

Occupational Hand Eczema among Cement users in Nepal

Abstract:

Background: Occupational dermatitis among cement workers is a major occupational health concern and skin contact with cement has been associated with contact dermatitis, which ranges from cement burns to cumulative irritant contact dermatitis. **Objective:** The objective of this study was to investigate the prevalence and severity of occupational cement contact dermatitis amongst cement workers in Nepal which is the first of its kind. **Methods:** A cross sectional descriptive study amongst patients in construction site and hardware shops within the Kathmandu valley were selected. A structured questionnaire was used to evaluate the demographic data and work-related activities of these cement workers. A complete skin examination was conducted and skin manifestations were assessed by a dermatologist. The data collected was compiled and appropriate statistical tools was used to find out the significance of variables. **Result:** Out of the total number of workers screened 164/377 (43.50%) had hand contact dermatitis. There were males 148(90.2%) and females 16 (9.8%) and the age ranged from 15-51 years (mean 27.41 ± 7.68 years). The duration of the disease ranged from 1-360 months (median 36 months (IQR=60)). The most common site of lesion was palms (62.8%) followed by tip of the fingers in 39.0% patients and the most common morphology of the lesion was erythema seen in 59.1% followed by scaling seen in 51.8 % patients. **Conclusion:** The issue of contact and irritant hand eczema amongst cement workers in Nepal has had a considerable morbidity. Identification of these patients with adequate treatment, test of the suspected allergens and counseling could further help the patients involved.

Key Words: Cement, eczema, contact dermatitis, Nepal.

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Introduction

Hand eczema is a common distressing condition giving rise to a lot of emotional and physical morbidity. [1] The term hand eczema (HE) implies that the dermatitis is largely confined to the hands with only minor involvement of the other areas. [2] The reported prevalence of HE in the general population is estimated to be about 2-10% and it accounts for 21-34% of all types of eczema.[3]

Occupational dermatitis among cement workers is a major occupational health concern.[4] Skin contact with cement has been associated with irritant contact dermatitis, which ranges from cement burns to cumulative irritant contact dermatitis. Cement burns cause an acute ulceration [5] most frequently seen in new and untrained cement workers. In non-sensitized workers who are exposed to cement on a regular basis, cumulative irritant contact dermatitis may result.[6]

some parts of the subcontinent. Though the agricultural workforce is by far the major work forcing the third world countries, its work organization has not received much attention.

With urbanization rapidly going in the capital and multiple high rise buildings coming up the actual prevalence of occupational dermatitis and specially hand eczema is not recorded. No data related to such can be found on the literature on extensive on line search. This study is the first of its kind related to the prevalence and severity of occupational dermatoses in cement workers with regular exposure to cement in Nepal.

Methods

A cross sectional descriptive study amongst patients 377 (95% CI) in construction site and hardware shops dealing with cement within the valley for sampling convenience was selected from Dec 2014 - Nov 2015. A structured questionnaire was used

to evaluate the demographic data and work-related activities of these cement workers. A complete skin examination was conducted and skin manifestations was assessed by a consultant dermatologist. Other skin diseases involving the hand such as infective dermatitis, dermatophytide, eczematous drug reactions, psoriasis were excluded by history and clinical examination. Camps were also conducted in the areas on a regular basis with informed notice, screening of the workers were done and then offered medicine and other treatment as and when needed.

A detailed survey was thus carried out to investigate the prevalence, causal agents, duration of the work exposure in this community .The data collected was compiled and appropriate statistical tools was used to find out the significance of variables.

Result

Out of the total number of workers screened 164/377 (43.50%) had hand contact dermatitis. There were males 148(90.2%) and females16 (9.8.%) and the age ranged from 15-51 years (mean 27.41± 7.68 years). The duration of the disease ranged from 1-360 months (median 36months (IQR=60)).

Table1: Demographic Details of the patients

Parameters	
Sex	
Male	148(90.2%)
Female	16(9.8%)
Age	
Range	15-51 years
Mean	27.41±7.68years
Duration of Disease	
Range	1-360months
Median	36 months (IQR=60)

Table 2 shows the age wise distribution of the patients.

Age group	Number	Percentage(%)
Less than 20	38	23.2
21-30	79	48.2
31-40	40	24.4
41-50	6	3.7
More than 50	1	0.5

The most common site of lesion was palms (62.8%) followed by tip of the fingers in 39.0% patients (Figure 1)and the most common morphology of the lesion was erythema seen in 59.1% followed by scaling seen in 51.8 % patients. (Figure 2)

