

Holidays and atopic eczema

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Abstract

Information was collected by telephone about 300 holidays taken over a three year period by 126 children with severe atopic eczema. During the holidays, improvement in eczema occurred more frequently (112/300, 37%) than deterioration (63/300, 21%). There was a significant correlation between improvement and a more southerly holiday location: improvement was common in holidays taken in the Mediterranean or further south (63/92, 69%), but holidays in northern Britain were more likely to be associated with deterioration (27/100, 27%) than improvement (13/100, 13%). Changes in eczema were correlated with changes in asthma in 231 holidays taken by children with both conditions, but improvement was not significantly associated with pet ownership. All patients returned to their preholiday state, usually within two weeks of return home. The causes of changes in eczema while on holiday have not been identified.

Triggers that worsen atopic eczema tend to be uppermost in the minds of parents and doctors. Things which are associated with improvement are often overlooked. This may explain the fact that although the most severe skin lesions may dramatically improve when the patient goes on holiday, changes in eczema associated with holidays do not appear to have been studied before. We conducted a telephone survey to investigate the effect of holidays on atopic eczema.

Patients and methods

The survey was conducted by MAT in November 1989. At that time, 188 children with atopic eczema were frequently (at least every three months) attending the University Department of Child Health. Eight, who no longer had eczema and who were still attending because of asthma, were excluded. For 154 children a telephone number was known, and by making up to two calls to each number the parents of 136 children were contacted. Ten children had taken no holidays in the period of the survey. All parents contacted agreed to participate, and were asked a standard set of questions about all holidays taken by the patient during 1987, 1988, and 1989.

Results

Data on 300 holidays taken by the 126 patients were collected. This included three affected

Table 1 Holiday location

Zone	Latitude (degrees north)*	Locations	No of holidays
A	>52	Scotland, northern England, north Wales	100
B	50-52	Southern England, south Wales	92
C	48-50	Northern France	14
D	45-48	Switzerland	2
E	40-45	Southern France, Yugoslavia	16
F	35-40	Spain, Portugal, Balearics, Greece	63
G	25-30	Florida, Canaries, Pakistan, Bangladesh	12
H	<25	Malaysia	1

*Manchester is 53.5° north.

younger siblings of index cases who between them had five holidays. The median number of holidays per patient was 2 (range 1-6). The median age at the time of the holiday was 6.7 years (range 0.4-18.5). Holiday locations were classified by latitude (table 1). All holidays were taken in the summer—it so happened that there were no winter or skiing holidays. Change in eczema severity was reported as much better on 67 (22%) holidays, slightly better on 45 (15%), no change on 125 (42%), slightly worse on 39% (13%), and much worse on 24 (8%). Improvement was significantly more common than deterioration (sign test $p < 0.01$).

TIMING OF CHANGES

In the 112 holidays where the eczema improved, this improvement occurred within two days of the start of the holiday in 10 (9%), between the second and fourth day in 53 (47%), between the fifth and seventh day in 32 (29%), and after the seventh day in six (5%). In the 63 holidays with deterioration in the skin, this occurred within two days in 20 (32%), between the second and fourth day in 23 (37%), between the fifth and seventh day in five (8%), and after the seventh day in two (3%). (The timing could not be recalled in 11 holidays with improvement and 13 with deterioration.) Deterioration therefore occurred more rapidly than did improvement ($p < 0.001$, Mann-Whitney U test).

HOLIDAY LOCATION

Table 2 shows change in eczema for each zone of latitude. Only in zone A (northern Britain) was deterioration more common than improvement ($p = 0.05$, sign test). Improvement correlated with more southerly holiday destination (Spearman rank correlation coefficient $r_s = 0.42$, $p < 0.001$). The data include more than one holiday for many of the individuals and so are not truly independent. To investigate this, patients

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Table 2 Change in eczema by zone. Results are number (%) of holidays

