

Contact leukoderma following irritant contact dermatitis to an isopropanol-based hand rub: A consequence of rigorous hand hygiene

Surabhi Sinha  | Kabir Sardana

Department of Dermatology & STD, Dr. Ram Manohar Lohia Hospital & ABVIMS, New Delhi, India

Correspondence

Surabhi Sinha, Department of Dermatology & STD, Dr. Ram Manohar Lohia Hospital & ABVIMS, Room No. 205, Academic Block, PGIMER Building, New Delhi 110001, India.
Email: surabhi2310@gmail.com

KEYWORDS: CAS no. 67-63-0, case report, chemical vitiligo, contact depigmentation, contact leukoderma, irritant contact dermatitis, isopropanol

Contact leukoderma is usually due to direct melanocyte damage by aliphatic or aromatic phenols and catechols. Rarely, it can follow irritant or allergic contact dermatitis. The use of alcohol-based hand rubs (ABHRs) has become prevalent in the general population since the start of the COVID-19 pandemic. While ABHRs are usually well-tolerated, they may incite irritant contact dermatitis (ICD) in conjunction with other irritants such as detergents and frequent hand washing. Continued use may result in permanent sequelae, such as contact leukoderma, as in our case, which has important consequences on skin of colour.

CASE REPORT

A 40-year-old male office worker presented with confluent depigmentation and a few confetti macules on the interdigital web

spaces of both hands which had appeared one week ago (Figure 1). No other anatomical sites were involved. He had been regularly using a 70% (v/v) isopropanol (2-propanol, CAS no. 67-63-0) hand rub for 2 months during the COVID-19 pandemic. He had noticed itching and mild erythema over the web spaces after a few days of using the hand rub, but continued its application. He also reported frequent handwashing, sometimes with hot water, and doing wet household work without the application of moisturizers. No other potential irritants or allergens could be discerned from the history.

A semi-open test was performed (isopropanol being a potential irritant) with the undiluted sanitizer “as is” and in 50% dilution and a closed test was done with isopropanol 10% aq. along with the Indian baseline series.¹ The tests were read as per International Contact Dermatitis Research Group grading at day (D)2 and

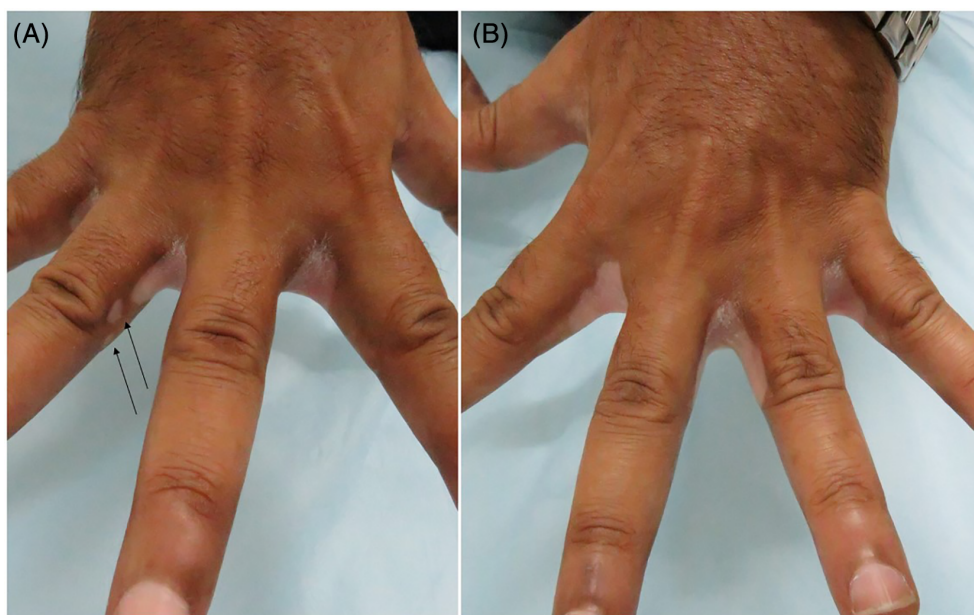


FIGURE 1 Clinical photograph showing confluent depigmentation with few confetti macules (black arrows) on all interdigital web spaces of (A) the right and (B) left hands. Fine scaling can be seen in the web spaces as well

D4 (Table S1). The semi-open test with the sanitizer “as is” showed strong erythema and vesicles sharply limited to the site of application on D2, which rapidly resolved by D4, while the 10% aq. solution gave a negative result, favouring the diagnosis of an irritant reaction to the hand rub (Figure S1). A skin biopsy from the depigmented skin confirmed the absence of melanocytes on S-100 immunohistochemical staining. In view of the confluent and confetti macules conforming to the site of exposure, he was diagnosed with contact leukoderma and advised to stop use of the hand rub and apply emollients, along with daily application of fluticasone and tacrolimus on the depigmented macules and the patch test site.² The patch test site had not developed depigmentation at 8 weeks’ follow-up and, while the depigmented macules did not increase, neither did they re-pigment during that time.

