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Does a Patient's Occupation Influence the Course of Atopic Dermatitis?

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The importance of occupational environments in relation to the course of an atopic skin disease was investigated. A series of 1008 adult patients, who had had an atopic disease since their teenage years, were studied. Severe or moderate childhood atopic dermatitis tended to persist or relapse in adulthood independent of occupation. Only dermatitis of the hands showed a correlation with extensive daily exposure to occupational irritation factors. Atopic dermatitis patients did not go on sick leave more often than controls or those with atopic mucosal symptoms, although sick leave caused by skin problems lasted longer than sick leave caused by other circumstances. Atopic patients did not change their occupation because of their disease more often than the non-atopics. On the whole, changes in occupation were most common for patients without special education.

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Occupational skin disease accounts for approximately 20–40% of the occupational diseases in Western countries (1, 2), e.g. in Finland, where annual statistics for occupational skin diseases have been available since the 1970s (3). The figures are high and the economic burden of these diseases is considerable. The number of lost working days is highest in the industrialized countries. However, appropriate information may lower these figures (4–10).

Occupationally related, exogenous dermatitis is generally seen in the hands. Persons with a history of an atopic disease – of atopic dermatitis (AD), in particular – are considered highly susceptible to the risk of developing hand dermatitis if their exposure to irritation is extensive (11–15). When considering the distribution of AD patients among different occupations, several factors are of importance, including socioeconomic ones. When there is appreciable unemployment, individuals with a history of work-related disease may find it difficult to gain employment.

The prevalence of AD or other atopic symptoms among adolescents is 10–30% (16, 17). Atopic diseases are common, but the outcome of these diseases in adults and also in different occupations needs further investigation. In this study we have followed patients with atopic diseases, classifying their skin problems and their occupations, and relating the outcome of dermatitis to their occupational exposure during a follow-up period of 6 years.

MATERIALS AND METHODS

Subjects

The study was carried out from 1983 to 1989 in the Dermatology Department of Turku University Central Hospital. The study population consisted of 1224 atopic patients who had been previously examined and undergone prick-testing during their teens in the clinic. Of the 1224 patients invited, 1008 participated in the first personal investigation. When the follow-up study began, 488 of the atopic patients were 28–41 years old (groups I 1–4), and 520 were 19–27 years old (groups II 1–4).

The atopic patients in both age groups were further divided into four subgroups, according to the severity of the skin disease and other associated atopic symptoms such as allergic rhinitis (AR), conjunctivitis (AC) and asthma.

Group 1: Severe AD, history of periods of hospitalization ($n = 241$).

Group 2: Moderate AD, five or more ambulatory visits to the Department of Dermatology ($n = 399$).

Group 3: Mild dermatitis, one to four Outpatient Clinic visits ($n = 161$).

Group 4: Patients with AR, AC or asthma, but having had no dermatitis in childhood ($n = 207$).

Controls: The control groups consisted of 626 age- and sex-matched subjects, who had no history of atopic symptoms in childhood. From these controls non-atopic dermatoses were not excluded. Two specific categories were followed in more detail in the control group, namely 46 hairdressers and 153 shipyard workers.

Clinical studies

The patients and their controls were interviewed by a trained nurse who registered the course of dermatitis and the characteristics of the environment at home and at work. Particular attention was paid to work-related factors, such as wet work, chemical and mechanical irritation and the opportunities for skin protection. Sick leave and changes in employment were registered. If skin problems had led to a change in work, this was separately registered.

Each patient was also investigated by a dermatologist. The present symptoms were recorded. The occurrence, extent and distribution of papules, vesicles, erythema and lichenification were scored on a scale of 0–3 as follows: 3 – severe, 2 – moderate, 1 – mild and 0 – no dermatitis. The dermatitis was graded mild, moderate or severe in accordance with the total score based on both the lesions and the extent. If the dermatitis covered more than 50% of the skin it was considered severe.

Later, every second year (that is, on three occasions), the patients received follow-up letters in which they were asked to report the course of the dermatitis, occupational changes and sick leaves. Those patients with moderate or severe dermatitis were also examined 5–6 years after the initial visit.

