

Amy Burdzik, MBChB,
Occupational Medicine
Registrar,
Centre for Occupational
and Environmental
Health Research,
School of Public Health
and Family Medicine,
University of Cape Town

Gail Todd,
BSc (Agric), MBChB,
FFDERM (SA), PhD
Head: Dermatology
Division,
Department of Medicine,
University of Cape Town

Analysis of attendance records for the Occupational Dermatology Clinic, Groote Schuur Hospital, Cape Town, during 2008 and 2009

ABSTRACT

Occupational skin disease is common. In South Africa, the prevalence is largely unknown. The records of clinic attendance at the Occupational Dermatology Clinic, a specialist referral clinic at Groote Schuur Hospital, Cape Town, during 2008 and 2009 were reviewed to gain an insight into the diagnoses seen, industries represented at the clinic and referral patterns to the clinic. Fifty-nine patients were seen during the study period. Twenty-one patients were diagnosed with ACD and four with ICD. Skin patch testing was done on 38 patients. Twenty-nine tests were positive and 19 of these were related to occupation.

Key words: occupational skin disease, contact dermatitis, occupation, primary site, referral

INTRODUCTION

Occupational skin disease is common, and represents approximately 30% of reported occupational diseases in European countries.¹ In South Africa, the prevalence of OSD is largely unknown, but large cross-sectional studies have shown very high prevalence of irritant and allergic contact dermatitis in particular industries.² It is probable that OSD is under-reported for several reasons, including a lack of access to occupational health care, the patient's decision not to seek treatment for mild symptoms, and misdiagnosis.¹

The most common occupational disease by far is contact dermatitis, but contact urticaria, nail disorders, leukoderma, acne, infections and cancer are all reported.³ Although irritant contact dermatitis has traditionally been thought to be more common in the workplace than allergic contact dermatitis, some researchers argue that allergic reactions are more common if you look hard enough for the agent.^{4,5} Patch testing is, therefore, an essential part of the investigation of OSD. It is not foolproof, though, as there is the possibility of false positive reactions and interpretation of tests is largely subjective and depends on the skill of the reader.¹

Several industries are high risk for occupational contact dermatitis, particularly healthcare, hairdressing, the food industry, metal work⁶ and construction.⁷ The most common allergens are metals and components of rubber.⁷

THE OCCUPATIONAL DERMATOLOGY CLINIC AT GROOTE SCHUUR HOSPITAL

The Occupational Dermatology Clinic is a specialist clinic which runs twice a month at Groote Schuur Hospital. It is a referral clinic for people with skin conditions thought to be related to their work and serves a large catchment area including Cape Town and surrounds. Referrals to the clinic come from occupational nurses and doctors, private general practitioners and dermatologists, and clinics and hospitals within the state sector. The clinic is staffed by a dermatology professor and two registrars – an occupational medicine registrar and a dermatology registrar who rotate through the clinic for six months at a time.

A full occupational and dermatological history is taken from each patient and a dermatological examination is performed. When indicated, patch testing is done with 45 commercial allergens commonly associated with allergic contact dermatitis by an experienced sister from the dermatology ward, and



Figure 1. Acute hand eczema. a. Vesicles on a background of erythema and mild scale. b. Vesicles, eroded, wet and weeping skin on a background of erythema and oedema. c. Extensive blister and vesicles with barely visible erythema. d. Peeling of the skin following acute eczema



Figure 2. Acute on chronic hand eczema. a. Diffuse vesicles on a background of erythema, hyperpigmentation and lichenification (increased skin markings). b. Diffuse vesicles on a background of erythema, lichenification and scale. c. Scattered vesicles and weeping on a background of erythema and dry, scaly, thickened, mildly pigmented (lichenified) skin

***“The most common occupational disease
by far is contact dermatitis . . .”***

patients are asked to return for reading of the patch test after 72 hours. In selected cases, further patch testing may be performed with specific chemicals from the workplace. Workplace visits are an essential part of the service and are carried out if exposures are not apparent after the patient interview.

As there is very little data about OSD in South Africa, the data from the clinic was analysed to determine:

1. the types of occupational skin disease seen at the clinic;
2. the primary site of dermatitis;
3. the frequency of positive patch tests;
4. the occupations represented at the clinic; and
5. referral patterns to the clinic.

METHODOLOGY

A medical record review was undertaken between April and June 2010. Attendance at the Occupational Dermatology Clinic was ascertained from computerised clinic statistics, and individual files were then searched by hand. All patient files from the period Jan 2008 to December 2009 were reviewed by one reviewer. This period was selected as the clinic was running well during this time, and records were easy to obtain. The relevant data was extracted and stored in Microsoft Excel. Ethics clearance for the study was obtained from UCT’s ethics committee (HREC REF 090/2011).

RESULTS

The Occupational Dermatology Clinic was run on 36 occasions in 2008 and 2009. In total, we saw 59 new patients, of whom

28 were female and 31 were male. The median age was 38 years. Sixteen workplace visits were conducted when we could not obtain a good understanding of the work from the patient’s description alone and when we felt it would be helpful to see the job being performed.