Zone	Much better	Slightly better	No change	Slightly worse	Much worse	Total
A	5 (5)	8 (8)	60 (60)	17 (17)	10 (10)	100
B	14 (15)	17 (18)	38 (41)	14 (15)	9 (10)	92
C	2 (14)	3 (21)	6 (43)	2 (14)	1 (7)	14
D	0	0	0	1	1	2
E	2 (12)	7 (44)	5 (31)	2 (12)	0	16
F	37 (59)	9 (14)	13 (21)	2 (3)	2 (3)	63
G	7 (58)	1 (8)	2 (17)	1 (8)	1 (8)	12
H	0	0	1	0	0	1
Total	67 (22)	45 (15)	125 (42)	39 (13)	24 (8)	300

who took two or more holidays were examined. There were 91 who took two or more holidays, and in these the two most recent holidays were in the same zone in 44 (48%) ($r_s=0.43$, $p<0.001$). However, taking the most recent holiday for each patient, there was still a significant correlation between latitude and improvement ($r_s=0.50$, $p<0.001$). Patients appeared to react consistently to successive holidays in the same zone. Forty four patients took their two most recent holidays in the same zone. Of the 14 who improved on the penultimate holiday, 11 (79%) also improved on the latest holiday. The outcomes of the two most recent holidays in this group of 44 patients were significantly correlated ($r_s=0.46$, $p<0.01$).

It might be suggested that changes in eczema severity on one holiday would influence the subsequent choice of holiday destination, and that those who improved in a particular zone would be more likely to return to that zone than those who deteriorated. This did not appear to be the case. Of the 90 patients who took two or more holidays, 32 improved on their penultimate holiday. Only 14 of these (44%) returned to the same zone, while 30 of the 59 (51%) who did not improve returned to the same zone for their latest holiday. This difference was not significant ($p>0.1$, Mann-Whitney U test).

DURATION OF HOLIDAY

Altogether 144 (48%) of the holidays were of 10 days or greater duration. Improvement was more likely in these holidays than in the 156 of less than 10 days ($p<0.001$, Mann-Whitney U test). However, duration also correlated with more southerly destination ($p<0.001$, Mann-Whitney U test), and when the association between outcome and duration of holiday was examined for each zone of latitude separately, correlation was found only within zone B (southern Britain), where improvement was more likely on longer holidays ($p<0.01$, Mann-Whitney U test).

OTHER ATOPIC DISEASE

In the 231 holidays taken by patients who also had asthma, improvement in asthma correlated with improvement in eczema as shown in table 3 ($r_s=0.44$, $p<0.001$) and with more southerly destination as shown in table 4 ($r_s=0.27$, $p<0.001$). In 22 holidays taken by patients with rhinitis, improvement was noted in 13 and worsening in nine. Improvement in eczema was more likely in the 13 patients whose rhinitis

Table 3 Change in eczema in relation to change in asthma. Results are number of holidays

	Asthma					Total
	Much better	Slightly better	No change	Slightly worse	Much worse	
Eczema:						
Much better	10	8	32	3	0	53
Slightly better	1	2	31	2	0	36
No change	0	1	87	4	1	93
Slightly worse	0	0	19	6	4	29
Much worse	0	0	14	4	2	20
Total	11	11	183	19	7	231

Table 4 Change in asthma by zone. Results are number (%) of holidays

Zone	Much better	Slightly better	No change	Slightly worse	Much worse	Total
A	0	1 (1)	65 (84)	7 (9)	4 (5)	77
B	1 (1)	2 (3)	63 (85)	7 (9)	1 (1)	74
C	2 (18)	0	8 (73)	0	1 (9)	11
D	0	0	2	0	0	2
E	0	1 (10)	8 (80)	0	1 (10)	10
F	6 (13)	4 (9)	31 (67)	5 (11)	0	46
G	2 (20)	3 (30)	5 (50)	0	0	10
H	0	0	1	0	0	1
Total	11 (5)	11 (5)	183 (79)	19 (8)	7 (3)	231

improved than in the nine whose rhinitis deteriorated ($p<0.01$, Mann-Whitney U test). On 84 holidays the patient was accompanied by a parent with atopic disease (eczema, asthma, or rhinitis). Change in the parents' symptoms correlated with change in the child's eczema ($r_s=0.25$, $p=0.02$).

