Atopic Dermatitis, House Dust Mite Allergy and Month of Birth

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An analysis of the month of birth in 210 patients with atopic dermatitis and a positive prick test towards the house dust mite (*Dermatophagoides pteronyssinus*) showed a significantly higher prevalence of birth in the interval May to November when compared with the expected distribution ($p<0.01$). A subdivision of the AD patients due to the concomitant presence of asthma showed no differences as the relative risk was nearly the same in the two subgroups. This observation indicates that a consistent seasonal preference of birth in patients with atopic dermatitis only applies to the skin disease and not to coexistent asthma. (Received March 19, 1987.)

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The development of atopic dermatitis (AD) may be related to both intrinsic and extrinsic factors (1–3). Intrinsic factors include immunological and inflammatory abnormalities. Extrinsic factors of importance may be food allergens and common environmental allergens, known as inhalant allergens (i.e. house dust mites, pollen, animal dander).

Exposure to an allergen during the first 6 months of life has been found to be of importance for the induction of allergen specific IgE production (4). Thus, previous studies have shown an increased incidence of house dust mite allergy in asthmatics born in the months of May to October when the concentration of house dust mites in the environment is supposed to be highest (3, 5). As a previous investigation has shown a high environmental exposure to house dust mites in AD patients (H. Harving et al., 1986, unpublished) and since 75% of children with atopic diseases are sensitized to the house dust mite by the age of 10 (6), investigations were initiated to elucidate if a considerable house dust mite exposure during the first months of life was positively correlated with a positive prick test in AD patients in later life.

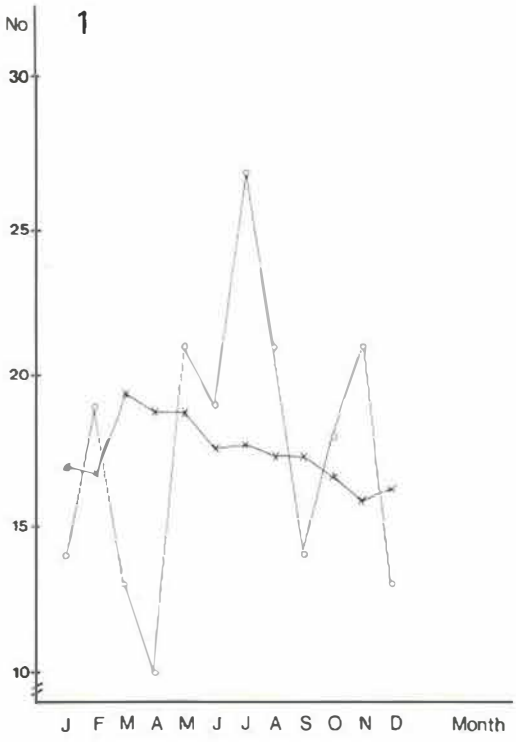
PATIENTS AND STATISTICAL METHOD

In a retrospective study in Århus and Odense 210 patients with AD and a positive prick test to house dust mite allergen were included. All patients had AD of various degrees, and 147 (70%) had a concomitant bronchial asthma. The patients were born in the period 1940–1981. The distribution of sex in relation to age is given in Table I.

Skin prick tests had been performed in all patients with nine common allergens produced and standardized by Allergologisk Laboratorium A/S, Copenhagen. All 210 patients had a positive cutaneous reaction towards the major antigens in the house dust mite (*Dermatophagoides pteronyssinus*). A positive skin reaction was equal to or larger than a reference test with 0.1% histamine.

The birth month of all patients included were recorded. The distribution of birth month for the entire Danish population born from 1940–1981 ($n=3\,229\,070$) was given by "Danmarks Statistik". The expected distribution of the month of birth among the patients was calculated from this information. The ratio between the number of persons born in a given month (1940–1981) and the total number of births ($n=3\,229\,070$) multiplicated with the total number of observed patients was the number of patients expected to be born in that month.

Statistical analyses were performed with the χ^2 test. By using the number of expected patients as reference the relative risk of a given birth month for the observed patients could be calculated (7).



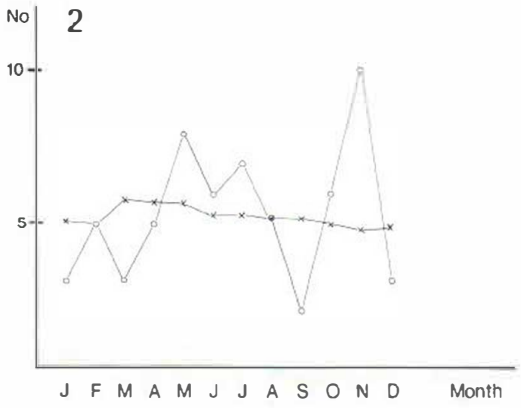


Fig. 1. Distribution of the month of birth in 210 patients with atopic dermatitis (○—○). For comparison the expected distribution of the birth month is shown (×—×), when calculated from the distribution in the general population.

Fig. 2. Distribution of the month of birth in 63 atopic dermatitiss patients without asthma (○—○). For comparison the expected distribution of the birth months is shown (×—×), when calculated from the distribution in the general population.

