

Patch testing in discoid eczema

COLIN FLEMING¹, EILEEN PARRY¹, ANGELA FORSYTH¹ AND DANNY KEMMETT²

¹Department of Dermatology, Vale of Leven Hospital, Alexandria and Contact Dermatitis Investigation Unit, UK

²Glasgow Royal Infirmary, Glasgow, UK

We report a retrospective study of patch testing in patients with discoid eczema. 48 patients with persistent or severe discoid eczema were patch tested. The mean age of patients was 45 years and the median duration of symptoms was 6 months. 24 patients (50%) had positive patch tests, and 16 of these (33%) were considered to be clinically relevant. The most common allergens implicated were rubber chemicals, formaldehyde, neomycin, chrome, nickel (5, 2, 2, 2, 2, 2 reactions, respectively). 13 of 16 patients were followed up by telephone in 1996, and 8/13 (61%) stated they had benefited from patch testing. This study suggests allergic contact dermatitis is relatively common in persistent discoid eczema, and allergen avoidance may be of benefit. We recommend patch testing should be considered for all patients with severe or persistent discoid eczema.

Key words: patch test; contact allergy; discoid eczema; allergic contact dermatitis. © Munksgaard, 1997.

Accepted for publication 12 February 1997

Discoid or nummular eczema was first described by Rayer in 1845 (1). It is a clinical entity characterized by circular or oval plaques of eczema with a clearly defined border (2). It often overlaps with other clinical types of eczema, but has no specific histological features (3). Despite this, it is readily recognized by dermatologists, and the term continues to be commonly used. The aetiology is obscure (1, 2, 4). A number of factors have been proposed as causative agents, but there are no studies of the relevance of contact allergy in discoid eczema.

Patients and Methods

From 1981 to 1993, patients with discoid eczema in dermatology departments in the Argyll and Dumbarton districts of Scotland were referred for patch testing to the Contact Dermatitis Investigation Unit in Glasgow, if their condition did not respond to treatment after 1 outpatient appointment. This practice permitted the opportunity to study retrospectively the rôle of patch testing in this group of patients.

196 patients with discoid eczema were identified. 163 case records were available for review. 48 patients had persistent or severe disease and were patch tested by the same consultant in the same unit. The case records of these patients were ana-

lysed for information on initial symptoms, duration of symptoms, sites of onset and spread, precipitating factors, presence of atopic diseases, family history of atopy, relevant medical history, occupation, investigations, treatment and clinical progress.

Patients who had been patch tested were contacted by telephone in 1996. After an explanation of the purpose of the study, patients were asked the question "Do you think your skin benefited from patch testing?", with possible responses; definitely, probably, possibly, probably not or definitely not. Answers were arbitrarily scored; definitely=5, probably=4, possibly=3, probably not=2, definitely not=1. Scores were compared between positive and negative groups by chi-squared tests.

Results

The mean age of those patch tested was 45 years (range 14–83 years). The MOAHL index for these patients is given in Table 1. The condition commenced on the legs in 10, arms in 11, arms and legs in 5, hands in 8, trunk in 5, feet in 2, limbs and trunk in 4, face and neck in 2 patients, respectively (1 not recorded). The course of the disease was continuous in 33 patients, intermittent in 7 pa-

Table 1. MOAHL index for patients patch tested ($n=48$)

Male	% patients			
	Occupational dermatosis	Atopy	Hand dermatitis	Leg ulcer/stasis dermatitis
54	10	12 (7 patients not recorded)	25	0

tients and not recorded in 8 patients. The median duration of symptoms was 6 months (range 1–168 months). 9 patients had a family history (9/48 not recorded) of atopic eczema, hayfever, asthma or conjunctivitis. The commonest occupations (7 not recorded) were; retired (7), housewife (6), joiner (3), nurse (2), school student (2), driver (2), and book keeper (2). All those studied had been treated with potent topical corticosteroids, and most with antihistamines and emollients.

16 patients (33%) had at least 1 clinically relevant positive patch test, and a further 8 had positive patch tests which were clinically irrelevant or of uncertain relevance. The details of patients with positive patch tests are given in Table 2. The most

common positive patch tests were to rubber chemicals, nickel, formaldehyde, neomycin, chrome, Dowicil 200 (5, 3, 2, 2, 2, respectively). The median age of those with positive patch tests was 33 years (range 14–68 years), and 11/16 positive patch tests were in females. In 2 of these patients, there was a history of atopic disease. The commonest occupations were; housewife (5) and school (2). There was no clear relationship between positive patch tests and body site of discoid eczema.