PETS

In 85 holidays the patient left a home containing a mammalian or avian pet for holiday accommodation that was free of animals. Improvement was more likely (49%) in this group than in the remaining 215 (33%), $p<0.01$, Mann-Whitney U test. However, pet owners were more likely to travel further south for holidays ($p<0.05$, Mann-Whitney U test) and when pet withdrawal was examined for each zone separately, there was no significant difference in outcome ($p<0.1$, Mann-Whitney U test). In 55 holidays the pet left at home was a cat or a dog. Improvement occurred in 44% of this group compared with 36% of the other 245. This difference was not significant ($p>0.1$, Mann-Whitney U test).

AGE OF PATIENT

Improvement in eczema was more likely with increasing age ($r_s=0.16$, $p=0.007$), but older children were more likely to holiday further south ($r_s=0.11$, $p=0.05$) and when examined by latitude zone there was no correlation between age and outcome.

TREATMENT

Topical treatment was increased on 16 holidays and decreased on 10. Increasing treatment correlated with deterioration while on holiday ($r_s=0.30$, $p<0.001$). Patients were on a restricted diet for 221 (74%) of the 300 holidays. Parents admitted that foods normally disallowed were

consumed during 24 of these holidays, but there was no significant difference in outcome ($p > 0.1$, Mann-Whitney U test).

SEA AND POOL BATHING

Patients sea bathed on most days in 51 (17%) and on some days in 41 (14%) of the holidays. The frequency of sea bathing correlated with improvement ($r_s = 0.30$, $p < 0.001$) but also with more southerly holidays ($r_s = 0.22$, $p < 0.001$). When the association between sea bathing and change in eczema was examined for each zone separately, no correlation was found except in zone B (southern Britain), where improvement correlated with sea bathing ($r_s = 0.30$, $p < 0.01$). Swimming pools were used on most days in 79 (26%) and on some days in 47 (16%) of holidays. Swimming pool use was correlated with improvement ($r_s = 0.27$, $p < 0.001$), but also with more southerly destinations ($r_s = 0.40$, $p < 0.001$). When the association between swimming pool use and change in eczema was examined for each zone separately, no correlation was found except in zone F (Iberia and Greece), where improvement correlated with swimming pool use ($r_s = 0.30$, $p < 0.02$).

SUNSCREEN

A sunblocking oil or cream was used on 109 (36%) of holidays. Improvement was more likely when sunscreen was used ($p < 0.01$, Mann-Whitney U test), but sunscreen use was more common in more southerly locations ($p < 0.001$, Mann-Whitney U test), and when the zones were examined separately, the correlation between sunscreen use and improvement was found only in zone B ($p < 0.05$, Mann-Whitney U test).

PARENTS' OBSERVATIONS

The parents were asked which factors they felt were the most important causes of change in their child's eczema while on holiday (more than one reason could be given). In the 112 holidays where an improvement was noted, sunshine was thought to be important in 53 (47%), 'change of air' in 33 (29%), sea bathing in 32 (29%), psychological factors in 15 (13%), and change of diet in two (2%). Parents could think of no reason for change in 26 (23%).

In the 63 holidays where the child's eczema deteriorated, change of air was thought to be important in 19 (30%), contact with sand in 14 (22%), sea bathing in 13 (21%), sunshine in 10 (16%), psychological factors in eight (13%), and change of diet in four (6%). In 10 (16%) no reason could be given for deterioration.

SAND

The patients had contact with sand in 172 holidays. The parents noted that contact with both wet and dry sand caused an increase in symptoms of eczema in 74 holidays (43%) and wet sand only in 26 holidays (15%). No effect was seen in 65 (38%), and in seven holidays (4%) exposure to sand was thought to reduce symptoms.

USUAL RESPONSE TO WEATHER

The parents were asked about the child's usual response to changes in weather while at home. Altogether 62 holidays (21%) were taken by children who were reported not to react to changes in weather, 52 (17%) who reacted adversely to cold weather only, 96 (32%) to hot weather only, 33 (11%) to both hot and cold weather, and 56 (19%) to any change in weather. To investigate whether changes in eczema while on holiday were related to previously noted reactions to hot weather, the 114 holidays taken by patients who did not react, or reacted to cold weather only, were compared with the other 185. No significant difference in outcome was found ($p > 0.01$, Mann-Whitney U test).