Allergen exposure

In Denmark and in the Netherlands the seasonal variation in the number of house dust mites has shown the largest concentration in the summer and autumn (3.8). In USA the occurrence of house dust mites showed a similar maximum in June to September (8). Thus, in our calculations the summer and autumn (May to November inclusive) were defined as the season, when the Danish population is exposed to the highest concentrations of house dust mites.

RESULTS

Compared with the distribution of birth month in the control population house dust mite allergic AD patients (n=210) showed a significantly higher proportion of births in the months from May to November inclusive. (χ^2=7.3, df=1, p<0.01, Fig. 1).

Subdivision of the AD patients according to coexistent asthma revealed a significantly more frequent month of birth within the period May to November (χ^2=3.96, df=1,

Table I. *Distribution of number of patients according to age and sex*

M: male, F: female

	Age (years)			
	0–10	11–20	21–30	31–41
Number/sex	21/M 14/F	27/M 28/F	38/M 45/F	18/M 19/F
Total number	35	55	83	37

$p<0.05$), in the asthma group ($n=147$). This corresponds to a relative risk of 1.41 (95% limits of confidence: 1.003–1.98). The group of AD patients without asthma ($n=63$) showed only a trend towards the same period ($\chi^2=3.66$, df=1, $0.05<p<0.1$, Fig. 2) with a relative risk of 1.68 (95% limits of confidence: 0.98–2.88).

The seasonal preference of birth in all house dust mite allergic AD patients corresponds to a relative risk of 1.49 (95% limits of confidence: 1.22–2.17). This means that the risk of house dust mite allergy in AD patiens born from May to November is about 50% higher compared with persons born in the rest of the year.

DISCUSSION

Production of allergen specific IgE antibodies only occurs after exposure to the allergen. The hypothesis of a special priming period around the age of 3 months with a subsequent increased risk of atopic disease in later life has been proposed (1). A temporary decrease in serum IgA has been observed at the age of 3 months as well as in children with frequent respiratory infections (1, 10). This may be accompanied by low concentrations of IgA in intestinal and bronchial secretions resulting in an ineffective antigen exclusion (11).

Partial immunodeficiency especially IgA deficiency has been found more frequently in an atopic population compared with normal controls (12). Adults with a positive skin test towards house dust mites had significantly lower concentrations of mite specific IgA compared with controls (12). Under these circumstances allergens more easily penetrate the bronchial epithelium and give rise to specific IgE production. In AD penetration of damaged epidermis may be of pathogenetic importance (13) as IgE coated Langerhans' cells may present the mite antigen to sensitized T lymphocytes and mast cells in dermis (6, 14).

The present study supports the view that exaggerated antigen exposure in the first month of life increases the risk of house dust mite allergy in AD later in life. A subdivision due to concomitant presence of asthma do not reveal any differences as the relative risk is nearly the same in the subgroups. Thus, this seasonal preference in atopic dermatitis patients only applies to the skin disease and not to coexistent asthma.

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Are Acquired Nevi Oestrogen-dependent Tumours?

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Jemec GBE, Bhogal BS, Wojnarowska F. Are acquired nevi oestrogen-dependent tumours? Acta Derm Venereol (Stockh) 1987; 67: 451–453.

Twelve benign acquired nevi were studied for the possible specific binding of the ER D5 monoclonal antibody. The ER D5 monoclonal antibody identifies the p29 protein, which is found in the cytoplasm of oestrogen-sensitive cells and which is present in a higher concentration than nuclear oestrogen receptors. No staining was seen in nevoid cells, and the results are taken to support the hypothesis that acquired nevi are not oestrogen-dependent tumours. (Received January 23, 1987.)

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Acquired benign nevi are known to grow in puberty and pregnancy, and biochemical investigations using radio-labelled oestrogens in competitive binding studies have implied that nevi may be oestrogen-sensitive tumours (1, 2, 3, 4). In immunofluorescence studies using FITC-labelled oestrogens (5, 6, 7) these findings could only be reproduced in part, and it would seem that acquired nevi do not bind fluorescent labelled oestrogen (6). Because of the possible association between malignant melanoma and nevi, it was decided to test acquired nevi for the presence of p29 protein. The p29 protein is found in the cytoplasm of all normal oestrogen-sensitive cells, and is present in a higher concentration than actual nuclear oestrogen receptors (8, 9). The p29 protein is identified with the ER D5 monoclonal antibody, and the technique offers the advantage of not crossreacting with tissue enzymes as does labelled oestrogen (10), thereby eliminating false-positive results.

MATERIALS, METHODS AND RESULTS

Acquired and obviously benign nevi excised for cosmetic reasons at the request of the patients were used in this study, with the permission of the patients. The patients were all in good health, and not on treatment with oestrogens or steroids. Twelve nevi were excised from eight patients (7 female, 1 male), the average age of the patients was 38.9±14.1 years and histologically seven nevi were of the compound type, one junctional and four intradermal.

ER D5 monoclonal antibody and normal mouse serum were obtained from Amersham International