SHORT COMMUNICATION

# Pattern of Occupational Allergic Dermatitis in the Dermatology Clinic, Hospital Kuala Lumpur

R Rohna , MRCP, T Ganesapillai, FRACP, D Salbiah, I Zaiton, Department of Dermatology, Hospital Kuala Lumpur, Jalan Pahang, 50586 Kuala Lumpur

## Summary

A two years retrospective analysis of patients diagnosed as contact allergic dermatitis with positive patch test attending the Dermatology clinic was performed. Of the 346 patients with a positive patch test, 14% had occupational dermatitis. This condition affected mainly young and inexperienced workers. An inverse relationship was seen between age and prevalence of occupational allergic dermatitis. Allergic hand dermatitis was the commonest presentation in occupational allergic dermatitis. This was followed by dermatitis of the exposed skin (face, neck, hands and forearms). The common sensitising agents identified were rubber chemicals and nickel. The two main groups at risk were factory workers and medical personnel. The common allergens found in factory workers were epoxy resin, pewter, nickel and rubber chemicals. Exposure dermatitis occurred in patients working in the pewter industry. Two thirds of medical personnel with hand dermatitis were allergic to rubber gloves. One year follow up after patch testing showed that 19% of patients still suffered from chronic dermatitis. Dermatitis improved in 34% of patients. Forty-seven percent were cured and stopped attending the clinic after patch testing and adequate counselling.

*Key words:* Occupational allergic dermatitis, Rubber allergy, Nickel allergy

## Introduction

Malaysia is a developing country where metal, electrical and construction industries co-exist with the plantations. The industries are located in and around the major towns. Animal farms and plantations are mainly found in the rural as well as the coastal areas. The increase in the workforce has resulted in an increase in the number of people exposed to occupational allergens. Many are unaware that their skin conditions can be the result of contact with allergens in their working environment. It is only recently that physicians and dermatologists have been made aware that occupational dermatoses is a notifiable disease. We performed this study to look at the frequency of occupational dermatoses diagnosed at the Dermatology Clinic, Hospital Kuala Lumpur from September 1994 to September 1996.

## Materials and Methods

Patients documented to have occupational dermatitis at the Contact Allergy investigating Unit, Dermatology Clinic, Hospital Kuala Lumpur from mid-September 1994 to mid-September 1996 were included in this study. Parameters assessed were age at first presentation, gender, race, occupation, affected sites, identifiable contact allergen and probable source of allergen. Patch testing was carried out using the European standard series as the routine tray. Photoallergen and rubber series were additional allergens tested in patients suspected of photocontact dermatitis and contact rubber

allergy respectively. The allergens used for patch testing were supplied by Hermal (Kurt Herrmann, Rhinebeck, Germany). Pewter dust were brought from the workplace. Patch tests were performed with Finn Chambers on Scanpore tape for 2 days before removal for readings at 48 and 96 hours. The test reactions were interpreted following the ICDRG recommendations[1]. Photopatch tests were performed on the back of patients using the Finn Chamber method. Two sets of Photoallergen series were tested. The control set is covered with a black cloth for 5 days. The Scanpore tapes were removed for reading at 48 and 96 hours. The Scanpore tapes in the other set were removed after 24 hours. The test area was then shinned with 10 Joules of ultraviolet A radiation. Readings were done at 48 and 96 hours. Photocontact dermatitis was concluded when there was a positive reaction in the irradiated photoallergen area and a negative reaction in the control area.

## Results

There were 346 patients with positive patch and photopatch test during the two years study period. Fourteen percent (48 patients) were classified as occupational dermatitis. Both genders were almost equally affected (male: female ratio being 1: 1.1). The frequency of occupational dermatitis was highest in the 21 to 30 age group and decreased with age. The majority presented with hand dermatitis. Other presentations include dermatitis in exposed skin (which includes face, 'V' of the neck, forearms and the hands), and a combination of hand and foot dermatitis (Table I). The commonest identifiable sensitiser was rubber additives which are rubber chemicals added during the manufacturing of rubber products.

**Table I**
**Common sites in occupational dermatitis and the incriminating allergens**

| Allergens | Sites of Dermatitis | | | | Total |
|---|---|---|---|---|---|
| | Hands only[a] | Feet only[b] | Hands & Feet[c] | Exposed skin[d] | |
| Rubber | 11 | | 5 | 1 | 17 |
| Nickel | 4 | 1 | 3 | 4 | 12 |
| Phenol-formaldehyd | 2 | | | | 2 |
| Epoxy Resin | 4 | | | | 4 |
| Fragrance | 4 | | | 3 | 7 |
| Chromium | 3 | | 1 | 2 | 6 |
| Cobalt | 3 | | 3 | | 6 |
| Others | 12 | | 1 | 4 | 17 |
| **Total** | **26** | **3** | **6** | **13** | |

*a : Five patients had a single causative allergen responsible for hand dermatitis.*
*b: All patients had a single causative allergen responsible for feet dermatitis.*
*c: All patients had more than one allergens responsible for the hands and feet dermatitis.*
*d: Seven patients had a single causative allergen responsible for exposure dermatitis.*

