31 T-CELL RATIO IN NEWBORNS AND ONE YEAR OLD CHILDREN AT RISK OF DEVELOPING ATOPY.

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Today, it is possible to identify the majority of the newborns with a high risk of atopy by recording family history (FH) and determination of cord-blood IgE (CB-IgE). But this selective screening cannot detect the total number of newborns at risk of atopy. The aim of the present study was to investigate the value of T-cell suppressor count in newborns for the prediction of atopy. We studied CB-IgE, T-cell counts and FH in 138 non-selected newborns. No measures were undertaken for the prevention of atopy. A control determination of IgE and T-cell function was performed at 14 months age.
All children with elevated CH-IgE and low T-Suppressor cell count in the cord blood (11%) developed clinical signs of atopy. The risk of atopy was significantly higher in children with low CB-T-suppressor cell count and pos. FH compared to normal controls (p 0,01). High CB-IgE or low T-suppressor cell count are of similar value for the prediction of atopy.
At the age of 14 months, no correlation could be drawn between IgE, T-suppressor cell count and atopy symptoms.

32 RESULTS OF DIETARY AND ENVIRONMENTAL MEASURES FOR THE PREVENTION OF ATOPY IN AT-RISK BABIES: FOLLOW-UP TO 3 YEARS 8 MONTHS OF AGE.

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To evaluate the prophylactic effect of dietary and environmental measures on the development of atopic diseases we have selected and followed from birth to 8 yrs 244 children with family history of atopic diseases. Dietary measures were as follows: Exclusive breast-feeding for the first 6 mos of life, no more than 200 ml of cow's milk (CM)/day and no more than 2 eggs/week to the nurs ing mothers, soy-milk(Isomil Abbott)supplement if breast milk was not sufficient, selected weaning after the 6th mo, CM from birth when mothers did not breastfeed, in the CM-fed infants no attempts to influence the type and time of weaning. Environmental controls were as follows: No smoking in the house, strict controls for the elimination of house dust,molds and mites, no pets in the house, day-care attendance delayed to after 3 yrs. All the infants were seen at our Clinic at the age of 1,3,6,9,12 mos and twice-a-year afterwards. The median age of the 244 children at the last follow up was 3yrs+8mos(Range 7 mos-8 yrs). 26 (14,5%) of the 179 breast- or soy-fed and 25 (38,5%) of 65 CM-fed infants developed atopic diseases during the follow-up (p< 0,001). In detail, 8 of the 26 breast- or soy-fed infants showed atopic dermatitis (AD),14 asthma, 1 rhinitis, 2 asthma associated with AD, and 1 urticaria.2 of the 25 CM-fed infants showed AD, 13 asthma, 2 rhinitis, and 8 asthma associated with AD. These data suggest that dietary and environmental measures exert a prophylactic effect on the development of atopic diseases in at-risk infants.

33 THE FOLLOW-UP OF SPECIFIC IgE IN THE CONTROL OF ALLERGIC DISEASE.

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Allergic disease is very common in children. The disease is characterized by a variety of symptoms. When a child is referred to the pediatrician, the allergy has caused many problems. The sensitization to the different allergens has already taken place. The avoidance of allergens results in a decrease of symptoms. Since five year we follow-up the development of specific IgE for food and inhaled allergens in patients with a family history of atopy. In a group of young children we could demonstrate that the development of specific IgE for inhaled allergens was preceeded by specific IgE for food allergens even before allergic symptoms of the respiratory tract existed. In a group of older children with pollen asthma we found in 88% of the patients specific IgE for peanuts. These findings give rise to several questions. Is a strong immunological reaction to food in the first years of life a basis for a strong immunological reactivity for inhaled allergens later on? Are there different routes in sensitization for the same allergen? How can these processes be influenced? These questions formed the basis for our investigations and the study (see abstract P.G. Calkhoven) of the significance of cross-reactions between food and inhaled allergens.

34 CROSSREACTIVITY OF IgE ANTIBODIES BETWEEN VEGETABLE FOODS AND POLLEN.

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Patients with IgE-mediated hypersensitivity to pollens are frequently also hypersensitive to allergens in other plant tissues. For example, patients with immediate hypersensitivity to birch pollen are frequently sensitive to a variety of raw fruits, vegetables and/or nuts.

Crossreactivity of IgE antibodies was investigated serologically by RAST-inhibition assays and Western blots with human IgE antibodies and crossreacting monoclonal antibodies. Apart from periodate-susceptible crossreacting carbohydrate determinants, several periodate-resistent crossreacting determinants were detected on protein components of 20, 18 and 14 kD, respectively. The 20 kD component present in birch pollen seems to be responsible for the crossreactivity with fruits, whereas the 18 kD component of birch pollen seems to be responsible for the crossreactivity with grass pollen, potato and fruits. The cross-reacting determinant on the 14 kD component is present in pollens (e.g. grass pollen) and other vegetable materials (e.g. potato).

35 AEROSOL CHALLENGE ALTERS THE PERMEABILITY OF THE TRACHEA IN SENSITIZED RATS

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More antigen penetrates the tracheal epithelium of rats when they have been sensitised prior to challenge via the airways. The present study examines the mechanism of this increased penetration by measuring the passage of (electron-dense) lanthanum into the respiratory epithelium.
Rats were sensitised by injection with DNP_{19}-ovalbumin (DNP-OA) or saline. The rats were challenged for 10 minutes with an aerosol of DNP-OA, bovine gamma globulins or saline. Within one minute of completion of challenge the trachea was immersed in a fixative containing 1% lanthanum nitrate. Subsequently, the lanthanum concentration in the epithelium was measured by planimetric analysis of electron micrographs and by X-ray static probe micro-analysis.
The proportion of lanthanum-stained intercellular boundaries was greater in the tracheas from the DNP-OA sensitised and challenged group than in the other experimental groups ($p<0.05$). X-ray microanalysis confirmed that more lanthanum was present in the tracheal epithelium of these rats ($p<0.05$). The quantity of lanthanum penetrating correlated ($R=0.74$) with the severity of the mechanical respiratory response.
The results show that antigen challenge of sensitized subjects leads to increased permeability between the epithelial cells. The intercellular route could be used by antigen or released agonists to enhance sub-epithelial activation.
Support from the Welcome Trust is gratefully acknowledged.

36 SENSITISATION TO HOUSE DUST MITE MAY OCCUR BY DIFFERENT ROUTES IN ASTHMA AND ECZEMA

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Different allergens occur in the body and faeces of the house dust mite, Dermatophagoides pteronyssinus. As inhalation of faecal particles is barely possible because of their size and the body is 12 times bigger, we decided to examine the proportions of IgE antibody to mite faeces and body in asthmatic and eczematous children. A difference could indicate different portals of sensitisation in the two diseases.
69 children with combinations of asthma, eczema and/or rhinitis had radio-allergosorbent (RAST) tests to purified faecal and body allergens performed on their sera. The concentration of IgE antibodies to the body was higher in eczema than in asthma (RAST $\pm$ SD; 3.8$\pm$0.7 vs 1.9$\pm$1.3) but the concentrations of IgE antibodies to the faecal allergens were not significantly different (2.9$\pm$1.4 vs 2.1$\pm$1.4). The ratio of IgE's (body vs faecal) was significantly greater in the eczematous than in the asthmatic subjects (1.32 vs 0.96). The results in the 4 subjects with rhinitis (2 with and 2 without eczema) support the view that IgE antibodies to the body are characteristic of eczema.
Sensitisation to mite body may occur by a different process from sensitisation to mite faecal particles. The allergens of the body may penetrate the skin while faecal allergen may also enter by other routes.
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