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The trend of allergic contact dermatitis in the elderly population over a 15-year period

G. GUPTA, G. DAWN AND A. FORSYTH

Contact Dermatitis Investigation Unit, Department of Dermatology, Glasgow Royal Infirmary, Castle Street, Glasgow G4 0SF, UK

Key words: allergic contact dermatitis; elderly; trend; allergens; oral lichenoid eruptions; referral patterns; atopy; fragrance; nickel; mercury. © Munksgaard, 1999.

Allergic contact dermatitis (ACD) in the elderly (>65 years) is reported to be less common than in the younger adult age group (<65 years) (1, 2), suggesting that elderly patients may not react to allergens so efficiently (3–5). The positive reactions that do occur tend to be many and various (6), though reportedly similar to those of the younger age group (7), the most common allergens seeming to be topical medicaments (2, 8, 9). We have compared patch test results in elderly patients of our tertiary referral centre in 2 separate years with an interval of 15 years between them.

Patients and Methods

All patients with suspected ACD over the age of 65 years were identified in the years 1982 and 1997. Patch testing had been done with standardized allergens in Finn Chambers® on Scanpor® tape, according to ICDRG

guidelines, and read on days (D) 3 and 5 by the same investigator (7). Standardized series of perfumes and fragrances, food additives and chocolate were also applied to the forearms, removed at 20 min and readings recorded. Patients were asked to observe the test sites for a further 6 h. A positive test was defined as lasting for more than 2 h and symptomatic.

Results

800 patients in 1982 and 860 in 1997 were patch tested. The number of elderly patients in 1982 and 1997 was 39 (4.9%) and 41 (4.8%), respectively. The characteristic features of patients in 1982 and 1997 are shown in Table 1. The sex ratio of patients with ACD reflected that overall. The sites of onset and the main sites involved are documented in Table 2. In 1982, 25 patients (64%) had a diagnosis of allergic contact dermatitis, in 1997 20, plus 4 with

Table 1. Characteristics of patients seen in 1982 and 1997

Patient characteristics	1982	1997
sex ratio	M17, F22	M8, F33
median age (years)	69	69
occupational dermatitis	nil	1 (2%)
atopy	1 (3%)	7 (17%)
hand dermatitis	8 (21%)	2 (5%)
leg ulcer/stasis	9 (23%)	4 (10%)
duration of disease		
median	18 months	24 months
range	1–480 months	1–804 months
type of eruption or symptom		
“dry” dermatitis	19 (49%)	20 (49%)
“weeping” dermatitis	10 (26%)	1 (2%)
vesicular dermatitis	6 (15%)	1 (2%)
urticarial	2 (5%)	9 (22%)
non-specific rash	2 (5%)	4 (10%)
pain	nil	6 (15%)
history of intolerance	32 patients (82%)	24 patients (59%)
other skin diseases	3 patients (8%)	nil

Table 2. Sites of onset and main sites affected

Sites	Site of onset		Main site affected	
	1982 (n=39)	1997 (n=41)	1982 (n=45)	1997 (n=41)
oral mucosa	0	12 (29%)	0	12 (29%)
legs	8 (20%)	5 (12%)	8 (18%)	5 (12%)
hands	7 (18%)	4 (10%)	8 (18%)	5 (12%)
face	6 (15%)	7 (17%)	10 (22%)	6 (15%)
arms	4 (10%)	3 (7%)	4 (9%)	3 (8%)
trunk	4 (10%)	2 (5%)	6 (13%)	3 (8%)
behind ears	3 (8%)	0	0	0
feet	2 (5%)	4 (10%)	3 (7%)	3 (8%)
eyelids	2 (5%)	1 (2.5%)	2 (5%)	1 (2%)
ears	1 (3%)	0	1 (2%)	0
perianal	1 (3%)	1 (2.5%)	1 (2%)	1 (2%)
lips	1 (3%)	0	1 (2%)	0
stoma	0	1 (2.5%)	0	1 (2%)
scalp	0	1 (2.5%)	1 (2%)	1 (2%)

allergic oral lichenoid eruptions, and 1 with immediate hypersensitivity to benzoates, the % of patients with contact allergy in 1997 being 59%. The prevalence of contact allergy in the elderly in the years 1982 and 1997 was 3.1% and 2.8%, respectively. Table 3 lists the allergens in the 2 years. In addition, in 1997, there were 5 patients with contact urticarial reactions to benzoates and/or cinnamon, 3 with urticaria, 1 with an oral lichenoid eruption and 1 with atopic and allergic contact dermatitis.

