

Allergic Contact Dermatitis to Chlorhexidine in a Very Young Child

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Abstract: Allergic contact dermatitis to chlorhexidine is an unusual condition, with sensitization in childhood rarely reported. We report the observation of allergic contact dermatitis to chlorhexidine in a 23-month-old boy.

Allergic contact dermatitis to chlorhexidine is a rare condition (1–7). Reports of sensitization in childhood are uncommon. We believe in the possibility of a very early sensitization to chlorhexidine and report a new observation of allergic contact dermatitis to chlorhexidine in a young boy.

CASE REPORT

In March 2006, a 23-month-old child without a history of atopic dermatitis was referred for acute facial eczema occurring two days after he injured his forehead. His mother treated a wound with topical chlorhexidine-based antiseptic solutions (Biseptine[®], Pierre-Fabre Medicament, France; Diaseptyl[®], Bayer, France) and antibiotic cream (Fucidin ointment) (Fig. 1). The diagnosis of allergic contact dermatitis was suspected. All topical medications were stopped, and treatment with a mild topical steroid cream resulted in rapid healing.

Two months later, he was patch tested to the European contact standard series, a supplementary GERDA series added systematically and an antiseptic series, to-

gether with the topical agents that had been applied on the wound. At two days, patch testing showed many positive reactions (Fig. 2): balsam peru (2+), fragrance mix I (2+), nickel (2+), lyral (1+), Biseptine[®] (2+), Diaseptyl[®] (2+), chlorhexidine digluconate 5% aq (2+). The diagnosis of chlorhexidine contact dermatitis was established.

We were surprised with the early, numerous, and acute reactions, especially to chlorhexidine. On questioning, the mother stated that a chlorhexidine solution (Biseptine[®]) was used on a twice-a-day basis for umbilical cord care of the child, for more than one and half months duration. We believe this allowed early sensitization to chlorhexidine.

DISCUSSION

This observation expands the literature of allergic contact dermatitis to chlorhexidine in children. De Waard-van der Speck and Oranje recently reported the first case (8). Mailhol et al assessed the frequency of cutaneous sensitization to topical atopic dermatitis

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Figure 1. Very acute facial eczema occurred two days after application of topical antiseptics lotions.

treatments in 641 children with atopic dermatitis, showing that Chlorhexidine digluconate tested positive in 2.7% of tested children. Clinical relevance was confirmed in 8 of the 17 cases (9). Children were under the age of 16, but the exact age of the patients were not specified.

Chlorhexidine is a bisbiguanide chlorine used most often in the form of gluconate and digluconate. It is used as a topical disinfectant of wounds, surgical scrub, pre-operative skin preparation, and as an active ingredient in mouthwash to reduce dental plaque and oral bacteria. In the United States, it is mainly marketed under the brand names Hibiclens[®], Hibistat[®], (Molnlycke Health Care, GA, USA) and Betasept[®] (Purdue Products L.P., Stamford, CT, USA).

In this case, the prolonged use of chlorhexidine solution (Biseptine[®]) for umbilical cord care caused early sensitization. This case highlights the risk of chlorhexidine contact allergy, of potential significance given the common use of this antiseptic for umbilical cord care in many maternity centers (10). According to the World Health Organization, in hospital nurseries, it is probably best to apply a topical antimicrobial to the cord stump after cutting the cord and once a day for the first three



Figure 2. Erythematous, papulovesicular patch test reaction to Biseptine[®], Diaseptyl[®], and chlorhexidine digluconate associated with others contact sensitizations.

days (11). The potential of early allergic sensitization during cord care might be considered when choosing from available antiseptic substances.

In our patient, none of any other positive responses seemed relevant for this acute facial eczema. On the other hand, these positive tests suggest sensitization to perfume as a consequence of early exposure in children. It also displays that chlorhexidine allergy, as in adult patients, is more often associated with other contact sensitizations.

As other components of the different chlorhexidine preparations may also cause allergic contact dermatitis (12,13), we emphasize the importance of testing all the components of a suspect product. Biseptine® is composed of chlorhexidine gluconate, benzalkonium chloride, benzylic alcohol, and purified water. Diaseptyl® contains chlorhexidine digluconate, decyl glucoside, glycerol, trolamine, and purified water. Chlorhexidine was the only component both present in Diaseptyl® and in Biseptine®, which could explain the two positive reactions.

REFERENCES

1. Caumes E, Le Maitre M, Garnier JM et al. Clinical tolerance of cutaneous antiseptics in 3,403 patients in France. *Ann Dermatol Venereol* 2006;133:755–760.
2. Goon AT, White IR, Rycroft RJ et al. Allergic contact dermatitis from chlorhexidine. *Dermatitis* 2004;15:45–47.
3. Barraza V. Connubial allergic contact balanitis due to chlorhexidine. *Contact Dermatitis* 2001;45:42.
4. Osmundsen PE, Brandrup F, Andersen KE. Contact allergy to chlorhexidine. *Ugeskr Laeger* 1987;149:3048–3050.
5. Lasthein Andersen B, Brandrup F. Contact dermatitis from chlorhexidine. *Contact Dermatitis* 1985;13:307–309.
6. Shoji A. Contact dermatitis from chlorhexidine. *Contact Dermatitis* 1983;9:156.
7. Osmundsen PE. Contact dermatitis to chlorhexidine. *Contact Dermatitis* 1982;8:81–83.
8. de Waard-van der Spek FB, Oranje AP. Allergic contact dermatitis to chlorhexidine and para-amino compounds in a 4-year-old boy: a very rare observation. *Contact Dermatitis* 2008;58:239–241.
9. Mailhol C, Lauwers-Cances V, Rancé F. Prevalence and risk factors for allergic contact dermatitis to topical treatment in atopic dermatitis: a study in 641 children. *Allergy* 2009;64:801–806.
10. Mullany LC, Darmstadt GL, Khatri SK et al. Topical applications of chlorhexidine to the umbilical cord for prevention of omphalitis and neonatal mortality in southern Nepal: a community-based, cluster-randomised trial. *Lancet* 2006;367–368.
11. World Health Organization. Care of the umbilical cord. 1998.
12. Kaminska R, Mörtenhumer M. Allergic contact dermatitis from phenolsulfonphthalein in chlorhexidine solution. *Contact Dermatitis* 2007;56:358–360.
13. Le Coz CJ, Meyer MT. Contact allergy to decyl glucoside in antiseptic after body piercing. *Contact Dermatitis* 2003;48:279–280.