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Alcohol and Smoking: Risk Factors for Infectious Eczematoid Dermatitis?

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Risk factors for infectious eczematoid dermatitis (IED) were analyzed in a study of males aged 19–50 years. The subjects were 43 IED patients and 226 controls with other skin diseases from the dermatological outpatient clinics of three University Hospitals in Finland. The patients' lifestyles were assessed by a self-administered questionnaire pertaining to two specified periods: the period 12 months before the onset of the skin disease and the period 12 months before the examination date. Recalled mean alcohol intake before the onset of the skin disease was 39.2 g/day for the IED patients and 17.1 g/day for the controls ($p = 0.04$). The average number of cigarettes smoked daily was 17.7 for the IED patients and 10.4 for the control patients ($p = 0.001$). The IED patients significantly reduced their alcohol intake after the onset of the skin disease. In logistic regression analysis, IED associated with alcohol intake and smoking but not with coffee consumption, life events, age, marital status, or social group. The odds ratio for IED at an alcohol intake of 50 g/day as against no intake, was 1.7 (95% confidence interval 1.03–2.7), and the odds ratio at a tobacco consumption rate of 20 cigarettes/day as against no use of tobacco, was 2.1 (1.2–3.7). We conclude that alcohol intake and smoking appear to be risk factors for infectious eczematoid dermatitis among males. ***Key word: Males.***

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The aetiology of infectious eczematoid dermatitis (IED) is far from completely understood, although a previous skin infection often seems to play a role. While it is known that susceptibility to infections is increased by alcohol intake and smoking, and while clinical experience suggests that these lifestyle factors may have a role in catching infectious eczematoid dermatitis, no studies have been published this far to our knowledge. We have therefore studied the role of alcohol intake, smoking and other lifestyle factors in IED.

PATIENTS AND METHODS

Patients

This study consisted of male patients admitted to the outpatient clinics of the departments of dermatology of the University Hospitals of Helsinki, Oulu and Tampere from September 1987 to April 1989, whether treated as outpatients or inpatients. The patients and the controls of the present study had served as controls in our previous psoriasis study (1). In that case control study two controls were chosen for each of the 150 consecutive psoriatic patients. The controls were of approximately the same age (± 10 years) as the psoriatic patient and also fulfilled the following other inclusion criteria. In order to limit the possible bias arising from memory failure or other misreporting (2) the study group was restricted to patients aged 19–50 years, with the skin disease originating in 1976 or later. Only male patients were chosen for the study because the average alcohol consumption tends to be considerably higher among males than among females. Consequently, variations in alcohol intake are more readily observed in males.

Two of the patients chose not to participate: one did not have the time and another felt the questions were too sensitive. Of the 300 patients who originally responded, 15 failed to meet the criteria for age or onset of the skin disease or did not respond to the question concerning the onset of their skin disease. Sixteen patients with nummular eczematous dermatitis were excluded from the present comparisons for two reasons. First, diagnostic confusion between the former and infectious eczematoid dermatitis could not be completely ruled out. Secondly, preliminary analyses showed that alcohol intake among this small group of patients was closer to patients with IED than to that of controls. The present study group thus comprised 269 patients, 43 patients with IED and 226 controls (Table I).

Diagnostic criteria

Patients with eczematous dermatitis (usually on the palms of the hands, the soles of the feet, or on the legs) were diagnosed as having IED if the diagnoses of allergic or toxic contact dermatitis, atopic, seborrhoeic or nummular eczematous dermatitis, and lichen simplex chronicus could be excluded. Forty-three patients fulfilled the criteria for IED. Sixteen patients were diagnosed as having nummular eczematous dermatitis on the basis of dry discoid lesions observed mainly on the external surfaces of the arms and legs, and sometimes also on the abdomen and back.