Table 3. Allergens in patients with contact allergy

Allergen	1982 (n=81)	1997 (n=85)
topical antibacterials*	16 (20%)	7 (9%)
rubber accelerators	12 (15%)	8 (10%)
balsams and fragrances	10 (13%)	31 (37%)
nickel	4 (5%)	7 (9%)
colophony	4 (5%)	3 (4%)
lanolin	4 (5%)	2 (2%)
parabens	4 (5%)	2 (2%)
domestic antiseptics [#]	4 (5%)	0
para-phenylenediamine and organic dyes	3 (4%)	2 (2%)
formaldehyde and formaldehyde releasers	2 (2%)	2 (2%)
cobalt	2 (2%)	1 (1%)
local anaesthetics	2 (2%)	1 (1%)
epoxy resin	2 (2%)	0
cetearyl alcohol	2 (2%)	0
mercurials	1 (1%)	6 (7%)
dichromate	1 (1%)	2 (2%)
topical corticosteroids	1 (1%)	1 (1%)
cigarettes	0	2 (2%)
eye medicaments	0	2 (2%)
others	7 (10%) [^]	6 (7%) ⁺

* Topical antibacterials including neomycin, flomazine, chlorocresol and chinofom.

[#] Domestic antiseptics including chloxylenol, savlon and Creighton's[®] cleanser as is.

[^] 1 positive reaction each to Unguentum Merck, propylene glycol, Brylcream[®], benzoyl peroxide, primin, phosphorus sesquisulfide and ethylenediamine.

⁺ 1 positive reaction each to 2-hydroxyethyl methacrylate, gold, primin, aminohydronate 2-phenyl phenol and sesquiterpene lactone mix.

Comment

The frequency of ACD in the elderly in our study was similar to previous reports, being less common than in younger patients (10); this had remained unchanged over the 15 years. An increasing proportion of women with ACD was found (1, 6, 11, 12), rather than a continuing equal sex ratio (13). The frequency of atopy had also increased by 1997. In 1997, more patients were seen with oral disease.

In 1982, the commonest allergens were topical antibacterials, rubber accelerators, fragrances and balsams. By 1997, there was a decrease in topical antibacterials, rubber accelerators and domestic antiseptics, with fragrances and balsams increasing dramatically (1, 14) and also nickel and mercurials (15).

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Occupational IgE-mediated contact urticaria from diphenylmethane-4,4'-diisocyanate (MDI)

LASSE KANERVA, BRITA GRENQUIST-NORDÉN AND PÄIVI PIIRILÄ

Finnish Institute of Occupational Health, Topeliuksenkatu 41 aA, FIN-00250 Helsinki, Finland

Key words: occupational; IgE-mediated; contact urticaria; asthma; carpenter; allergy; diphenylmethane-4,4'-diisocyanate; MDI; cross-reaction; toluene diisocyanate; TDI; respiratory effect. © Munksgaard, 1999.

Case Report

A 28-year-old carpenter, who had had respiratory atopy in childhood, presented with breathing difficulties. He had worked for 1 year glueing wood onto aluminum sheets in the manufacture of panels for ships, using a 2-component polyurethane glue. According to its material safety data sheet, the hardener contained diphenylmethane-4,4'-diisocyanate (MDI: >30%). 2–3 months earlier, the patient had, for the 1st time, noticed work-related breathing problems simultaneously with whealing on his lower arms. On several occasions, symptoms had reappeared when he had been working on the glueing machine.

Patch tests performed with a modified European standard series, a diisocyanate series (Chemotechnique Diagnostics: Malmö, Sweden; Trolab, Hermal: Reinbek, Germany), a plant series, a phenol-formaldehyde resin series, and his own MDI-containing hardener, were all negative.

Prick tests with 20 common environmental allergens (Allergologisk Laboratorium A/S, Denmark) and natural rubber latex were carried out by standard technique (1, 2), histamine hydrochloride (10 mg/ml) being used as positive control. Diisocyanate conjugates with human serum albumin (HSA) were prepared as previously described (3, 4), comprising MDI (Merck 820797, zur Synthese), hexamethylene diisocyanate (HDI: Fluka 52649) and toluene diisocyanate (TDI: Merck 808264, zur Synthese). For prick testing, the hapten-HSA conjugate and control HSA solutions were diluted to 1% (w/v) with Coca solution containing 50% glycerol (3). MDI-HSA induced a histamine-size reaction (diameter 4 mm) and TDI-HSA a 2-mm reaction. All other prick tests, including ones with formaldehyde and exotic woods, were negative. RASTs, performed as previously described (3, 4), with MDI (class 2), TDI (class 2) and HDI (class 2) indicated specific-IgE-mediated sensitization.

It was concluded that the patient had become occupationally sensitized to MDI in the glue, causing both

respiratory (asthma) and skin (contact urticaria) symptoms simultaneously. The positive RASTs to TDI and HDI appeared to indicate cross-sensitivity, as no exposure to TDI and HDI had occurred. The patient was advised to change to a job not involving diisocyanate exposure.

Discussion

Isocyanates are increasingly used in the manufacture of many and various polyurethane products (6). The most common occupational disease from isocyanates is asthma (5, 6). Exposure to diisocyanates and auxiliary chemicals may also result in allergic or irritant contact dermatitis (7–12). Generalized urticaria has been reported on rare occasions (13–15). An IgE-mediated reaction explains less than 1/2 of the immediate reactions in bronchial provocation tests with MDI, TDI and HDI (6). It is not clear whether patients with non-IgE-mediated asthma from diisocyanates may develop contact urticaria, but contact urticaria from diisocyanates is probably much more common than reported.

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