DISCUSSION

Contact leukoderma following repeated use of certain chemicals, most frequently phenolic/catecholic derivatives, is a consequence of selective destruction of melanocytes, pigment transfer block, or decreased melanogenesis.³ Rarely, some chemicals may incite irritant or allergic contact dermatitis in certain at-risk individuals resulting in pigment loss.⁴ Ghosh and Mukhopadhyay reported the largest study of 864 patients with chemical leukoderma in which only 5% had evidence of contact dermatitis at the site of depigmentation.⁵ Most cases followed topical exposures, presumably to higher concentration of the offending chemical delivered to cutaneous melanocytes.³

Hand dermatitis is often an occupational dermatosis for healthcare workers and is more frequently irritant rather than allergic contact dermatitis.⁶ ABHRs are recommended for hand hygiene among healthcare workers but, since the the COVID-19 pandemic, are now widely used also by the general population. Although subjective irritation is common, alcohol is not a strong irritant, and cases of irritant or allergic dermatitis are rare.⁷ However, multiple irritants used concurrently have a synergistic effect due to the alteration of skin permeability that would not occur with one agent alone (the “cross-over phenomenon”).⁸⁻¹⁰ Anionic detergents and repeated contact with water, especially hot water, are known irritants and probably augmented the propensity of isopropanol to cause ICD in the interdigital spaces in our case and contact leukoderma mirrored the distribution.¹¹ The presence of confetti macules, earlier thought to be characteristic of chemical-leukoderma, is now considered to be a sign of highly active vitiligo, but may signify rapid progression in contact leukoderma.³

Contact leukoderma following ICD is very rarely reported; however, this could also be due to the difficulty in diagnosing ICD.¹² A type of test (open/semi-open/closed) and the concentration and vehicle which could be used while testing patients’

products would be immensely helpful in diagnosing such cases.¹ Irritant patch test reactions that resolve by D3/D4 can perhaps be used as guides to the diagnosis of ICD by patch testing in the absence of other tests.

Our case illustrates the problem of a typical occupational disorder which, owing to the uncontrolled use of sanitizers by the general public, led to the complication of contact leukoderma. The visible colour contrast, chronicity of the disease, and lack of uniformly effective treatment add to the psychological distress and stigma attached to leukoderma in individuals with skin of colour. Our case should serve as an example to restrict the unbridled use of such agents.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

Surabha Sinha: Conceptualization; data curation; formal analysis; writing-original draft; writing-review and editing. **kabir sardana:** Conceptualization; writing-original draft; writing-review and editing.

ORCID

Surabhi Sinha  <https://orcid.org/0000-0002-0423-7588>

REFERENCES

- Jolanki R, Estlander J, Alanko K, Kanerva L. Patch testing with a patient's own materials handled at work. In: Kanerva L, Elsner P, Wahlberg JE, Maibach HI, eds. *Handbook of Occupational Dermatology*. Heidelberg and New York: Springer Verlag; 2000:375–383.
- Ghosh S. Chemical leukoderma: what's new on etiopathological and clinical aspects? *Indian J Dermatol*. 2010;55(3):255–258.
- Harris JE. Chemical-induced vitiligo. *Dermatol Clin*. 2017;35(2):151–161. <https://doi.org/10.1016/j.det.2016.11.006>
- Nakayama H. Pigmented contact dermatitis and chemical depigmentation. In: Rycroft RJG, Menné T, Frosch PJ, Lepoittevin JP, eds. *Textbook of Contact Dermatitis*. 3rd ed. Berlin, Heidelberg: Springer; 2001: 381–401.
- Ghosh S, Mukhopadhyay S. Chemical leukoderma: a clinico-aetiological study of 864 cases in the perspective of a developing country. *British Journal of Dermatology*. 2009;160:40–47. <https://dx.doi.org/10.1111/j.1365-2133.2008.08815.x>
- Dickel H, Kuss O, Schmidt A, Kretz J, Diepgen TL. Importance of irritant contact dermatitis in occupational skin disease. *Am J Clin Dermatol*. 2002;3(4):283–289.
- Löffler H, Kampf G, Schermund D, Maibach HI. How irritant is alcohol? *Br J Dermatol*. 2007;157(1):74–81.
- Goossens A, Gavin JG. Allergic or irritant contact dermatitis after patch testing with alcohol - that is the point. *Contact Dermatitis*. 2012;67(6):388.
- Amado A, Taylor JS, Sood A. Irritant contact dermatitis. In: Wolff K, Goldsmith LA, Katz SI, Gilchrist BA, Paller AS, Leffell DJ, eds. *Fitzpatrick's Dermatology in General Medicine*. Vol. 1. 7th ed. New York, NY: McGraw Hill; 2008:395–401.
- Tasar R, Wiegand C, Elsner P. How irritant are n-propanol and isopropanol? A systematic review. *Contact Dermatitis*. 2020;1–14. <https://doi.org/10.1111/cod.13722>.
- Stingeni L, Lapomarda V, Lisi P. Occupational hand dermatitis in hospital environments. *Contact Dermatitis*. 1995;33(3):172–176.

