic dermatitis in approximately half of the RCT evaluated. The administration of a probiotic mixture containing L acidophilus, B lactic and fructo oligosaccharides was associated with significant clinical improvement in children with AD [9,10].

It should be understood that treatment with probiotics is preventive and adjuvant, it can decrease the proportion of AD and reduce the intensity of clinical manifestations.

Treatment can control AD but cannot cure it. Treatment is important because prevent AD from getting worse, calm the skin relieving pain and itch, prevent infection, reduce emotional stress. Treatment includes medicine skin care and lifestyle changes. Pharmacologic agents used to treat AD include the following: topical corticosteroids (Hydrocortisone topical, Triamcinolone topical, Bethametasone topical), antihistamines, immunomodulators (Tacrolimus, Pimecrolimus, Calcineurin inhibitors, Omalizumab – a monoclonal antibody that blocks IgE function). Other treatments include UV, phototherapy, antivirals (Acyclovir), and antibiotics [8].

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