

Tendency to being bitten by insects among patients with eczema and with other dermatoses

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SUMMARY. *In order to ascertain whether patients with eczema are more prone to being bitten by insects than those with other dermatoses, data were collected by interview and questionnaire from 496 patients attending the outpatient department of a hospital in Sydney and a general dermatological practice in Geelong, Australia. Of the 93 patients with eczema 65% claimed they were prone to insect bite and that they were bitten in preference to other people when in a group, compared with 17% of the 403 patients with other chronic dermatoses. Similar proportions of both groups (approximately 50%) had used insect repellents. Excluding those with eczema 30% of the 149 patients with a family history of atopy claimed they were prone to being bitten by insects compared with 8% of the 254 patients without a family history of atopy. There was no difference in the prevalence of eczema or family history of atopy between men and women, but more women felt themselves to be susceptible to insect bites than men. There is evidence that patients with eczema and those with a family history of atopy are prone to being bitten by insects. Further confirmatory work, perhaps using volunteers and mosquitoes, is indicated. However, patients with severe eczema or a family history of atopy should take care when travelling to areas where disease-carrying insects are prevalent.*

Keywords: *bites and stings; eczema; skin diseases; morbid-risky risk factors.*

Introduction

PEOPLE with a history of atopy often have a more pronounced reaction to insect bite than those without¹ and may produce a quicker reaction.²⁻⁶ Certain diptera are attracted to discharging wounds^{7,8} and some people are more attractive to insects than others, but the reasons for this are still unknown.⁹ Maibach and other workers showed the insect repellent properties of epidermal lipids and the attractant factors in sweat.¹⁰⁻¹² Insects are also attracted by heat, movement, light colours, humidity and carbon dioxide, as well as lysine, certain amino acids and blood.^{13,14} Insects might therefore be expected to find wet, inflamed, eczematous skin attractive.

At a time when many people are travelling for business or pleasure to countries with large and potentially dangerous insect populations, it is important that they are advised about the possibility of serious illness as a result of insect vectors. Advice given to travellers may need to be modified if they suffer from eczema.

The aim of this study was to establish whether eczema sufferers are more prone to being bitten by insects than people with other chronic dermatoses.

Method

In order to achieve as broad a picture as possible and to ensure M Harford-Cross, MA, FRCP, general practitioner, Kirkby Malzeard, North Yorkshire.

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there was no selection bias, the study was conducted in two centres: the general dermatological outpatient department of the Royal Prince Alfred Hospital, Sydney, Australia and a general dermatological practice in Geelong, Victoria (consisting of sessions at Geelong Hospital and in the practice). The clinics accept patients with minor and severe dermatological conditions and referrals at both centres mostly come from general practitioners, but a large number are self referrals.

Between February and April 1990, all patients aged between 15 and 70 years attending general dermatological sessions were interviewed by the author using a set questionnaire. The questionnaire had been designed with the advice of an epidemiologist and was based on a widely used format. Two pilot studies had been undertaken, in the United Kingdom and Australia. Patients were asked demographic details and four questions on dermatological diagnosis (diagnoses were discussed with the consultant if there was any ambiguity). Patients were also asked about family history of atopy; use of antibiotics for non-dermatological reasons in the previous six months; use of insect repellents (often, sometimes or never); and use of steroid creams, lotions or ointments in the last six months.

There were three questions on insect bite: Do you find you are bitten by insects more than other people, less, the same or you do not know? If you are in a group of people do insects find you more attractive, less attractive or have you never noticed the difference? Name those insects found to be most troublesome. Patients were advised to ignore the severity of their reaction to insect bites and any late reactions but confine themselves solely to the immediate concern of being exposed to possible insect bite. The study did not rely on patients completing the questionnaires by themselves; wherever possible patients' replies were corroborated by a friend or spouse accompanying the patient. Only consistent replies to the first two questions on insect bite were included in the analysis.

The eczema group comprised patients suffering from atopic eczema, discoid or nummular eczema, pompholyx and contact dermatitis. Patients with seborrhoeic eczema, juvenile plantar dermatoses and lichen simplex were excluded. Skin disorders which had persisted for more than six months and which were not in the eczema group were designated chronic dermatoses. Patients with eczema were compared with patients with other chronic dermatoses rather than people with healthy skin because of the possibility that patients with chronic skin disorders might be more anxious about skin problems which would give a distorted picture. Data were analysed using the chi square test.

