



## Allergic Contact Dermatitis Due to Chlorhexidine in 2 Pediatric Patient<sup>☆</sup>

### Dermatitis alérgica de contacto a clorhexidina en dos pacientes pediátricos

To the Editor:

Allergic contact dermatitis has become more and more frequent in children in recent years.<sup>1</sup> This increase seems to be the result of greater exposure to allergens at younger ages, changes in cosmetic usage habits, and greater diagnostic suspicion, together with the increasingly frequent use of patch tests in this population.

**Patient 1.** A 5-year-old girl with no history of atopy presented with a flare of vesiculobullous, erythematous, pruriginous lesions on her right knee 24 hours after application of alcohol-based Cristalina (chlorhexidine digluconate, benzyl alcohol, and polysorbate 80) as an antiseptic to treat a wound (Fig. 1). Her parents denied having applied other topical products or any type of dressing and reported that similar lesions had appeared on several occasions during the previous 2 years when they had used the same antiseptic. She was prescribed topical betamethasone and fusidic acid, and her lesions disappeared after a few days. One week after the lesions resolved the patient presented with a reactivation at the same site, coinciding with



**Figure 1** Exudative, vesicular lesions on the knee (Patient 1).



**Figure 2** Positive results in an open test (upper) and semioclusive test (lower) (Patient 1).

sun exposure at the beach and with no previous application of any product.

Open and semioclusive tests performed with Cristalina both yielded a positive result at 96 hours (Fig. 2). The patch tests were performed with the standard series of the Spanish Contact Dermatitis and Skin Allergy Research Group (Grupo Español de Investigación en Dermatitis de Contacto y Alergia Cutánea [GEIDAC]) and the individual components of Cristalina (chlorhexidine 0.5% in petrolatum [pet], benzyl alcohol 1% pet, and polysorbate 80 10% pet). The results were only positive for chlorhexidine 0.5% pet at 96 hours. The result of the prick test with chlorhexidine 0.5% and 2% was negative, and an that of an intradermal test with chlorhexidine 0.5% diluted 1/1000 was positive at the immediate reading and at the delayed reading (1 week). The results of intradermal tests in 3 control patients were negative. Given the final diagnosis of allergic contact dermatitis caused by Cristalina with immediate and delayed sensitization to chlorhexidine, the parents decided not to complete the study using patch tests to evaluate possible worsening of the condition by sunlight.

**Patient 2.** A 2-year-old boy with congenital hypothyroidism and no history of atopy presented with flares of papular, erythematous, pruriginous lesions at an injection site that had first appeared 24 hours after the procedure and resolved spontaneously during the following days (Fig. 3). Clorhexidina Lainco, an aqueous solution of chlorhexidine digluconate 2%, was applied as an antiseptic before blood sampling. The results of open and semioclusive tests with Clorhexidina Lainco were positive at 48 hours. Subsequent patch testing with isopropyl alcohol 2.5%, 5%,

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**Figure 3** Erythematous papules at the injection site (Patient 2).

and 10% in water and chlorhexidine 0.5% in water yielded positive results to chlorhexidine at 48 and 96 hours. When antiseptic with chlorhexidine was suspended, the patient did not develop further lesions. The parents decided not to continue with the study.

Chlorhexidine is a topical fungicidal and bacterial antiseptic that has been widely used in health care since 1954, generally in the form of digluconate, aqueous solutions, or alcohol-based solutions.<sup>2</sup> It is used for hand washing, hygiene of hospitalized patients, presurgical antiseptic baths, and disinfection of the surgical area. It is also applied before placement and care of catheters and may be used to impregnate medical devices (eg, cannulas, dressings, catheters).<sup>3</sup> Furthermore, in recent years, chlorhexidine has been increasingly used as a biocide in all types of cosmetic products.<sup>4</sup>

Chlorhexidine can lead to local irritation. Other adverse effects, such as tooth discoloration<sup>3</sup> and fixed drug eruption,<sup>5</sup> are less common. In addition, chlorhexidine can potentially cause allergic contact dermatitis, photosensitivity,<sup>6</sup> urticaria, and anaphylaxis.<sup>4</sup> Some patients experience both immediate and delayed hypersensitivity reactions; therefore, even mild to moderate allergic dermatitis may indicate a potential risk of severe immediate-type reactions during subsequent exposure to chlorhexidine in this population.<sup>7</sup>

However, the sensitizing capacity of chlorhexidine is poor despite the frequency of its use. Series of patients assessed using patch tests show that between 0.5<sup>8</sup> and 13.1%<sup>9</sup> are sensitized to chlorhexidine, although in Europe, 1% is a more realistic prevalence.<sup>10</sup> The appropriate concentration for testing chlorhexidine has not been established. A concentration of 0.5% is probably more appropriate than 1%, since it leads to fewer irritant reactions.<sup>10</sup>

We report the cases of 2 children with allergic contact dermatitis to chlorhexidine, in 1 of whom sensitization was shown to be immediate. In patients with a positive patch test result to chlorhexidine, the workup should be

completed with skin tests in order to assess the possibility of immediate-type allergic reaction. Furthermore, in the case of a patient with urticaria or anaphylaxis during medical or dental treatments, chlorhexidine should be considered a possible trigger, alongside latex, anesthetics, and other drugs.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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