Patient characteristics

No significant differences were found between the patients with IED and the controls with respect to age, marital status or social group. The mean age (standard errors in parentheses) of the IED patients was 35.1 (± 1.3) years and that of the controls 33.5 (± 0.6) years ($p =$

Table I. *Diagnoses of patients.*

Diagnosis	Number of cases
Patients	
Infectious eczematoid dermatitis (IED)	43
Controls	
Dermatitis (other than IED or nummular)	54
Skin infections	28
Acne and rosacea	19
Urticaria	16
Lichen ruber	15
Connective tissue diseases	11
Leg ulcers and vasculitis	9
Bullous diseases	8
Lichen simplex chronicus	7
Palmoplantar pustulosis	6
Miscellaneous skin diseases	53

Table II. *Alcohol intake (g/day) before the onset of the skin disease and before the examination.*

Variable	Mean	Standard Error	Number of Cases	P-value (1)
Before the onset of skin disease				
IED	39.2	10.1	41	0.04
Controls	17.1	1.7	209	
Before the examination				
IED	35.5	9.9	40	0.05
Controls	15.8	1.3	185	

(1) Two-sided t-test; separate variance estimate.

0.2). The mean duration of the disease was 3.1 (± 0.48) years for the IED patients and 3.4 (± 0.19) years for the controls (p = 0.6). Of the 269 patients, 32% were single, 54% married for the first time, 6% remarried, 8% divorced and 0.4% widowed (one response missing). The social group distribution according to the City of Helsinki classification (3) was as follows: (I) professionals, managers and higher administrative or clerical employees 11%, (II) lower clerical employees 17%, (III) skilled workers 60% and (IV) unskilled workers 12%.

Measurements

All patients were examined by a dermatologist, and diagnoses were based on the clinical examination. Patch tests, skin biopsies, and microbial cultures were performed when needed.

Patients were asked to complete a self-administered questionnaire. Trained research nurses gave assistance only if a question was not understood. The questionnaire consisted of two parts. In the first part, the respondents were asked to recall the 12 months preceding the onset of their skin disease and answer questions pertaining to that period. In the second part, the patients were asked to focus on the 12 months (or less in certain incidental cases) preceding the examination date.

Questions concerning food intake, coffee consumption, smoking sauna bathing and various 'life events' were included in order to prevent undue preoccupation with alcohol. For coffee intake and smoking the highest response alternatives were '10 cups or more' and '60 cigarettes or more'. The significance of life events, whether positive or negative, was assessed on the basis of open answers by one of the authors (KP).

Alcohol consumption was evaluated on a quantity-frequency scale charting the respondent's regular intake of beer, wine and spirits. On the basis of previous research, the questionnaire options were formulated to enhance the reporting of frequent and heavy consumption (4). In calculating average daily alcohol intake (grams of 100 % ethanol) the following ethanol concentrations (g/l) were used: beer and long drinks 4%, natural wines 9.2%, fortified wines 14.8% and spirits 30%. These figures correspond to the average alcohol content of various beverage groups sold in Finland in 1987. The annual frequency of alcohol intoxication was ascertained by asking "How often had you had such an amount of alcohol that you have felt it in your head, even if slightly?".

Statistical analysis

T-test was used to examine differences in continuous variables between two groups, and paired T-test was applied to study change over time. Associations between categorical variables were evaluated by the Chi-square contingency test (Yates' correction for 2×2 tables). Logarithmic transformations were used to reduce skewness before calculating linear correlation coefficients when appropriate. Because some patients did not respond to all questions the number of cases varies slightly depending on the variables under study. All nonresponses were treated as missing values. $P < 0.05$ was considered significant. The programme for Generalized Linear Interactive Modelling (GLIM) was used for fitting the multiple logistic regression models (5). Odds ratios were estimated from the regression coefficients.

RESULTS

Alcohol intake

Patients with infectious eczematoid dermatitis (IED) reported a significantly higher mean daily alcohol intake prior to the first eruption of the skin disease than did the controls (p = 0.04; Table II). The mean annual frequency of intoxication was higher for IED patients (52.3 ± 9.8) than for the controls (39.3 ± 3.4), but this difference was not significant (p = 0.2). Alcohol consumption correlated closely with the frequency of intoxication (r = 0.84; $p < 0.001$ after logarithmic transformations). The percentage of abstainers was 9 among IED patients and 14 among the controls, a non-significant difference.

