

Short Communication

Frequency and determinants of occupational contact dermatitis in 2793 consecutively-investigated patients

CHEE-CHING SUN AND CHUNG-SHEN CHENG

National Taiwan University Medical Center, Department of Dermatology and National Taiwan University College of Public Health, Institute of Occupational Medicine and Industrial Hygiene, 7 Chung-Shan South Road, Taipei, Taiwan, 10016 ROC

Key words: occupational; allergic contact dermatitis; irritant contact dermatitis; epidemiology; construction industry; hairdressing; patch testing. © Munksgaard, 1998.

Patients and Methods

Our Contact Dermatitis (CD) Clinic is a referral clinic at the NTUH (National Taiwan University Hospital) (1–3). For every patient seen here since 1978, a special sheet has been completed by the dermatologist, which includes a detailed history, sites and appearance of lesions, and personal and family histories of atopy, namely, asthma, allergic rhinitis, hay fever or atopic dermatitis. Every such patient has been comprehensively patch tested with the European standard series plus additional workplace substances, performed and scored as previously described (3). Patients were diagnosed as having occupational contact dermatitis (OCD) by widely accepted criteria, including work-relatedness of history, patch testing (4, 5) and repeated follow-up. Data was computerized and analyzed by simple χ^2 tests and multiple logistic regression.

Results

During 1978–1995, of 2793 patients with suspected contact dermatitis, 442 (15.9%) were diagnosed as having occupational contact dermatitis (OCD), 238 (54%) women and 204 (46%) men. More than 80% of such patients came from 10 leading industries (Table 1). OCD in middle-aged (26–49 and >50) men was commoner than in women (Table 2). Of the 442, 234 (53.7%) had allergic contact dermatitis (ACD) and 242 (54.2%) irritant contact dermatitis (ICD), 34 having both. The commonest contact sensitizers are summarized in Table 3. Patients with OCD were less likely to have a personal or family history of atopy. Multiple logistic regression analysis also showed that occupational factors persisted after adjustment for other determinants (Table 4).

Discussion

Middle-aged non-atopic men were found to be at highest risk of OCD in the selected population of our clinic (6). Atopic dermatitis has been reported to be associated with

occupational skin disease (7). However, Goh (8), like us, found that the frequency of a personal or family history of atopy was lower in patients with occupational dermatitis. Such observations may indicate that atopic dermatitis in childhood has influenced later occupation. Hairdressing was the most frequent causal occupation in women, followed by electronics. Guo et al. (9) found that 83% of hair-

Table 1. Occupations of patients diagnosed as occupational contact dermatitis (OCD), irritant (ICD) and allergic (ACD)

Occupation	Total	OCD	ICD	ACD
electronics	178	69	36	39
construction	72	56	23	42
hairdressing	64	53	16	38
housekeeping	372	39	33	8
health service	100	38	16	24
clerical	686	26	18	10
printing	35	19	8	12
agriculture	33	16	9	8
chemical	71	28	13	15
electroplating	27	11	4	9
	2793	442	242	234

Table 2. Age, sex and atopic history among patients with and without OCD

Age (years) and sex	Non-occupational	Occupational	Total
<25 women	486	72	558
men	154	21	175
26–49 women	1006	150	1156
men	243	137	380
>50 women	225	16	241
men	207	46	253
History of atopy			
personal only	205	37	242
family only	127	20	147
personal and family	173	18	191
	2321	442	2793

Table 3. Frequencies of sensitizers detected by patch testing in 442 patients with occupational contact dermatitis

