

Irritant hand dermatitis in health care workers

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Background	Health care workers (HCWs) are at increased risk of irritant contact dermatitis due to frequent hand washing and use of alcohol gel. This has increased the incidence of occupational skin diseases.
Aims	To evaluate hand dermatitis in HCWs in our hospital by means of a survey which also examined trends of exposure and the utility of patch testing.
Methods	HCWs diagnosed with hand dermatitis in our contact dermatitis clinic from January 2011 to July 2012 were included. Information was collected retrospectively from medical notes, computer records and the database of the British Cutaneous Allergy Society.
Results	A total of 69 HCWs were diagnosed with hand dermatitis, with a prevalence of ~4%. The majority were female and the clinical areas in which they worked were diverse. About 98% (68) had irritant contact dermatitis, and hand washing was the commonest cause of symptoms. About 75% (51) had irritant dermatitis exclusively. Patch test was positive in 42% with the commonest reaction to nickel, followed by formaldehyde. Associated atopy was found in less than half of the cases.
Conclusions	Irritant hand dermatitis is prevalent in HCWs in this setting. Patch testing is useful to identify any additional allergic element in such cases.
Key words	Irritant contact dermatitis; occupational skin disease; patch test.

Introduction

Health care workers (HCWs) are at increased risk of contact dermatitis [1]. This is mainly due to frequent hand washing, but the use of alcohol gel, contact with allergens and the occlusive effect of gloves can also contribute. Contact dermatitis accounts for 70–90% of all occupational skin disease and can adversely affect both function and quality of life [2]. We therefore undertook a survey of hand dermatitis in HCWs in our hospital and examined the utility of patch testing in HCWs with dermatitis.

Methods

This was a retrospective survey of HCWs diagnosed with irritant hand dermatitis attending a contact dermatitis clinic from January 2011 to July 2012. The study population comprised all 2000 HCWs in a hospital in central England. The contact dermatitis clinic is held weekly in the dermatology department for patients referred for patch testing. HCW referrals come from the occupational

health department, general practitioners (GPs) and general dermatology clinics. Information, including demographic details, the nature and area of work, patch test results, diagnosis, management and association with atopy, was collected from medical notes, computer records and the British Cutaneous Allergy Society (BCAS) database. The quantitative data obtained were analysed without complex statistical analysis. No patient identifying information was examined or used so ethics approval was not sought.

Results

Sixty-nine HCWs were diagnosed with hand dermatitis during the review period, representing a prevalence of ~4% in a hospital population of 2000 HCWs, or the equivalent of one HCW presenting with hand dermatitis every week over an 18 month period. About 94% (65) were female and the mean age was 37 (32 in women and 42 in men). About 66% (46) were nurses (both qualified and students). The remainder were other health care staff (doctor, physicist, pharmacist, physiotherapist, etc.).

The clinical areas where they worked were diverse, with the operating theatre being the most commonly reported area (eight HCWs). Other areas included paediatrics (five), cardiology (two) and fracture clinic (two).

Ninety-eight per cent of cases were diagnosed with irritant contact dermatitis, hand washing being the commonest culprit (90% reported washing their hands frequently). Frequent gelling of hands and prolonged use of gloves was practised by six and five HCWs, respectively, and was the commonest cause in these cases. Of the 68 with irritant dermatitis, 75% (51) had irritant dermatitis exclusively whereas the remaining 25% had both irritant and allergic dermatitis. Only one had allergic contact dermatitis exclusively.

Patch testing was positive in 42% (29) of cases. In these cases, 62% (18) had at least one positive reaction of current relevance. Nineteen different types of allergens were identified, accounting for a total of 56 positive reactions. The commonest reaction was with nickel (eight), followed by formaldehyde (five), sodium metabisulphite (five) and fragrance (four). Rubber-related allergens, i.e. carba mix and thiuram, accounted for five positive reactions. Of the 56 positive reactions, 62% (35) were found to be of current relevance. These included formaldehyde (five), sodium metabisulphite (four), quaternium (four), thiuram (three), diazolidinyl urea (two), methylchloro-isothiazolinone/methylisothiazolinone (MCI, MI) (two), carba mix (two), fragrance (two) and various others. **Table 1** indicates common sources of contact with these allergens. Treatment was needed in all cases, with topical therapy used in 68 workers. The one patient who needed systemic therapy had both irritant and allergic contact dermatitis with rubber-related allergens causing the latter. An association with atopic eczema was found in 38% (26) and with hay fever or asthma in 43% (30).

