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Progress in pediatric allergology in 2001

The year 2001 brought us a lot of essential news in the nomenclature, pathophysiology and allergic diseases therapy, especially in children. They should soon find their own place in everyday practice of allergology. However, some of them need further research. The most important news and discoveries refer to: 1) proposal of modified allergic nomenclature, 2) new classification of allergic rhinitis (AR) and its links with asthma, 3) prevention of allergic diseases (breast-feeding, probiotics), 4) pharmacotherapy of atopic dermatitis (AD).

A revised nomenclature for allergy has been prepared by an European Academy of Allergy and Clinical Immunology (EAACI) task force composed of specialists that reflect the broad opinion on allergy (4). The aim of this report was to propose a revised nomenclature for allergic and related reactions that can be used independently of target organ or patients' age group. The most important points from this report are presented below.

The hypersensitivity may be allergic (immunological mechanism is sure or probable) or non-allergic (immunological mechanism is excluded). The mechanism of allergic reaction is IgE-mediated or non-IgE-mediated. For example, the typical classification of asthma was shown in Figure 1.

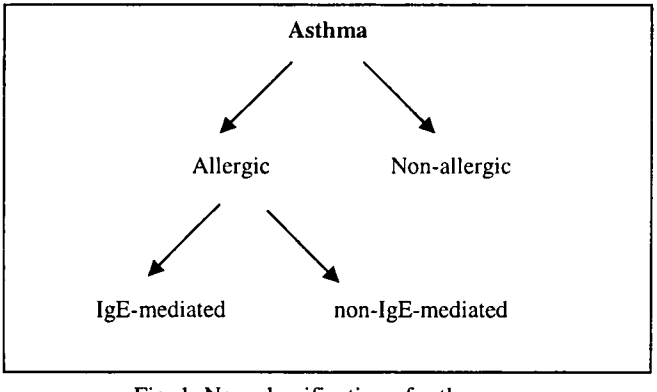

Fig. 1. New classification of asthma

New classification of AR as a major chronic respiratory disease due to its prevalence, impact on quality of life, impact on work/school performance and productivity, economic burden, links with asthma, association with sinusitis and other co-morbidities as conjunctivitis

(2). This new classification of AR is based on symptoms (duration and severity) and quality of life parameters (Fig. 2).

The epidemic of allergic diseases has made their prevention in at-risk infants a public health priority. The complementary concept of prevention is based on allergen-nonspecific approaches arisen from data linking the allergic epidemic to hygiene (12) and suggesting that exposure to certain infections can prevent IgE sensitization to allergen (8). Consequently, IgE sensitization

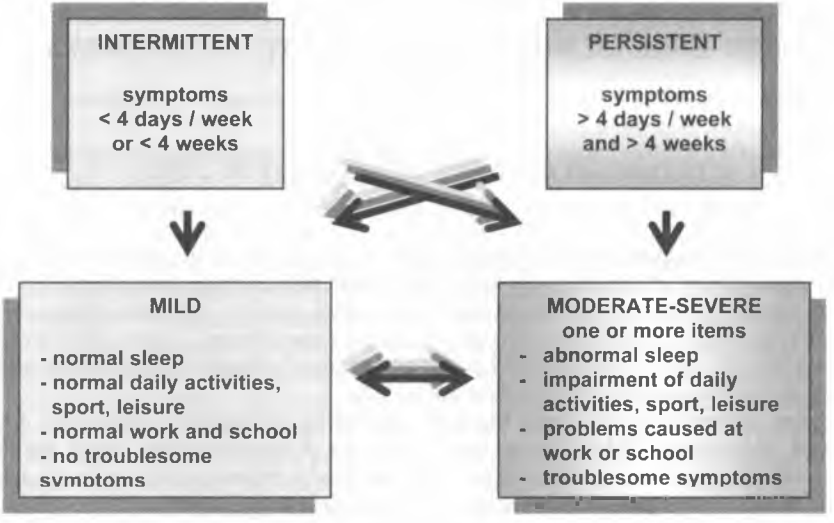

Fig. 2. New classification of allergic rhinitis

might be prevented by administration of appropriate microbes or their substances. New probiotic preparations (first of all lactic acid bacteria – *Lactobacillus GG*) have been proposed to treat allergic diseases and the first double-blind placebo-controlled trial appeared five years ago (7). Kalliomaki et al. recently tested the hypothesis that *Lactobacillus GG* may be useful in

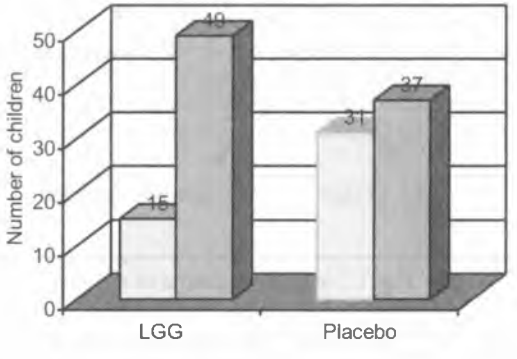

Fig. 3. Principal results of the study. LGG - children treated with *Lactobacillus GG*

preventing allergic diseases when administered to pregnant mothers and to "high risk" group of infants (5). Atopic dermatitis (AD) was diagnosed at 12 month of age only in 23% treated children vs. 46% controls (Fig. 3).

The tested probiotic should be given to five children from a high risk group in order to prevent these children from suffering from AD during the first two years of life. The authors concluded that *Lactobacillus GG* was effective in preventing early atopic diseases in infants at high risk. Although the results are very promising, they need further long-term studies for confirmation.