Agents	Electronics	Construction	Hair-dresser	Printing	Agriculture	Chemical	Electroplating	Health service	House-keeping	Clerical
potassium dichromate	5	37	0	6	1	6	2	1	0	2
thiuram mix	3	4	0	1	1	2	1	6	2	0
formaldehyde	1	0	1	0	1	1	3	2	0	2
epoxy resins	10	1	0	0	0	3	1	2	0	0
colophony	2	0	4	1	0	0	0	1	1	0
thimerosal	1	2	1	1	0	1	0	2	1	0
ammoniated mercury	4	2	2	3	0	0	0	1	2	3
balsam of Peru	0	0	1	0	1	0	0	3	2	1
cinnamic alcohol	2	3	6	0	1	0	0	0	3	0
cobalt chloride	9	13	3	2	0	2	3	4	0	0
p-phenylenediamine	0	1	25	0	0	2	0	0	3	0
nickel sulfate	16	1	13	1	1	3	4	6	4	5
fragrance mix	2	4	8	0	3	1	0	2	1	0
industrial	9	1	0	9	0	10	1	1	0	0
hair preparations	0	0	15	0	0	0	0	0	0	0
medicaments	0	0	1	0	0	0	0	3	0	1
pesticides	0	0	0	0	4	0	0	0	0	0
total	69	56	53	19	16	28	11	38	39	26

dressers in Tainan had had occupational dermatoses. Construction was the most frequent causal occupation in men, as was reported in the US (10). Workers exposed to wet cement have been shown to be particularly at risk (11). As in previous investigations (3), few patients had applied for workers' compensation, thus leading to underestimation of the true prevalence of OCD.

Acknowledgements

I am indebted to Dr. Jung-Der Wang for assistance in analyzing the data and constructive comments. This study was partially supported by a grant from the National Health Research Institute of the Department of Health, Executive Yuan, ROC (DOH 87-HR-504).

Table 4. Estimates of risk factor for patients with contact dermatitis

Occupation	Adjusted odds ratio	95% CI
clerical	1	
housekeeping	3.6	5.0–2.6
health service	19.2	26.7–13.8
electronics	19.6	26.6–14.4
chemical	27.9	42.9–18.1
hairdressing	96.3	143.7–64.5
construction	89.9	163.0–49.60
Sex		
female/male	0.3	0.3–0.2
Age (years)		
>50	1	
25–49	1.9	4.9–2.7
<25	3.7	2.3–15
Atopy		
no	1	
personal+family	0.7	0.9–0.6

References

1. Sun C C. Allergic contact dermatitis due to chromium. *J Formosan Med Assoc* 1984; 83: 699–704.
2. Sun C C. Clinical experiences of occupational dermatoses in recent years. *Kaohsiung J Med Science*. 1988; 4: 378–385.
3. Sun C C, Guo Y L, Lin R S. Occupational hand dermatitis in a tertiary referral dermatology clinic in Taipei. *Contact Dermatitis* 1995; 33: 414–419.
4. Rycroft R J G. Is patch testing necessary? In: Champion R H, Pye R J (eds): *Recent advances in dermatology*, no 8. Edinburgh: Churchill Livingstone, 1990: 101–111.
5. Fisher A A. Occupational dermatitis In: Rietschel R L, Fowler J F (eds): *Contact dermatitis*, 4th edition. London: Williams and Wilkins, 1995: 551.
6. Campion K M, Rycroft R J G. A study of attenders at an occupational dermatology clinic. *Contact Dermatitis* 1993; 28: 307.
7. Adams R M. *Occupational skin disease*. Philadelphia: Saunders, 1990: 215–221.
8. Goh C L. An epidemiological comparison between occupational and non-occupational hand eczema. *Br J Dermatol* 1989; 120: 77–82.
9. Guo Y L, Wang B J, Lee J Y, Chou S Y. Occupational hand dermatoses of hairdressers in Tainan City. *Occup Environ Med* 1994; 51: 689–692.
10. Mathias C G T, Morrison J H. Occupational skin disease, United States: results from the Bureau of Labor Statistics Annual Survey of Occupational injuries and illnesses, 1973 through 1984. *Arch Dermatol* 1988; 124: 1519–1524.
11. Freeman S. Dermatitis due to chromate in cement (II). Incidence of cement dermatitis in Austria. *Aust J Derm* 1986; 27: 104.