

Allergic contact dermatitis caused by Olanedine[®] (olanexidine gluconate), a new antiseptic

Hiroshi Nagai¹  and Hitoshi Fukuda²

¹Division of Dermatology, Department of Internal Related, Kobe University Graduate School of Medicine, Kobe 650-0017 Japan and ²Department of Dermatology, National Hospital Organization Himeji Medical Centre, Himeji 670-8520 Japan

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Olanedine[®] (Otsuka Pharmaceutical Factory, Tokushima, Japan) is a novel biguanide-based antiseptic for external use, launched as a 'preoperative skin preparation' in Japan. The active ingredient of Olanedine[®] is olanexidine gluconate (CAS no. 799787-53-4; Fig. 1), which has been shown to exert a significant bactericidal effect against a wide range of bacteria, especially gram-positive cocci, including methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant enterococci (1). We

present the first 2 cases of allergic contact dermatitis (ACD) caused by this antiseptic.

Case Reports

Case 1

A 66-year-old woman underwent thoracoscopic surgery for left lower lobe lung cancer. At the time of surgery, Olanedine[®] was applied on her left back and chest. On postoperative day (POD) 10, she noticed a pruritic rash on her back; she consulted us on POD 12. On physical examination, sharply demarcated, irregularly shaped and slightly oedematous erythema was found on the left back and chest and on a part of the right back. The patient was treated with a topical corticosteroid and oral antihistamine. The pruritic erythema had mostly disappeared on

Correspondence: Dr. Hiroshi Nagai, Division of Dermatology, Department of Internal Related, Kobe University Graduate School of Medicine, 7-5-1 Kusunoki-cho, Chuo-ku, Kobe 650-0017, Japan. Tel: +81 78 382 6134; Fax: +81 78 382 6149; E-mail: hnagaikobe@gmail.com

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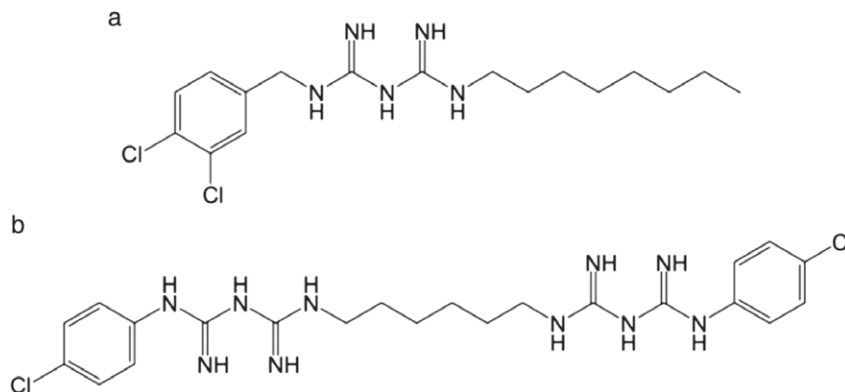


Fig. 1. Chemical structures of (a) olanedine and (b) chlorhexidine. (1).

day (D) 7 after commencement of treatment. Ten weeks later, we conducted closed patch tests with Olanedine® 'as is' alone, with two pharmaceutical additives, namely, 1% polyoxyethylene (20) polyoxypropylene (20) glycol diluted in saline, and 0.025% glucono- δ -lactone (CAS no. 90-80-2) diluted in saline, with 0.1% chlorhexidine gluconate aq. (Maruishi Pharmaceutical, Osaka, Japan), and with saline (as a negative control), by the use of Patch Tester Torii® (Torii Pharmaceutical, Tokyo, Japan). Positive reactions (++ according to the ICDRG classification system) on D2 and D3 were observed only at the patch test site of Olanedine®.

Case 2

A 65-year-old man underwent thoracoscopic surgery for left upper lobe lung cancer. At the time of surgery, Olanedine® was applied on his left back and chest. He was discharged 4 days after surgery, and noticed a pruritic rash on his back on POD 6; he then consulted his primary-care physician, and received treatment on POD 8. However, the pruritic rash did not improve, and the patient consulted us on POD 15. On physical examination, a sharply demarcated and irregularly shaped erythema was found on the left back and chest. Eight weeks later, we conducted patch tests with Olanedine® alone, and with the two pharmaceutical additives, namely, chlorhexidine gluconate, and saline; that is, we used the same methods described for case 1. Positive reactions (D2, +; D3, ++) were observed only at the site of Olanedine® application.

Normal control subjects were not patch tested, owing to the perceived risk of active sensitization upon occlusive

application. However, in case 1, a positive reaction was observed extending far beyond the area of application of the drug, and in case 2, an increasing positive reaction was observed on D3 as compared with D2.

Discussion

Notably, in these cases, erythema developed on POD 6 to POD 10, despite only one-time application of Olanedine® at the time of surgery. The erythema was sharply demarcated, and corresponded to the application site. Neither patient had a history of previous use of Olanedine®. These findings strongly suggest prolonged retention of olanedine gluconate in skin tissue, which induced contact allergy and elicited ACD after first-time and one-time use. Although we could not conduct patch testing with olanedine gluconate, the chief ingredient of Olanedine®, we suspect it of being the causative allergen in these cases, on the basis of patch testing with Olanedine® alone and its two excipients. Owing to the potential cross-reactivity between olanedine and chlorhexidine, the package insert of Olanedine® recommends judicious use for patients with a history of hypersensitivity to chlorhexidine. Neither of our patients had a history of hypersensitivity to antiseptics, including chlorhexidine. As in case 2, patients who receive Olanedine® application are at risk of developing ACD after hospital discharge. Medical staff need to be aware of the risk of ACD development at 6 days or later after its use, and inform patients. Patch testing with pure olanedine gluconate and identification of a suitable patch test concentration appear to be important to further characterize the sensitization risk associated with this new antiseptic compound.

References

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