Statistical analysis

The frequencies were statistically compared by the chi-square test.

RESULTS

First visit

Of the patients invited, 81% came to the first personal investigation. During this visit the following background information was gained.

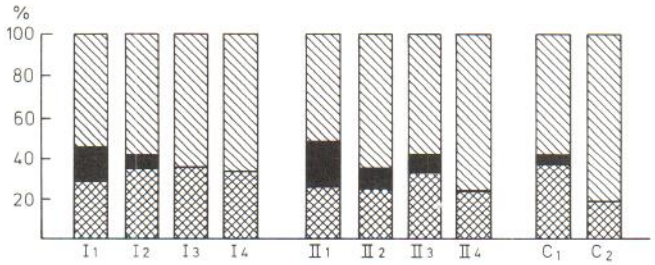

Fig. 1. Sick leave during the last year among atopic patients (Groups I, II: 1–4) and among non-atopic controls (*C1:* controls with a history of skin symptoms, *C2:* no history of skin symptoms). – *striated*: sick leave caused by variable reasons, – *black*: sick leave caused by dermatitis, – *double striated*: no sick leave.

Education

All levels of education were represented among the patients. Of the older patients with AD, 28% had received a university degree or corresponding higher education after high school, while 35% had graduated from vocational school after elementary school, the latter being the only education for the remainder of the patients. The corresponding figures for the younger group were 24%, 37%, and 39%. Among the patients with AR/AC or asthma, the corresponding figures were 45% for university or related studies and 30% for vocational school. Among the non-atopic patients the figures were 24% and 30%.

Occupation

The spectrum of occupations was extensive. Executive positions and office-type work were common after university studies. Numerous employees were found in the health care system, in technical planning work, in the food industry and in kitchen work, as cashiers and in transport systems.

Dermatitis

Independent of the occupation, 44% of the patients who had a history of severe or moderate dermatitis also had current dermatitis at the first visit. The clinical picture of the dermatitis has been described earlier (18). No significant differences in the occurrence or location of the dermatitis seen between the two age groups, although the dermatitis showed some tendency toward alleviation with age. Dermatitis usually affected the face, neck, upper part of the body and the upper extremities.

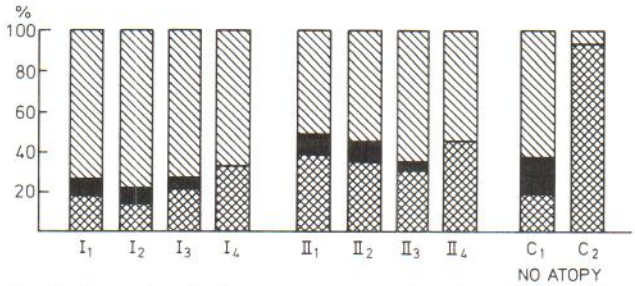

Fig. 2. Occupational changes among atopic patients (I, II: 1–4) and among non-atopic controls (*C1:* controls with a history of skin problems, *C2:* no history of skin problems). – *striated*: occupational change caused by variable reasons, – *black*: occupational change caused by dermatitis, – *double striated*: no occupational changes.

Hand dermatitis showed an evident correlation with occupational exposure. Of the atopic patients exposed to wet work or mechanically skin-irritating factors for 2 h or more daily, 90% had hand dermatitis, compared to 50% of those who had little or no corresponding exposure. Skin protection was common, although occasional, also among those who were exposed to irritation. Dermatitis in other locations was not associated with occupational exposure.

Other atopic symptoms

Of the patients with AD, 47% simultaneously had AR/AC symptoms and 17% had asthma. Of the patients who had rhinitis, 89% had simultaneous AC and 17% had asthma.

Sick leave (Fig. 1)

During the last year, 70% of the patients with AD had been on sick leave for a variety of reasons. In 20% the reason had been dermatitis and 50% of these patients had required sick leave for hand dermatitis. Sick leave for skin problems were most common in those patient groups who had had severe or moderate dermatitis in childhood.