13 of 16 patients with clinically relevant positive patch tests were contacted by telephone (Table 2). The median follow-up time from the date of patch testing was 120 months (range- 54 to 174 months), and the total questionnaire score was 44 (out of maximum possible 65).

18 of 25 patients with negative patch tests were interviewed by telephone. The median follow-up time was 114 months (range-36 to 169 months), and the total questionnaire score was 25 (out of maximum possible 90). There was a highly significant difference between the total scores of the negative and positive patch-tested groups (χ^2 , $p<0.001$), suggesting that from the patient's perspective, patch testing had been worthwhile.

Table 2. Details of patients with positive patch tests

Age (years)	Sex	Atopy	Occupation	Sites of discoid eczema	Positive patch tests	Benefit
32	M	N	dustman	limbs/trunk	Ni	—
33	F	N	nurse	limbs/trunk/face	black rubber mix	5
36	F	N	housewife	limbs/trunk	Dowicil 200	5
36	F	N	baker	ars/trunk	Dowicil 200, textile resins, form	3
26	M	Y	DK	legs	Neo, B.Ch, carba mix* Ni*	4
53	M	DK	electrician	limbs	carba mix, DPG	5
22	F	N	nurse	limbs/trunk	Chr, fragrances, Co, Ni	—
52	F	N	housewife	limbs/trunk/face	Ni, Co, benzoic acid	—
33	F	DK	housewife	hands/legs	black rubber mix	5
67	M	N	retired	limbs/trunk	caine mix	—
54	F	DK	DK	limbs/trunk	Germall 115, Bronopol	4
16	M	Y	school	arms/hands	Ni*	—
14	F	Y	school	arms/hands/face	colophony, perfumes	1
32	M	N	gillie	limbs/trunk	black rubber mix, carba mix	4
33	M	N	joiner	limbs	Form	1
41	M	N	librarian	legs, flexures	Form, Germall 115	—
68	F	DK	retired	legs, trunk, neck	ethylenediamine	3
18	F	N	housewife	flexures, trunk	fragrances, hydroxycitronellal	DK
29	F	N	DK	hands/feet	Chr	DK
28	F	N	housewife	limbs/trunk	Ni	4
26	M	N	plumber	limbs/trunk	carba mix*	—
44	M	DK	DK	limbs/trunk/face	Ni, Neo, colophony, Chr*	DK
53	F	N	housewife	legs/hands/trunk	Ni, Chr, Neo, balsam of Peru, ethylenediamine	2
62	F	N	police	arms/trunk	cinnamaldehyde (urticarial reaction)	—

¹ Age: age at first hospital attendance.

² **Bold** typeface: relevant reaction; normal typeface: irrelevant or uncertain relevance; * irritant reaction.

³ Form: formaldehyde; B.Ch.: benzalkonium chloride; Ni: nickel; Chr: chrome; Co: cobalt; Neo: neomycin; DPG: 1,3 diphenylguanidine.

⁴ DK: not known or recorded.

⁵ Benefit: telephone survey results: "do you think your skin benefited from patch testing? 'definitely=5, probably=4, possibly=3, probably not=2, definitely not=1.

Discussion

The aetiology of discoid eczema is obscure, and many causative factors have been proposed. Early workers felt that nutrition was important, and suggested that sufferers ate insufficient meat and vegetables and large amounts of fats and concentrated carbohydrates (5).

Bacterial colonization or infection may be important. *Staphylococcus aureus* is often isolated from lesions (1), and there may be co-existent infection in patients (6). In addition, elevated antistreptolysin and antistapholysin levels have been demonstrated in patients, and there may be lowered lymphocyte transformation after incubation with phytohaemagglutinin (1). Treatment with antibiotics is often advocated, but lesions do not always respond to antimicrobials, and no specific immune deficits have been described.

The relationship of discoid eczema to atopy has been keenly debated (1). It has been proposed that discoid eczema is a variant of atopic dermatitis, as the 2 conditions show many common features (7), and in one study, a link between generalized nummular eczema and atopy has been described.

In our study, only 12% of patients had atopy, defined by the presence of atopic eczema, hayfever, asthma or conjunctivitis. This finding is consistent with the majority of studies, which suggest atopy is not associated with discoid eczema (4–6). In addition, nummular eczema patients have significantly lower IgE levels than atopic eczema patients (9), suggesting no common role for IgE in the 2 conditions.

Other factors have been implicated in the aetiology of the condition. Irritant contact dermatitis may present with discoid lesions, and discoid eczema has been stated to occur more commonly in housewives as a result of housework (1). Trauma (4), insect bites (4), drug reactions, varicose veins, lower leg oedema (10) and emotional factors (4) have also been implicated.