RETURN HOME

After all 175 holidays in which the eczema had changed the patients' eczema returned eventually to its preholiday state. This occurred within two days of return from five holidays (3%), between two and four days in 23 (13%), between five and seven days in 33 (19%), between eight and 14 days in 29 (17%), and after 14 days in 55 (31%). The timing of return to normal could not be recalled in 30 holidays. No patient had a permanent improvement, and no patient who had improved on holiday became worse than usual after return.

Discussion

Although textbooks report that up to 10% of patients with atopic eczema deteriorate during the summer due to exposure to sunlight,¹ in this study children with eczema were more likely to improve than to deteriorate while on holiday, and the tendency to improve was more noticeable in holiday destinations at southern latitudes. For example, considerable improvement was seen during 75% of holidays taken in the Balearics, 54% in mainland Spain, and 47% in Greece. By contrast, only 4% of holidays in north Wales and 7% in northern England resulted in appreciable improvement. Deterioration was seen in 26% of holidays in Britain and in only 9% of Mediterranean holidays.

A possible explanation of improvement while on holiday is the beneficial effect of ultraviolet light on atopic eczema.²⁻⁵ However, latitude is only a crude measure of exposure to ultraviolet light. The amount of light in a particular location is also influenced by the time of year and the number of hours of cloud free sunshine, and an individual's exposure is further modified by duration of outdoor activity and shielding by clothes and topical sunscreens. In favour of the beneficial effect of sunshine was the observation that improvement correlated with sea bathing and sunscreen use within zone B (southern Britain). This area has a much more variable summer weather pattern than, for example, the Mediterranean area, and these two activities may be markers of holidays with more sunshine exposure. Sunshine was the factor most likely to be mentioned by parents as a cause of improve-

ment. However it is less easy to see how sunshine could explain improvement in asthma.

Another possible explanation for improvement with increasing distance from home is a change in amount or type of environmental allergens, such as house dust mite or pet epithelium. There is a lack of data about geographical variation in house dust mite numbers, and an individual's exposure to this or other mites is influenced by factors such as amount of time spent indoors, type of bedding and floor covering, as well as the frequency and method of cleaning. We could therefore draw no conclusions about the effect of house dust mites from our data, but the importance of environmental allergens is possibly supported by the findings of a correlation between improvement in eczema and change in asthma and rhinitis. Removal of the patient from a home containing pets did not appear to have a significant effect on outcome.

It is impossible, in a study of this nature, to quantify psychological variables such as degree of distraction or reduction in stress. Such factors were thought to be important by parents in only 13% of holidays where improvement was seen, and in a similar proportion of holidays with deterioration. Psychological factors would not easily explain the appreciable association between improvement and latitude. Lapses in treatment (topical or dietary) are likely to have been under-reported, but there was no effect of reported dietary indiscretions. The correlation of increased topical treatment with deterioration suggests that changes in treatment are the result of, rather than the cause of, changes in eczema severity.

A drawback to this study is the non-independence of the 300 holidays taken by the 126 children. Although the findings were similar when the patients' most recent holidays were

analysed separately, the choice of location is likely to have been influenced by previous holiday experience, and there was no way that this source of bias could be excluded. The choice of resorts (for example, lack of winter holidays) probably reflects the holiday preferences of the local population. A further drawback is the retrospective nature of the study. It is possible that some parents expect the eczema to improve on holidays, in which case they may tend to remember improvement rather than deterioration. This does not fully explain the effect of latitude, however, and it is not consistent with the numerous preholiday inquiries we receive about sunscreens and possible exacerbation of eczema due to sunlight.

In conclusion, holidays taken in the Mediterranean or further south were often (69%) associated with improvement in atopic eczema. Holidays taken in southern Britain were sometimes (34%) associated with improvement, particularly if taken for 10 days or more, and if the weather permitted sea bathing and sunscreen use. Holidays in northern Britain were more likely to be associated with deterioration (27%) than improvement (13%). The effect of holidays was usually short lived, the skin condition reverting to the preholiday state within two weeks of return. The causes of the changes associated with holidays have not been identified.

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