

CONTACT POINT OPEN ACCESS

Benzalkonium Chloride Allergy Mimicking Tattoo Infection

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Benzalkonium chloride (BAK) is an antiseptic that has long been known to be an irritant. In recent years, its allergenicity has been highlighted [1]. This cationic surfactant from the quaternary ammonium family is widely used in the health field, particularly as a skin disinfectant in France in the form of Biseptine [chlorhexidine 0.25%, benzyl alcohol 4%, BAK 0.25%] (Bayer Healthcare, Gaillard, France).

1 | Case Report

We report the case of a 42-year-old woman who had recurring vesicular, eczematous, and itchy lesions on her right forearm for 3 months following a tattoo in the same location. She had a history of contact reactions to dressings without investigation. From the first day of tattooing, the patient developed local skin inflammation with a vesicular reaction attributed to *Staphylococcus aureus* infection by her general practitioner (GP) (Figure 1). She had no fever. She was treated with amoxicillin-clavulanic acid 3 g/d orally for 14 days, which partially improved her condition. She applied to the skin concomitantly Biseptine and Septivon 1.5% [chlorhexidine] (Perrigo France, Chatillon, France). Due to the persistence of inflammatory skin lesions on her forearm (Figure 1), she continued to apply antiseptics topically several times a day with Locoid 0.1% [hydrocortisone-17-butyrate] (Cheplapharm France, Levallois-Perret, France). In the absence of improvement, she was treated a second time by her GP with amoxicillin-clavulanic acid 3 g/d orally for 10 days without success. The skin condition finally improved with Dermalmoval 0.05% [clobetasol propionate] (GlaxoSmithKline, Rueil-Malmaison, France) locally and oral desloratadine 5 mg/d

on the advice of a dermatologist after stopping local antiseptics. A contact allergy to local antiseptics was suspected. We performed patch testing with Biseptine and its components (benzyl alcohol, chlorhexidine, BAK). The reading was done according to the International Contact Dermatitis Research Group criteria. The occlusion time was 48 h according to the European Society of Contact Dermatitis guidelines. The haptens were applied on the back using Finn Chambers. Patch tests were positive for BAK 0.1% aq (+) and Biseptine (BAK 0.25%, chlorhexidine 0.25%, benzyl alcohol 4%) aq (++) (Figure 2) at D2. The rest of the substances were negative at D2 and D3. Patient consent was obtained for this article.

2 | Discussion

This case illustrates a vesicular reaction due to an allergy to BAK present in Biseptine. A similar reaction was described with a contact allergy to the topical antibacterials polymyxin B and bacitracin [2]. Only 15 cases of monosensitisation to BAK in case of allergy to Biseptine have been described in the literature [3]. The patient's history of allergy to dressings is likely due to her allergy to BAK, as it may be a component of dressings [4]. BAK allergy is probably underestimated because sensitisation to BAK is not systematically sought. In our case, it is impossible to say whether the very first post-tattoo skin dermatitis was related to *Staphylococcus aureus* infection or was already due to BAK allergy. The patient did not have bacteriological skin analysis. Regardless, this case shows that it is important to rule out a contact allergy in case of signs of recurring local infection.

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FIGURE 1 | Patient's right forearm. Skin lesions after tattooing at D1 (A) and at D15 (B).

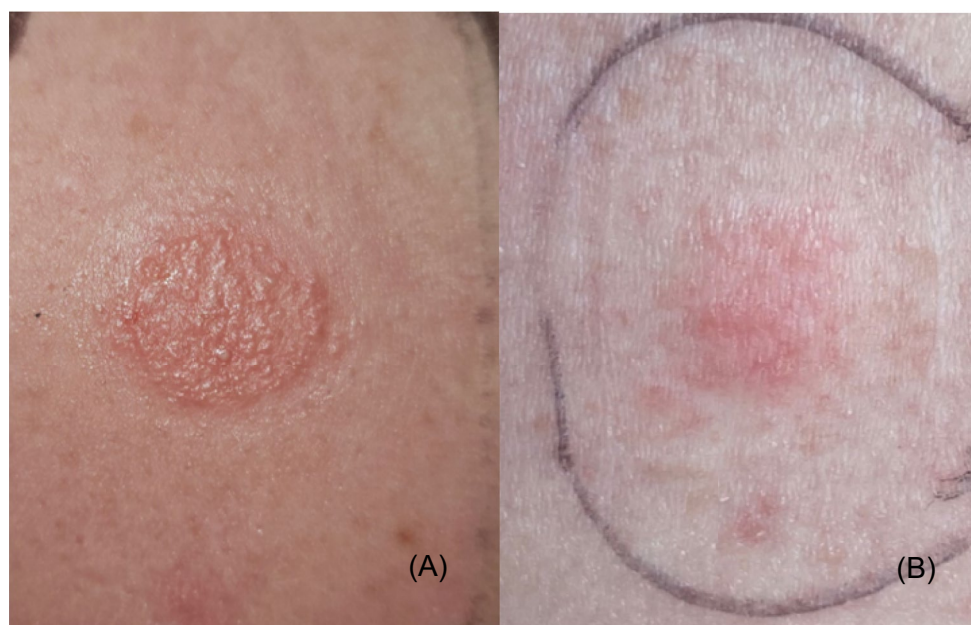


FIGURE 2 | Patch-testing to Biseptine (++) (A) and benzalkonium chloride (+) (B) at D2.

Author Contributions

Juliette Caron: conceptualization, investigation, writing – original draft, methodology, validation, visualization, writing – review and editing, data curation, supervision. **Florence Libon:** writing – review and editing. **Christine Delebarre-Sauvage:** writing – review and editing.

Conflicts of Interest

The authors declare no conflicts of interest.

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