Of the 59 patients seen, 31 (53%) were diagnosed with OSD, 16 (27%) with non-occupational skin disease and in the remaining 12 (20%) a conclusion was not reached about the work-relatedness of the condition, in most cases because the patient did not return for follow-up. In contrast to the recent findings from the NIOH Skin Disease Clinic,⁸ the most frequent OSD seen was allergic contact dermatitis (ACD) (Figures 1 to 3), followed by irritant contact dermatitis (ICD) and paronychia (Figure 4). Table 1 contains details of all OSD diagnoses.

In the 25 cases of occupational contact dermatitis (both irritant and allergic), the most common site was the hands (92%). Only two cases did not involve the hands, and the primary site in these two were the feet and forearms respectively. See Table 2 for the sites of occupational dermatitis.

Patch testing with 45 commercial allergens was conducted on 38 patients with dermatitis. Eleven of these patients had additional patch tests with specific substances obtained from their workplaces. Twenty-nine (76%) of the patients tested with the commercial allergens had positive reactions to at least one agent. Of the 11 patients tested with additional agents, five had a positive reaction, and one of these was an irritant reaction. All of the patients who



Figure 3. Chronic eczema. a. Dry, scaly, thickened, hyperpigmented skin with increased skin markings (lichenification). b. Dry, scaly, thickened, skin with increased skin markings and mild erythema. c. Focal areas of dry, scaly, thickened, skin with increased skin markings and mild erythema and fissuring. d. Dry, scaly, thickened, markedly pigmented and lichenified skin

had positive reactions to their own agents also had positive reactions to agents on the commercial battery.

Nickel was the most common cause of a positive reaction in both non-occupational and occupational dermatitis. Amongst people with occupational ACD, the next most common reaction was to potassium dichromate. The frequency of positive reactions to specific agents in cases of occupational ACD is seen in Table 3. The agents which caused positive reactions varied by profession. Patients from the healthcare industry had higher frequencies of reactions to thiomersal and carbamix, whereas those patients from the manufacturing and maintenance sectors had more frequent positive reactions to the metals (nickel, chromate and cobalt).

Patients attending the occupational dermatology clinic worked in diverse fields, ranging from agriculture and food and beverage handling, to manufacturing (including pharmaceuticals, clothing, electronics, furniture and more), construction, engineering, healthcare and retail. The industry with the largest representation in the clinic was the healthcare sector, including nurses, allied health professionals and hospital cleaners. For those with a confirmed OSD, the frequency of occupation can be seen in Table 4.

Many of the referrals to the clinic were made by occupational health nurse practitioners or occupational medicine practitioners based in the workplace. There were also high numbers of patients referred from the general dermatology



Figure 4. Swollen nail folds with associated loss of cuticle of the affected nail and nail dystrophy. On the right hand (fingers 1 and 4) the skin of the nail fold is pigmented and lichenified suggesting a chronic problem. On the left hand (finger 2) the skin is erythematous supporting a more recent inflammatory process

outpatients department and other outpatients departments at Groote Schuur Hospital, such as the neurology, respiratory and occupational medicine clinics. The remainder of the referrals came from private general practitioners and dermatologists, with very few from secondary hospitals in Cape Town. Table 5 provides a list of the facilities from which patients were referred.

Table 1. Breakdown of occupational skin diseases seen at the Occupational Dermatology Clinic in 2008 and 2009 (n=31)

Diagnosis	Frequency	Percentage
Allergic contact dermatitis	21	68
Irritant contact dermatitis	4	13
Paronychia	3	10
Urticaria	1	3
Leukoderma	1	3
Angioedema	1	3
Mercury toxicity	1	3
Total	32*	103

*One case had paronychia and allergic contact dermatitis.

“... 81% of the patients with OSD had either irritant or allergic contact dermatitis.”

Table 3. Numbers of positive reactions to patch testing with commercial allergens in cases of occupational ACD during 2008 and 2009 (n= 42)

Agent	Number of positive reactions
Nickel	8
Potassium dichromate	5
Colophony	4
Thiuram mix	4
Carbamix	3
Cobalt	3
Formaldehyde	3
Thiomersal	3
Quaternium 15	2
Fragrance mix	2
Benzocaine	1
Epoxy	1
Fentichlor	1
Mercaptomix	1
Vioform	1
Total	42

DISCUSSION

Overall, our results are in accordance with previous reports which show that contact dermatitis is the most common type of OSD.^{1,8,10-13} In our clinic, 81% of the patients with OSD had either irritant or allergic contact dermatitis. There is conflicting evidence in the literature with some writers reporting a predominance of irritant contact dermatitis,¹⁰⁻¹³ and some reporting more ACD^{5,14} in OSD. In our clinic, ACD was far more common than irritant contact dermatitis. This may be due to the fact that we are a tertiary referral clinic, and that irritant dermatitis is diagnosed and managed in the primary care setting without a need for referral. As in other studies^{8,14,15}, the most common primary site of both ACD and ICD was the hands as this is the usual site of exposure during work.