The total frequency of sick leave was comparable in all patient groups. Of the patients with AR/AC or asthma 67–74% had been on sick leave, and 67% of the controls had been on sick leave as well. Among the non-atopic controls 4% had been on sick leave due to dermatitis. Sick leave caused by dermatitis tended to be longer than that caused by other diseases.

Employment

Of the atopic dermatitis patients, 40% had a history of one unemployment period and 29% had had at least two such periods. The corresponding figures were 25% and 5% for the control subjects.

Work changes

Occupational changes were rather common. Of the older patients with AD 83% and of those with AR/AC or asthma 76% had changed occupation, as had 80% of the non-atopic controls. In the younger age groups the corresponding figure was 63%. The reason for the change in occupation was dermatitis in 8% of the atopic patients and in 18% of the non-atopic controls with a history of dermatitis. The largest groups in which changes of occupation took place because of dermatitis are presented in Table I. Only the main occupational groups, two thirds of the total, are presented. The patients without any special education most frequently started in a new, different occupation and these patients also most commonly experienced unemployment.

Special occupations

Of the 46 hairdressers 11 had a history of an atopic disease and 4 of these 11 hairdressers had a history of hand dermatitis. One of these hand dermatitis patients had suffered from extensive dermatitis as a teenager. At the time of examination the 4 atopics and also 2 other hairdressers had current hand derma-

Table I. *Occupational changes due to dermatitis*

Due to the great variation in occupations, some of the patients could not be included in these occupational groups.

Present occupation	Previous occupation								
	Food handling	Cleaning work	Nursing work	Office work	Metal work	Textile work	Building work	Transport	All
Office work	9	4	6	4	3	2	1	–	34
Food handling	4	5	2	4	1	–	1	1	18
Transport	1	1	–	1	1	–	2	4	16
Education	4	2	–	1	1	1	1	–	14
Domestic work	2	3	1	1	1	1	–	–	10
Nursing work	2	2	3	2	2	–	–	–	9
Textile work	1	1	–	–	–	–	–	–	5
Cleaning	1	2	1	1	–	–	–	–	5
All	24	20	15	13	13	7	7	7	111

titis. None of these subjects had been on sick leave for dermatitis and all of them wanted to continue in this occupation, which they liked. They found that they had been well informed about the occupational and their own constitutional risks.

In the shipyard, a strict pre-employment selection was generally carried out in an attempt to exclude, among others, patients liable to develop dermatitis, such as atopics. Despite this selection procedure 27/153 of the examined workers were atopics, 9 of whom had a history of AD in childhood. In their current occupation 4 of the atopic workers had suffered from hand dermatitis, as had 2 of the non-atopics. None of them had been on sick leave for dermatitis during the last year.

Letter interviews

The first letter interview was returned by 79%, the second by 80% and the third by 63% of those contacted.

In each follow-up the trend of the answers was similar. The patients with a history of severe or moderate dermatitis also had relapsing eczema frequently, the older age group reporting symptoms in 81% and the younger groups in 89% after the previous visit or previous letter. Among the patients with a history of milder dermatitis 67% reported temporary eczema. From those patients who only had had AR/AC or asthma, 38% had also experienced periods of dermatitis.

Current dermatitis was reported by 85% and 93% of the patients who had a history of severe dermatitis, the younger suffering more frequently, and by 70% and 73% of the patients with moderate dermatitis. Of patients with mild dermatitis, 62% and 67% and of those with only a history of AR/AC or asthma, 13% and 29% reported current dermatitis.

The dermatitis was most common in flexural areas, followed by the head, neck and shoulder region and the hands. The reported occurrence of dermatitis showed an increase in the third follow-up letter. The prevalence of hand dermatitis increased from 40–53% in group II 1 and from 29–40% in group I 1. In the head, neck and shoulder region the dermatitis was present in 50% in group II 1, whereas in group I 1 it increased from 35–50%. In the other body regions including flexural areas, the prevalence increased from 62–67% in the younger patients and from 47–57% in the older patients. In the other groups the percentages were lower but showed a fluctuating tendency during follow-up. Of those patients who had mainly suffered from mucosal sympoms, 7% had dermatitis when the first letter of inquiry was sent, and having received the third letter 12% reported current dermatitis mainly in their hands.