Table 1. Allergens of current relevance

Allergen	Role	Common sources
Formaldehyde	Preservative	Household/industrial products
Sodium metabisulphite	Anti-oxidant, to prevent bacteria and discoloration	Trimovate/other topicals, food/drinks, textiles
Quaternium	Preservative, to kill bacteria and fungi	Cosmetics and toiletries
Thiuram	Rubber accelerator	Gloves, shoes
Diazolidinyl urea	Preservative	Cosmetics, toiletries, household
MCI/MI	Preservative	Cosmetics, household, industrial
Carba mix	Rubber accelerator	Gloves, shoes
Fragrance	Perfume	Cosmetics, household, medicaments

Discussion

Our survey found that many HCWs in our hospital suffered from hand dermatitis, predominantly irritant contact dermatitis secondary to frequent hand washing. Most cases were female nurses to a degree approximately proportionate to the preponderance of females amongst the nursing staff in our hospital. Those affected work in diverse clinical areas. An association with atopy was common.

There is a lack of studies of the prevalence of hand dermatitis in HCWs in UK hospitals. Our survey will help to fill this gap. As irritant dermatitis was found to be by far the commonest form of dermatitis, it may be useful to provide a more balanced message for HCWs about hand hygiene as an infection control measure.

The survey also highlights the importance of patch testing in HCWs, as allergens were identified in a large number of cases, leading to avoidance advice. No formal primary prevention programme exists in our hospital, although some hospitals in Europe, having realized the importance of formal education programmes for primary prevention, are undertaking studies to assess their effectiveness [3].

Our survey may have underestimated the true prevalence of irritant contact dermatitis as some HCWs with hand dermatitis may not have been seen in our patch test clinic, having been managed by the occupational health department or their GP, while in mild cases, they may have self-treated. Our results mirror the findings of several other studies. Two questionnaire-based studies from Denmark and Taiwan looking at 2274 and 724 responses from HCWs, respectively, showed a predilection for younger age and association with atopy [4,5]. However, there was a male preponderance in the former and a female one in the latter. A North American study found a preponderance of rubber-related allergens, whilst our study found formaldehyde and its releasers to be the commonest allergens [6].

We were unable to find national statistics with which to compare our prevalence figure directly. However, there is useful data from THOR (The Health and Occupation Reporting network), which confirms that hand dermatitis is common in UK HCWs, with 80% of occupational skin diseases reported by occupational physicians and dermatologists being due to hand dermatitis (M. Carder and R. Agius, on behalf of the THOR project, personal communication). EPIDERM (occupational skin surveillance in the UK) data from 2002 to 2011 suggests 1122 nurses were affected by contact dermatitis, though not exclusively of the hands, representing the highest incidence amongst several occupations (M. Carder and R. Agius, on behalf of the THOR project, personal communication).

As hand dermatitis in HCWs is common and can cause absence from work, impaired quality of life and even unemployment [2], there is a need for improved awareness

and education about contact dermatitis amongst hospital HCWs, as studies have highlighted current inadequacies [7].

Key points

- Irritant hand dermatitis affected many individuals in this population of hospital health care workers.
- A patch test was useful to identify causative allergens and should be performed to identify or exclude an allergic element in such cases.
- There is a need for primary prevention of hand dermatitis in health care workers in this and presumably in other hospitals.

Conflicts of interest

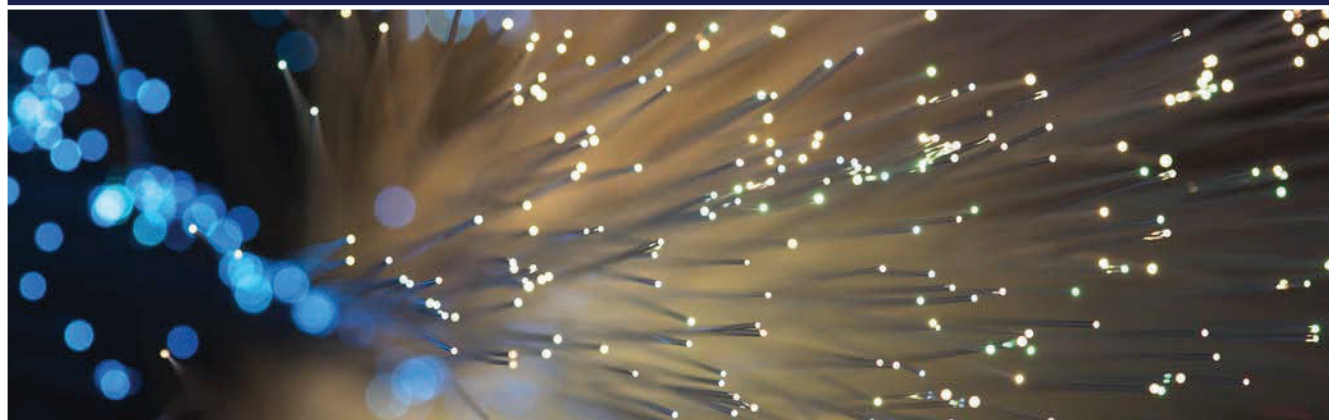
None declared.

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