12. Verma GK, Mahajan VK, Shanker V, Tegta GR, Jindal N, Minhas S. Contact depigmentation following irritant contact dermatitis to chloroxylenol (Dettol). *Indian J Dermatol Venereol Leprol*. 2011;77(5):612–614.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

How to cite this article: Sinha S, Sardana K. Contact leukoderma following irritant contact dermatitis to an isopropanol-based hand rub: A consequence of rigorous hand hygiene. *Contact Dermatitis*. 2021;84:346–348. <https://doi.org/10.1111/cod.13743>

Central venous access device-associated contact dermatitis in patients with cancer: The utility of extensive screening patch tests

Pierre Marcant^{1,2}  | Alexandra Moreau¹ | Aline Da Silva³ |
Capucine Aelbrecht-Meurisse⁴ | Delphine Staumont-Sallé^{1,2}

¹CHU de Lille, Service de dermatologie, Lille, France

²University of Lille, Lille, France

³CH de Valenciennes, Service d'oncologie, Valenciennes, France

⁴Centre Oscar Lambret, Service d'oncologie, Lille, France

Correspondence

Dr Pierre Marcant, Department of Dermatology, Lille University Hospital, 2 avenue Oscar Lambret, 59000 Lille, France.
Email: pierre.marcant@chru-lille.fr

KEYWORDS: case report, central venous access devices, contact dermatitis, Dermabond, disinfectants

Skin complications associated with central venous access devices (CVADs) are frequently reported, including irritant contact dermatitis (ICD) and allergic contact dermatitis (ACD). Our case illustrates the necessity of using sufficiently extensive screening patch tests to identify the culprits and to limit treatment disruption in patients with cancer.

CASE REPORT

A 37-year-old man with metastatic testicle tumor requiring chemotherapy presented a papulovesicular eruption around a port-a-cath (PAC) implanted 48 hours earlier. Because of superinfection, the device was removed; lesions resolved in a few days. A peripherally inserted central catheter (PICC) was set as an alternative but the patient developed erythematous and erosive lesions 14 days later (Figure 1A) while antiseptics were still used. The PICC was finally removed due to the absence of improvement.

Patch testing including the European baseline, a plastic and glues, an epoxy series, chlorhexidine, and povidone-iodine was undertaken to identify a possible allergen common to both PAC and PICC implant

procedures. Tests revealed an atypical reaction to povidone-iodine “as is” (Figure 1B), and a negative reaction to other allergen preparations, including povidone-iodine 10% aq. Povidone-iodine-free treatment was suggested for a new PAC implant, but the patient still developed a local vesicular reaction 12 hours later (Figure 2).

Further patch tests were carried out with rubber additives, a diisocyanate, and a (meth)acrylate series as well as, semi-open, a surgical glue (Dermabond, 2-octyl cyanoacrylate), latex gloves, and several PAC components (pieces of the rubber, metallic, and plastic parts). At day (D)3, positive reactions were seen for Dermabond (++) (Figure S1) and ethyl cyanoacrylate 10.0% pet. (++) (Figure S2).

ICD to antiseptics and ACD to Dermabond were diagnosed and a new PAC was implanted, avoiding povidone-iodine and cyanoacrylates. No reaction resulted, allowing the resumption of the chemotherapy.

DISCUSSION

Skin allergy is the most common PICC-related complications in patients with cancer.¹ ICD is related primarily to the use of