Figure 1: Site of lesions in patients having hand eczema amongst cement users

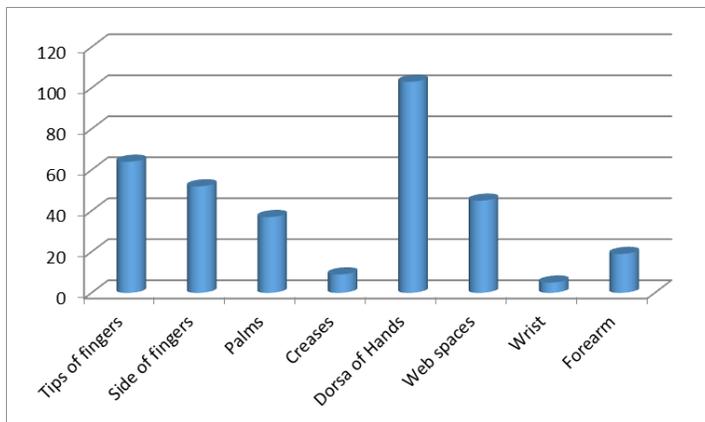
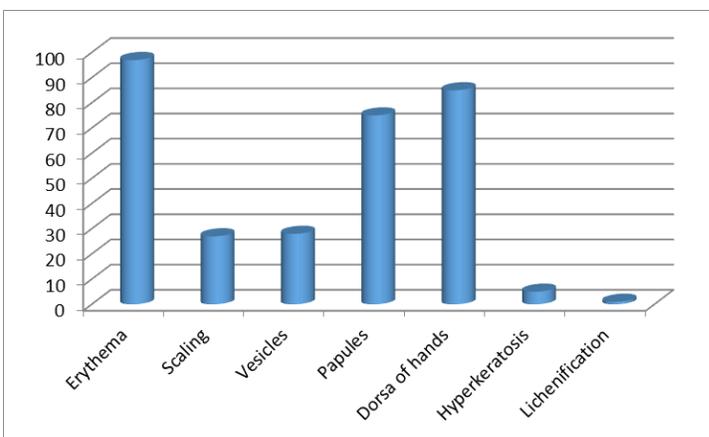


Figure 2: Morphology of lesions in patients having hand eczema amongst cement users



Discussion

Occupational contact dermatosis is the most significant and frequent dermatoses among all occupational skin diseases.[7] Skin in contact with cement has been associated with irritant cement contact dermatitis and allergic cement contact dermatitis. Cement contains the following substances: silicon dioxide (SiO₂), aluminium oxide (Al₂O₃), iron oxide (FeO₃), magnesium oxide (MgO), sulfur dioxide (SO₂) and calcium oxide (CaO). When calcium oxide comes into contact with water, it becomes calcium hydroxide (Ca(OH)₂), which is a highly alkaline substance, with a pH value of 11–13. It is a very strong irritant to the skin, and may sometimes produce skin erosion and even skin necrosis. [8] The common allergens affecting cement workers are: epoxy resin, colophony, formaldehyde, nickel, rubber gloves and cobalt, but the worst offender is hexavalent chromium.[9] Cement workers' hands are regularly in contact with cement, so once they suffer from hand contact dermatitis as a result of exposure to cement, they are susceptible to recurrence and complete recovery is very difficult [10]which may compromise their work efficiency.

The In this study 83.5% of cement workers were over the age of 21-30 years with a mean around 27 years (Table 1) which was

slightly less as compared by the study done by Guo et al [11] and Sharma et al [12].

Association of atopy in patients with and eczema has been well documented. Our study found a prevalence of atopy in 16(9.8%). Patients with atopy have diminished barrier function which could lead to more cumulative irritant dermatitis.

The commonest site affected were the dorsum of the hand seen in 103(62.8%) patients followed by tips of the fingers in 64 (39.2%) (Figure 1). This result has been shown to be comparable to the studies done in India as reported by Sharma et al.[11] The most possible reason why palms were less affected than other parts of the hand could be the pattern of work done. Most of these workers were seen carrying cement blocks and mixing cements without wearing gloves and palms being more thicker could result in the less irritant reactions as compared to the dorsum of the hand.

Although a large number of studies on this subject has been published in the western world, it was difficult to compare the results because the patient selection, study purposes, and methodology used for analysis varied considerably. In contrast to the developed world, there has been no attempt to evaluate the magnitude of this problem with very less supportive evidence.

Morphologically erythema was seen in 97(59.1%) patients while hyperkeratosis plaques were the second most common presentation seen in 85(51.8%) followed by papules in 75(45.7%) patients. The morphology suggests again the cumulative irritant damage to the skin. Acute reactions were seen in very less patients with vesiculation in 5(3.0%) patients. Our study found more irritant hand eczema as compared to the allergic contact dermatitis.

Conclusion

There are no studies in Nepal which shows the actual prevalence of occupational Hand eczema affecting persons working in the construction sites or people dealing with cement and other irritants in hard ware shops. Workplace safety guidelines are less strictly supervised in many developing countries, including Nepal. This study helped us to assess the magnitude of the problem and since it is just a base line cross sectional survey, further research can be planned to see the allergens amongst the persons suspicious of contact dermatitis amongst the cement workers.

Limitation of the Study: As this is a preliminary study, the actual data were unknown. We plan to do the patch test on subsequent visits to workers suspected of having cement allergy using the standard allergy kit as approved by the contact dermatitis forum of India.

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