

Hand dermatitis in healthcare workers: A 15 years' experience with hand sanitizer solutions

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Introduction:

Hand dermatitis is common among healthcare workers (HCW) although its frequency is probably underestimated. The prevalence of occupational dermatitis in the general population estimates of 20% whereas in HCWs it has been reported to be around 21%^{1, 2}. This is mainly due to frequent hand washing and regular use of hand sanitizers¹. The aim of the following study was to evaluate hand dermatitis in our hospital and the utility of patch testing, with a special consideration toward hand sanitizer solution.

Materials and results:

Healthcare workers diagnosed with severe hand dermatitis seen by the accredited employee health doctor of the institution were sent to our contact dermatitis clinic from January 2005 to December 2019. We performed patch testing with the European standards and preservatives series (Hermal, Reinbeck, Germany: 2005-2015, and Chemotechnique Diagnostics, Vellinge, Sweden: 2016-2020) and hospital series with 3 types of hand sanitizing preparations (tested "as is"): Hopigel®; B. Braun Medical AG, Sempach, Switzerland (Chlorhexidine digluconate 0.58%, isopropanol 70% , water), Hopirub®; B. Braun Medical AG, Sempach, Switzerland (Chlorhexidine digluconate 0.58%, isopropanol 70%, water, emollient), and Sterilium®; Hartmann GmbH, Neuhaussen, Switzerland (Mecetronium 0.2%, isopropanol 45%, propanol 30%, dye, water, perfume, glycerol). During this 15 years survey, 159 health care workers were followed (118 nurses and 41 other related health workers). The majority were female and the clinical areas in which they worked were diverse. Among the nurses, 66 % had irritant contact dermatitis (ICD) and 34% had a combination of irritant and allergic contact dermatitis. Nickel was the most common allergen (27%). The relevant allergens were fragrances (11%), chlormethylisothiazolinone and/or methylisothiazolinone (7.5%) found in personal hand creams and rinse-off products, personal hand creams (7.5%), and rubber derivatives (2.5%). 4 % of the nurses with hand dermatitis had an allergic contact dermatitis (++ reaction at day 4) to handrub preparations. ICD was a diagnosis of exclusion, in case of

negative patch test, or a patch test with positive results but no occupational relevance.

Discussion:

Our institution is a 2000-bed, tertiary care institution serving a population of approximately 500,000 individuals³. Since 2005, two alcohol-based sanitizers, a solution (Hopirub®) and gel (Hopigel®) both containing chlorhexidine digluconate and isopropanolol, are proposed to HCW. None of hand sanitizers contained fragrances. Only the nurses allergic to chlorhexidine are supposed to use Sterilium®. Chlorhexidine, used as an antiseptic agent, is reported to be an irritant, and less frequently an allergic agent in HCW⁴. In our survey, chlorhexidine were tested in all the cases and were found negative.

The results of our observation support the diagnosis of ICD in HCW using hand sanitizers. Although frequently accused by the workers, real allergic contact dermatitis to hand sanitizing formulations is rare. ICD has an important impact on the hygiene regimen⁵. In a French study, 52% of the HCW with hand dermatitis stopped or decreased the use of hand sanitizers to limit the irritation⁶.

Conclusion:

Allergic contact dermatitis to chlorhexidine or hand sanitizing formulations in HCW is rare. Irritant contact dermatitis is the occupational dermatosis mainly observed. It has significant impact since it can reduce the effective workforce, and lack of adherence in some cases, leading to subpar hygiene. This observation recall us for the important role of dermatologist in the primary prevention and the prompt treatment of skin problem in HCW.

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