After the onset of the skin disease, alcohol intake decreased significantly among the IED patients (p = 0.002) and non-significantly among the controls (p = 0.09). Yet the IED patients continued to drink more than their controls (Table II). This finding was supported by differences in serum gamma-glutamyltransferase values available for the patients of the Department of Dermatology in Helsinki (1). The mean value (SE's in parentheses) for the 11 IED patients was 103.8 (± 28.7) and for the 81 controls it was 33.6 (± 3.4) U/l a significant difference (p = 0.035; t-test; separate variance estimate).

Smoking

Before the onset of the skin disease the average number of cigarettes smoked daily was 17.7 for the IED patients and 10.4 for the control patients (p = 0.001; Table III). The percentage of smokers was 76 among IED patients and 56 among controls a significant difference (p = 0.002). The number of cigarettes smoked daily did not change significantly (p = 0.1) from the onset of the disease to the time of the examination (Table III).

Other factors

To control for possible confounding factors, logistic regression models were fitted to the data pertaining to the 249 observations with no missing responses in any of the variables under study. IED was not associated with coffee consumption, age, social class, life events or marital status. Omitting these variables did not significantly weaken the model. Alcohol intake and smoking were both significantly related to the diagnostic category.

Table III. *Average number of cigarettes smoked daily before onset of skin disease and before examination.*

Variable	Mean	Standard Error	Number of Cases	P-value (1)
Before the onset of the disease				
IED	17.7	1.9	43	0.001
Controls	10.4	0.8	226	
Before the examination				
IED	18.7	1.9	43	0.000
Controls	9.9	0.8	226	

(1) Two-sided t-test; separate variance estimate

Odds ratios

The odds ratio for IED at an alcohol intake of 50 g/day, as against no intake, was 1.7 (95% confidence interval 1.03–2.7) and the odds ratio at smoking 20 cigarettes/day, as against no tobacco intake, was 2.1 (1.2–3.7).

DISCUSSION

That patients with psoriasis and infectious eczematoid dermatitis consume more alcohol than other dermatological patients is a suspicion shared by many dermatologists, but scientific evidence for this has been limited. We have recently shown in a case-control study that alcohol is a risk factor for psoriasis (1). There are no previous controlled studies on the role of alcohol as a risk factor for infectious eczematoid dermatitis. The occurrence of skin diseases in alcoholics has been studied, and reports have shown that dermatitis is not uncommon among heavy drinkers (6, 7, 8). The present study provides a clear indication that male patients with IED, like patients with psoriasis, drink more than control dermatological patients. They do so while the disease is active, but they have also done so before the onset of the disease. This finding suggests that alcohol is a risk factor for contracting IED. How alcohol increases the risk of IED is not known. One possibility is that drinking leads to poor hygiene and skin infections which can trigger IED. Alcoholics are likely to neglect their skin disease and its treatment, which may lead to chronic dermatitis. Alcohol may also impair the immunological functions of the skin, which again might increase the risk of dermatitis.

Though the psoriatic patients smoked no more than the controls in our previous study (1), smoking appears to be a risk factor for IED, this being a new observation. The patients smoked more than the controls both before and during their skin disease. Smoking remains an independent risk factor even after alcohol intake has been adjusted for. Pulmonary infections are common among smokers; perhaps smoking also increases the risk of skin infections which may lead to increased frequency of IED. Smoking is also frequent among patients with persistent palmoplantar pustulosis (PPP) (9). A common feature of PPP and IED is frequent pustulation or vesiculation of the palms and soles. It has been shown that polymorphonuclear leukocytes (PMNs) from psoriatic smokers respond more strongly to a chemotaxin than PMNs from controls (10). The increased chemotactic activity of PMNs might explain the association between smoking and PPP. Similar mechanisms might also explain the association between smoking and IED.

In conclusion we have shown that both alcohol consumption and smoking are risk factors for infectious eczematoid dermatitis.

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