Others include metal allergens (nickel, chromium and cobalt), fragrance mix and epoxy resin (Table I). The two main occupations at risk were factory workers and medical personnel. In the former, the most frequent presentation was hand dermatitis caused by epoxy resin or rubber gloves. Allergies to pewter, nickel, colophony, cobalt and fragrance mix were manifested as exposure dermatitis. About two thirds of the medical personnel developed contact dermatitis to rubber gloves. A small proportion of nurses had contact allergy to artificial leather shoes provided by the hospital. Patch test showed they were sensitive to phenol formaldehyde resin. Those working in the catering services had a higher chance of being sensitised to onions causing chronic dermatitis at the finger tips. The outcome of these patients after patch testing showed that despite adopting preventive measures, 19% of the patients still presented with recurrent dermatitis. The patients with photocontact dermatitis required in addition azathioprine for adequate response. In a third (34%) of the patients, dermatitis improved. Forty-seven percent improved and stopped attending the Dermatology Clinic after patch testing and counselling.

## Discussion

In a Swedish survey[2,7] performed in 1990, of the 1,385 respondents who had hand eczema in the previous 12 months, occupational exposure was the cause in 11.8%. The frequency of hand dermatitis resulting from occupational dermatitis in our study is just as low (14%). One of the main reasons for the low prevalence of occupational dermatoses is underreporting. Only those with treatment failure were referred to us by their panel doctor. The other important reason for this low prevalence is failure to recognise the dermatoses to be work related. The predominance of occupational dermatitis in the young and inexperienced is due to several factors. This includes inadequate job training in safety operating procedures, inability of the employer to appreciate occupational dermatitis from contact to chemical or substances at work, thus omitting protective gears. The young worker's attitude of disregarding safety operating guidelines is also a contributing factor.

The pattern of contact dermatitis seen at the Kuala Lumpur Hospital has changed over the last 5 years. The top 3 allergens noted by Gan et al[2] in 1989 were cetavlon (22.9%), nickel (14.5%) and colophony (8.5%). In 1996, the common allergens observed by Rohna[4] were nickel (36%), rubber chemicals (19%) and fragrance mix (17%). The main factor contributing to this change in pattern is industrialisation. Being the third major producer of rubber products, there is an increase in local usage of these products especially with the recent emphasis on universal precautions for HIV infection. This increased exposure to rubber products accounts for rubber chemicals being the most common sensitising allergens in occupational dermatitis. The sensitising occupational allergens in different countries are dependent on the types of occupation in that country. For example, the majority of occupational dermatitis is seen in metal workers in Singapore, steel workers in Germany, miners in England and bricklayers in Italy[5].

The hand is the commonest site of dermatitis because it is usually the first site of contact and the most frequent site of contact to chemicals and substances at work. Airborne exposure dermatitis is seen in patients with allergy to nickel sulphate, fragrance mix, pewter dust and rubber chemicals. Nickel and chromium allergies were commonly seen because of the emergence of the metal industry, building and railway construction in this rapidly developing city. Meding and Swanbeck[2,7] noted nickel, cobalt, fragrance mix, balsam of Peru and colophony as the common allergens causing hand dermatitis in Gothenberg, Sweden, an industrial city.

Proper counselling following identification of the offending allergen has resulted in an improvement in a third of the patients. It has stopped about half of the patients from coming to the clinic with the same complaint. On the other hand patients with recurrent dermatitis (19%) were still doing the same job and were in contact with the same allergens. Most of them however obtained intermittent relief with the use of a topical steroid. In Western Australia, Wall and Gebauer[6] reported the findings in more than 60% of 771 patients who were followed up for more than 2 years from their initial diagnosis. They found that 50% were still suffering from their original dermatitis. Some of our patients with photocontact required the addition of

azathioprine as potent topical steroids only gave temporary relief of the severe facial dermatitis.

## Conclusion

There is a need for attending doctors to recognise occupational dermatitis because adequate counselling and preventive measures can provide relief for most of the troublesome dermatitis as well as the anxiety that comes with it.

## Acknowledgment

We would like to thank Dr Gangaram Belani, Consultant Dermatologist, Hospital Kuala Lumpur, for proof reading of this article.

## References

1. Wilkinson D S, Fregert S, Magnusson B et al. Terminology of contact dermatitis. Acta Dermato-venerologica 1970; 50: 287-92.

2. Meding B, Swanbeck G. Occupational hand eczema in an industrial city. Contact Dermatitis 1990; 22: 13.

3. Gan AT, Wong LH, Ganesapillai T. Pattern of contact dermatitis at Department of Dermatology, General Hospital Kuala Lumpur in 1989. Paper presented at the 1st Asia-Pacific Environmental and Occupational Dermatology Symposium, National Skin Centre, Singapore, 22-24 June 1991.

4. Rohna R Pattern of contact and photocontact dermatitis at Hospital Kuala Lumpur - a two year study (1994 - 1996). Paper presented at Update on Contact allergy and Occupational dermatoses, Kuala Lumpur, 6th April 1996.

5. Goh CL, Handbook of Occupational Skin Diseases. Singapore: P G Publishing, 1990: 3.

6. Wall LM, Gebauer KA A follow-up study of occupational skin disease in Western Australia. Contact Dermatitis 1991; 24: 241.

7. Fisher's Contact Dermatitis, 4th ed. Baltimore: Williams and Wilkins, 1995; 551-89.