There are few studies of contact allergy in discoid eczema. Discoid lesions have been described in case reports of hypersensitivity to aloe (11), soluble oils (12), and ethylenediamine (13). In one study of discoid eczema, 5 patients had previous nickel dermatitis (4). In a review of 4825 patients patch tested by 10 dermatologists in 7 European countries (14), approximately 100 patients had nummular dermatitis. Of these, 17% had relevant positive reactions. No details of allergens were given, and it is difficult to derive a clear message from this combined data.

In this study, allergic contact dermatitis was diagnosed in 1/3, and positive patch tests were recorded in 1/2, of patients with persistent discoid

eczema. This suggests allergic contact dermatitis is relatively common in persistent discoid eczema. Evidence of benefit from patch testing came from the follow-up study, where 8 of 13 patients with previous positive patch tests felt their skin had definitely, or probably, benefited from patch testing. Patients with negative patch tests, in contrast, did not perceive benefit from patch testing ($p < 0.001$). These results may reflect, in part, a placebo effect of positive patch testing.

The main groups of allergens implicated by patch testing were rubber chemicals, formaldehyde and formaldehyde-releasers, and metals. The prevalence and nature of positive patch tests in the discoid eczema group broadly reflects that of the overall population patch tested at the Glasgow Contact Dermatitis Investigation Unit, although the prevalence of rubber chemical hypersensitivity is higher in the discoid group. More females than males had relevant positive patch tests, although there was no difference between sexes in the types of allergens involved. There was no association between anatomical site and allergen type in patients with relevant positive patch tests, although the number of patients was perhaps insufficient.

This study is hampered by the usual problems associated with retrospective work, and prospective studies are required to confirm our observations. However, all evaluations were undertaken by the same experienced clinicians, using a consistent approach.

In summary, allergic contact dermatitis is common in persistent discoid eczema, and a significant proportion of patients benefit from patch testing. We recommend patch testing should be considered for all patients with severe or persistent discoid eczema.

Acknowledgement

We thank Dr David Burden for his comments on the manuscript.

References

1. Sirot G. Nummular eczema. *Semin Dermatol* 1983; 2: 68–74.
2. Burton R M. Eczema, lichenification, prurigo and erythroderma. In: Champion R H, Burton J L, Ebling F J G (eds.). *Textbook of dermatology*, 5th. edition, vol. 1. Oxford: Blackwell Scientific Publications, 1992: 555.
3. Lever W F, Schaumburg-Lever G (eds): *Histopathology of the skin*, 7th edition. Philadelphia: Lippincott, 1989: 110.
4. Cowan M A. Nummular eczema- a review, follow-up and analysis of a series of 325 cases. *Acta Dermatol venereologica* 1961; 41: 453–460.
5. Fowle L P, Rice J W. Etiology of nummular eczema. *AMA Arch Dermatol* 1953; 68: 69–79.
6. Krogh H-K. Nummular eczema. *Acta Dermatol venereologica* 1960; 40: 114–126.

7. Basex A, Salvador R, Dupre A, Caristol B. Nummular eczema: Its relation to atopic eczema. *Bull Soc Fr Dermatol Syphilgr* 1965; 72: 432-435.
8. Carr R, Berke M, Becker S W. Incidence of atopy in patients with various neurodermatoses. *Arch Dermatol* 1964; 89: 20-26.
9. Kreuger G G, Kahn G, Weston W L, Mandel M J. IgE levels in nummular eczema and ichthyosis. *Arch Dermatol* 1973; 107: 56-58.
10. Bendi B J. Nummular eczema of stasis origin. The backbone of a morphological pattern of diverse aetiology. *Int J Dermatol* 1979; 18: 129-135.
11. Morrow DM, Rapaport M J, Strick R A. Hypersensitivity to aloe. *Arch Dermatol* 1980; 116: 1064-1065.
12. Rycroft R J G. Soluble oil dermatitis. *Clin Exp Derm* 1981; 6: 229-234.
13. Caraffini S, Lisi P. Nummular dermatitis-like eruption from ethylenediamine hydrochloride in two children. *Contact Dermatitis* 1987; 17: 313-314.
14. Fregert S, Hjorth N, Magnusson B et al. Epidemiology of contact dermatitis. *Trans St. John's Hosp Dermatol Soc* 1969; 49: 189-196.

Address:

C. J. Fleming
Department of Dermatology
Western Infirmary
Glasgow
G11 6NT
UK

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.