Although several cases of chronic urticaria were referred to the clinic, only one had a confirmed occupational exposure causing the urticaria. In most of the other cases, the patient was not followed-up for a sufficient length of time to obtain adequate information about exposures, so no definitive

Table 2. Primary Site of occupational dermatitis (n=25)

Site	Frequency	Percentage
Hands only	16	64
Hands and forearms	3	12
Hands and feet	2	8
Hands and face	1	4
Hands, face and forearms	1	4
Forearms only	1	4
Feet only	1	4
Total	25	100

Table 4. Frequency of occupation amongst patients with confirmed occupational skin disease (n=31)

Occupation	Frequency	Percentage
Healthcare	7	23
Manufacturing	5	16
Maintenance	5	16
Agriculture	4	13
Food production	4	13
Laboratory	2	6
Construction	1	3
Explosives	1	3
Hairdressing	1	3
Retail	1	3
Total	31	99

Table 5. List of health facilities from which all new patients seen in the Occupational Dermatology clinic were referred in 2008 and 2009 (n=59)

Health facility	Frequency	Percentage
OHNP/OMP in workplace	23	39
Dermatology OPD at Groote Schuur	13	22
Private dermatologist	7	12
Other department at Groote Schuur	6	10
Private general practitioner	4	7
Secondary hospital	1	2
Primary care facility	1	2
Unknown	4	7
Total	59	100

OHNP – Occupational health nurse practitioner
OMP – Occupational medicine practitioner

cause was found. In other reports,⁸ urticaria is a common cause of OSD. We could, therefore, assume that some of those lost to follow-up had occupational factors playing a role in the development of the skin condition. We would need to record exposures for each patient more formally in order to make definitive diagnoses.

Patch testing was performed on 38 patients with dermatitis. In the 21 patients eventually diagnosed with

occupational ACD, only one had a negative patch test, and the remainder had one or more reactions resulting in 42 positive reactions. Just two patients (10%) were diagnosed with ACD on the basis of the additional specific agents obtained in their workplace (metal grinding soap and a metal coolant), and would have been missed if the extra agents had not been used. Thus, it appears that the commonly available patch tests would allow for diagnosis of most of the cases of ACD, and should be sufficient for a clinic that is not dedicated to occupational health.

Interestingly, the four cases of occupational ICD all had positive reactions on their patch tests. However, they were due to nickel or fragrance mix which are ubiquitous in the environment and not limited to a workplace. The result was not thought to be contributing to their clinical presentation.

The most common allergen to which patients reacted on patch testing was nickel, but potassium dichromate was the most common occupational allergen. The patients who reacted to potassium dichromate all had exposures to substances which are known to contain chromium e.g. cement and leather, and worked in construction or maintenance. Both the frequency of positive tests and the associated occupations are consistent with reports in the literature which report high levels of chromate sensitisation in general, and particularly in the construction industry.^{9,10} Nurses have previously been reported to be over-represented in occupational patch test clinics which found high levels of sensitisation to agents in rubber.¹⁵ This is in agreement with our results where healthcare was the most frequently represented occupation amongst those with OSD and healthcare workers were most likely to be sensitised to carbamix and thiomersal.

LIMITATIONS

There are several limitations to our study. It was a retrospective record review, and not all records were complete. The clinic does not use a formal data capture form (as at the NIOH⁸), so the reviewer had to rely on what individual doctors had recorded in the notes. It may be that investigations were performed but not recorded, so the number of patch tests and workplace visits may be underestimated. There was a large loss-to-follow-up (20%), so we are probably underestimating the frequency of occupational contact dermatitis. The patients whose diagnoses were unclear at their last visit (before loss-to-follow-up) came from many different industries (including healthcare, manufacturing and maintenance), so there is not likely to be selection bias.

We have a large proportion of referrals from the retail industry due to a close relationship with a large retailer. We have very low levels of referral from other sectors of industry such as the construction industry. Therefore, our results cannot be taken to represent the frequency of ACD or ICD in the general population.

CONCLUSION AND RECOMMENDATIONS

The study showed that contact dermatitis was the most common OSD. The hands were the site usually affected, and patch testing with a commercial battery showed that potassium dichromate was the most common occupational allergen. The healthcare and manufacturing sectors were the occupations

most frequently represented amongst patients with OSD. The majority of the referrals to the clinic came from industry clinics, with very low levels of referral from the state sector outside of Groote Schuur.

In future, a formal data capturing form should be developed to ensure more complete information about exposures and diagnoses. It would also be interesting to contact all the patients seen (including those lost to follow-up) to research the consequences of their skin disease, especially given recent South African articles which suggest that the number of cases receiving compensation is low.¹⁶

LESSONS LEARNED

1. Contact dermatitis was the most common type of OSD, and allergic contact dermatitis was far more common than irritant contact dermatitis.
2. The most common primary site of both ACD and ICD was the hands as this is the usual site of exposure during work.
3. The most common allergens were nickel and chromate.
4. Healthcare, manufacturing and maintenance were the jobs most commonly associated with OSD.

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