Results

None of the 499 patients approached refused to take part. However, three patients answered the questions on insect bite inconsistently so their replies were excluded. Patients who answered that they were bitten the same as, or less than other people or who did not know were combined and compared as a group with those who considered themselves to be bitten more frequently. Of the 93 patients with eczema, 60 (64.5%) considered themselves prone to being bitten by insects, compared with 69 of the 403 patients with other dermatoses (17.1%) ($\chi^2 = 92.54$, 1 degree of freedom, $P < 0.001$). Excluding those with eczema, of the 149 patients with a family history of atopy, 44 (29.5%) considered themselves prone to being bitten by insects compared

with 21 of the 254 patients with no family history of atopy (8.3%) ($\chi^2 = 23.79$, 1 df, $P < 0.001$).

The proportion of patients with eczema and with a family history of atopy was the same among both men and women. However, of the 196 men, 12.8% considered themselves more prone to being bitten by insects compared with 34.7% of the 300 women ($\chi^2 = 29.55$, 1 df, $P < 0.001$).

Use of insect repellents was not significantly different among eczema sufferers and sufferers of other dermatoses: 52.7% of eczema sufferers and 51.9% of patients with chronic dermatoses stated that they had used an insect repellent at some time.

Of the 150 patients who had used a topical steroid in the past six months, 13 (8.7%) considered themselves to be prone to insect bites, compared with 43 of the 346 patients who had not used them (12.4%). This difference was not significant.

Among the 93 patients with eczema, 46.2% had used an antibiotic in the last six months for a non-dermatological complaint compared with 34.7% of the 403 patients with other dermatoses ($\chi^2 = 4.27$, 1 df, $P < 0.05$).

The 75 patients with psoriasis were compared with those with other dermatoses excluding eczema patients (328 patients) for bite proneness: 6.6% considered themselves to be bite prone compared with 19.5% of those with other dermatoses. But when patients with a history of atopy were excluded, two out of the 62 patients with psoriasis considered themselves susceptible (3.2%) compared with 18 of the 220 patients with other dermatoses (8.2%).

The types of insect reported to be most troublesome among those claiming to be prone to insect bites are shown in Table 1.

Discussion

This study was undertaken in Australia, and the outdoor nature of Australian life meant that people were conscious of problems with insects during sporting and social occasions. Patients with eczema are more concerned about their skin than healthy patients and may be more conscious of insect bites. For this reason they were not compared with a group of patients with healthy skin but with other patients with skin problems.

The main finding was that significantly more people with eczema reported being prone to being bitten by insects than people with chronic dermatoses. Insects may be expected to find eczematous skin attractive, but this does not explain why patients with a family history of atopy were also found to be prone to insect bites. However, patients with atopic dermatitis carry a higher number of staphylococci on the skin, even in the absence of clinical infection.¹⁵ It may be that the patient with a family history of atopy suffers from sub-clinical areas of eczematous skin, with subsequent scratching and skin damage.

Insect repellent was used among similar proportions of patients with eczema and with chronic dermatoses. It seemed that patients with eczema were loath to use them because they feared a reaction, although they mentioned that they sometimes applied

them to their clothes. The use of steroid creams did not seem to attract insects.

Fewer men considered they were prone to insect bite than women, which had not been noted in previous studies.^{10,12}

Antibiotic usage was higher in the group of patients with eczema, which might be a function of increased attendance at the doctor, secondary infection from weeping eczema or possibly increased treatment of co-existing asthma.

The smaller number of patients with psoriasis meant that no statistical conclusions could be drawn but it may be that they are less attractive to insects than patients with other skin problems.

This study cannot prove conclusively that eczema patients are bitten more frequently since it only investigated patients' perceptions. This could only be proven with an objective study, such as those using volunteers and mosquitoes.¹⁶ However, the strong associations make it likely that this is the case, and encourage further research.

Apart from the obvious significance of bite propensity in areas where insects are vectors of serious disease, the discovery of viral associations with malignancy raises the possibility of a wider range of conditions being insect borne.¹⁷ Further epidemiological analysis may reveal more insect bite disorders than we recognize today and the importance of insect bite susceptibility would then become increasingly important.

There seems to be enough evidence to advise patients with atopy and eczema to take care when visiting countries with large populations of biting insects and to ensure that their eczema is well treated and that they take precautions to minimize insect bite. They may be reassured that using steroid preparations will not increase their attractiveness to the insect population.

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Table 1. Types of insect reported to be most troublesome among the 129 patients claiming to be prone to insect bites.

	% of patients (n = 129)
Mosquitoes	72.9
Sandflies	8.5
Other biting flies	7.0
Fleas	7.0
Ants	4.7

n = number of patients.