The patients were asked about their subjective evaluation of the course of dermatitis. Roughly 30% reported that they had improved, 50% were unchanged and 20% considered that the dermatitis had become more severe during the follow-up period.

Although a majority of the patients had been on sick leave for various reasons, dermatitis had been the cause in only 9% among those with severe AD and in 7% of those with moderate AD.

The patients were asked about factors which aggravated their dermatitis. Stress was the factor most commonly suggested by the patients, followed by wet work exposure, winter climate, dust and contact with foods.

Second visit

Of the 170 moderate/severe AD patients invited, 114 (67%) participated in the second clinical examination. At that time 94% had current dermatitis. Facial dermatitis was seen in 63%, hand dermatitis in 54%, flexural dermatitis in 50% and in 52% dermatitis occurred on the body. Severe dermatitis was most often seen in the face and in the flexures (in 17% of all). The skin problems had led to sick leave in 11 cases, but none had lasted for more than 30 days. Nine patients had changed their work because of dermatitis, each having been exposed to skin-irritating factors in their previous work situation.

Asthma had occurred in 10%, AR in 50% and AC in 25% of those patients with a history of severe or moderate dermatitis. The symptoms had become milder, seldom requiring any medication.

DISCUSSION

Chronic AD in childhood or relapsing AD among teenagers has a tendency to persist for the next 15–30 years independent of occupation. Our follow-up results are in agreement with previous reports (12, 14, 15, 19). The severity of dermatitis, AR/AC and asthma showed a decreasing tendency. Derma-

titis, however, persisted in a majority of the patients with a history of severe or moderate AD, and it had actually become worse in 20% according to the questionnaire and follow-up. On the other hand, self-selection of the patients is evident and those who had most problems were the ones most interested in participating. The unfavourable course of atopic skin symptoms, however, was not dependent on occupational exposure to skin irritation, except in cases of hand dermatitis. It was surprising that 10% of the severe/moderate AD patients had no history of hand dermatitis in spite of daily occupational irritation exposure. Some earlier studies have focused on the wet work risk occupations and a tendency for AD patients to have an increased susceptibility to hand dermatitis has been reported (12, 13, 19, 20).

It has been suggested that AD patients inflict a high cost on society because of repeated sick leave (11, 15). In our material the AD patients did not go on sick leave more often than the controls. However, the patients with severe/moderate dermatitis had been on sick leave due to skin problems more often than the others. Sick leave caused by dermatitis also lasted longer than sick leave caused by other circumstances. The total number of compensated days was not significantly different from the others. This aspect of the costs of lost work days and on the multifactorial background of sick leave has not been considered in previous studies (21–23).

It was common for individuals in all groups to change occupation and place of employment. Skin symptoms had led to the changes most often among the non-atopic controls with variable dermatoses, such as contact dermatitis with occupational exposure. On the whole, irritant contact dermatitis from extensive external exposure and a low level of education were common features in cases of occupational changes. On the other hand, the majority of patients with AD had learned to work and live with their skin symptoms. They were motivated to maximize preventive manœuvres when they had been trained in occupations which they liked. One should be cautious recommending an occupational change to atopic dermatitis patients because of skin problems. The same has been suggested about occupational dermatitis, as well as different types of constitutional dermatitis (6, 15, 24–28).

It appears that the most important thing regarding AD patients is the information about the nature of the disease. A very definitive and restrictive occupational counselling policy cannot be recommended. It is important that all information is given to the patients as early as possible about their constitutional weakness, protective manœuvres and different occupational environments. Irritating work situations during training periods may cause problems, although the future work environment would be suitable. These patients need adequate information in time, after which their own motivation and mental capacity are crucical. Highly protective social systems and long sick leaves may decrease the patients' interest in education, treatment and protection of their skin. In addition to information, they also need support for acquiring proper occupational education and for being motivated to work.

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