If has been know for many years that breast-feeding is beneficial from many points of view. One effect may be to protect against allergic diseases, although there are publications which do not confirm these facts. Other essential news in pediatrics allergy published in 2001 refers to the role of breast-feeding as one of the first elements of primary prevention of allergic diseases and asthma in children. Breast-feeding is a potential protective factor for development of allergic diseases in early childhood. During XX-th Congress of EAACI the first report from the ongoing Swedish prospective birth cohort study (BAMSE) was presented (6). The main results are shown in Figure 4.

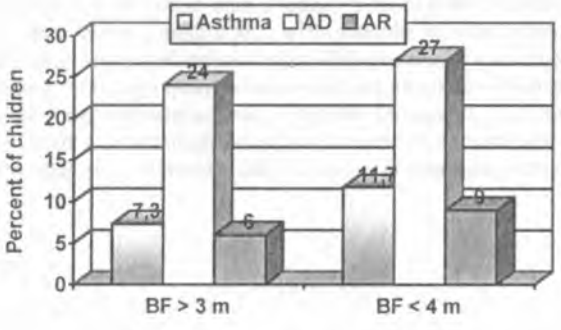

Fig. 4. Prevalence of asthma, atopic dermatitis (AD) and allergic rhinitis (AR) in children with exclusive breast-feeding>3 month (BF>3 m) compared to children breast-feeding less than 4 month (BF<4 m) at the age of 2 years [*significant difference between groups]

The authors concluded that exclusive breast-feeding >three month reduced the risk for development of allergic diseases (asthma, AR, AD) during the first two years of life. But partial breast-feeding during the first year also has a significant protective effect, only for asthma prevalence.

Atopic dermatitis is a frequent allergic disease in children, particularly in neonates and small children. This disease is frequently associated with colonization or infection with exotoxin producing *Staphylococcus aureus* strains. In these cases particularly, the course of disease is sometimes severe. Nowadays the treatment of AD includes corticosteroids (topical and/or systemic), antihistaminic drugs (first and second generation), emolientes and some other therapies. During XX-th Congress of EAACI in Berlin, 9-13 May 2001, German allergologists presented a paper about the treatment of severe AD (SCORAD index >50 pts) with oral *cyclosporin A* (3). In this study 11 children with severe AD were treated with oral cyclosporin A for eight weeks. Clinical signs and symptoms of AD were improved in all patients, with reduction in mean SCORAD score from 74 to 29 ($p<0.001$). In conclusions, they proposed

additional therapy with *cyclosporin A* in severe pediatric AD with *Staphylococcus* colonization. In children with Staphy-lococcus infections systemic antibiotic therapy should be applied together with *cyclosporin A*.

The year 2001 also brought new potential use of *montelucast* – antileukotrien drug, which has been used only in the asthma or AR treatment up to now. In research with good documentary evidence but a pilot one, Pei et al. proved essential improvement of clinical AD course in the group taking *montelucast* in comparison to the group taking placebo in moderate-severe AD children (9).

Another important fact of this field was introduction of a *takrolimus* for topical AD treatment (10). This drug was investigated for about 10 years, and in December 2000 it was registered in USA. The preliminary results are very good but futher clinical studies are required. A new perspectives of AD therapy was shown by Arkwight and David from the United Kingdom in their paper (1). On the basis of some previous observations (11) they hypothesized that if the increased prevalence of atopic disease was causally related to reduced exposure of the community to mycobacterium antigen, then immunization of atopic individuals with these antigens would ameliorate their disease. They used the mycobacterium antigen from *Mycobacterium vaccae* (SRL 172), which is one of over 80 species of environmental saprophytic mycobacterium. The study was conducted as a single-center, randomized, double-blind, placebo-controlled trial. The study included 41 children, aged 5 to 18 years with moderate-to-severe AD (SCORAD: 22-69 score), who were given one intradermal injection of killed *Mycobacterium vaccae* or placebo. The researchers proved that children treated with *Mycobacterium vaccae* showed a mean 48% reduction in the surface area affected by dermatitis compared with a mean 4% reduction for the placebo group ($p<0.001$) and 46%–85% reduction in dermatitis severity score compared with 18% for the placebo group ($p<0.01$) three months after treatment.The tolerance to treatment was good, apart from a local reaction in 13 of 21 children, which occurred one month after *Mycobacterium vaccae* administration and settled spontaneously.

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SUMMARY

The year 2001 brought much essential news in the nomenclature, pathophysiology and allergic diseases therapy, especially in children. They should soon find their own place in everyday practice of allergology. However, some of them need further research. The most important news and discoveries refer to a proposal of modified allergic nomenclature, new classification of allergic rhinitis (AR) and its links with asthma, prevention of allergic diseases (breast-feeding, probiotics) and pharmacotherapy of atopic dermatitis (AD).

Postępy w alergologii dziecięcej w r. 2001

Rok 2001 przyniósł szereg istotnych nowości w alergologii dziecięcej, szczególnie dotyczących nomenklatury, patofizjologii i terapii chorób alergicznych. Są one na tyle istotne, że powinny wkrótce trafić do codziennej praktyki alergologicznej. Część z nich będzie wymagała dalszych badań i potwierdzeń. Najważniejsze postępy dotyczą: propozycji zmodyfikowanej nomenklatury alergologicznej, nowej klasyfikacji alergicznego nieżytu nosa i jego powiązań z astmą oskrzelową, nowych możliwości prewencji chorób alergicznych (karmienie piersią, probiotyki) oraz nowości w farmakoterapii atopowego zapalenia skóry.