

In the management of wounds, it is important to consider allergic contact dermatitis when a wound is recalcitrant. In this communication, we report patients with sensitization to sorbitan sesquioleate (SSO) in *Adaptic*[®] non-adhering dressings.

Allergic contact dermatitis is a common, but still remains an under-recognized phenomenon in patients with recalcitrant wounds. There are many possible causes including sensitization to constituents of agents used to treat the wounds. In the management of wounds, it is important to consider allergic contact dermatitis when a wound is recalcitrant.

Patients and Methods

Patients

We report 3 cases, 1 child and 2 adults, in whom the recalcitrant wounds arose because of sensitization to *Adaptic*[®] non-adhering dressings.

Patch testing

All patients were patch tested at our outpatient clinic to investigate a possible allergic contact dermatitis to *Adaptic*[®] non-adhering dressings and/or its ingredients.

Case 1

The department of plastic surgery referred a 14-year-old boy to the outpatient department of paediatric dermatology at Erasmus MC-Sophia

Children's Hospital. The patient was born with a left clubbed foot for which he underwent conservative and operative corrections. For a period, he suffered from hypertrophic scar problems whereby the scar was regularly damaged because of rubbing in the shoes. After various treatments with intralesional corticosteroids and relief measures, he underwent several operative corrections at the age of 10 years. He received a plaster cast for 3 weeks followed by a splint after the last intervention. The wound was treated with *Adaptic*[®] non-adhering dressings. He was referred to us after about 4 weeks because of painful and slow wound healing accompanied by progressive skin abnormalities around the wound.

Dermatological examination of the left lower leg showed a visible scar with erosive areas dorsal from the medial malleolus. A diffuse to moderately sharp-bordered area consisting of erythema, erosions, crusts and desquamation was present around the scar (Fig. 1).

Eczema, most probably based on a contact allergy was considered. Patch tests using TRUE-test[®], supplemented with tixocortol-17-pivalate, budesonide, emollient and *Adaptic*[®] were conducted. After 4 days, a 3+ reaction only to *Adaptic*[®] was noted (Fig. 2).

Supplementary patch tests with *Adaptic*[®] and the individual constituents liquid paraffin, SSO (20% pet.) and Polysorbate 80 (5% pet.) were undertaken. Once again after 4 days, a 3+ reaction to *Adaptic*[®], in addition to a 3+ reaction to SSO were noted (Fig. 3).

Allergic contact dermatitis to sorbitan sesquioleate in *Adaptic*[®] wound dressing

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Fig. 1. Sharp-bordered erythematous, squamous and partly erosive abnormality around the scar at the level of the Achilles tendon.



Fig. 2. Patch tests in patient 1. A 3+ reaction to Adaptic® was visible after 4 days.



Fig. 3. Supplementary patch tests in patient 1 (reading after 4 days) whereby positive reactions (3+) with Adaptic® and sorbitan sesquioleate were observed.

Case 2

A 73-year-old man was referred by the department of surgery to our dermatology outpatient department in connection with painful and slow wound healing and a persistent skin abnormality around the wound.

The patient had a complicated leg fracture on the right side for which he had been treated with external fixtures and several 'split skin grafts'. The wound was treated with Adaptic® dressings. On his own initiative, the patient had also used Adaptic® for some time on his left leg because of several wounds following a period of increased swelling. Progressive skin abnormalities had also arisen on this leg.

At dermatological examination of the right leg, a moderately sharp-bordered area consisting of erythema, erosions, crusts and desquamation

was observed. A similar picture was also observed on the left leg, but with sharper border and a prominent rectangular form. There was also some pitting oedema, worse in the left leg than in the right leg (Fig. 4).

Eczema, most probably based on a contact allergy was considered. Patch tests using the European Standard Series supplemented with an additional series, Adaptic® and

its individual constituents [liquid paraffin, SSO (20% pet.) and Polysorbate 80 (5% pet.)] were conducted. A 2+ reaction to fragrance mix, Adaptic®, and a 3+ reaction to SSO were noted after 4 days.

Case 3

A 19-year-old woman was referred by a plastic surgeon to our outpatient department because of skin abnormalities that had arisen after undergoing breast reductions. She was not known to have eczema or any other skin disorders. At dermatological examination of her breasts, sharp-bordered, weepy erythematous and partially squamous abnormalities with a prominent rectangular form were observed. Eczema, most probably based on a contact allergy was considered. Patch tests using the European Standard Series supplemented with an additional series and Adaptic® were conducted. A 2+ reaction to Adaptic®, a 3+ reaction to SSO and a 2+ reaction to fragrance mix were noted after 4 days. Positive reactions of 2+, 2+ and 1+ to composite mix, oak moss and cinnamyl alcohol, respectively, were also noted.

Discussion

We report 3 patients with an eczematous reaction indicating contact allergy and who tested positive for Adaptic® non-adhering dressing (Table 1). Adaptic® non-adhering dressing consists of liquid paraffin, Polysorbate 80 (Tween 80), SSO (Arlacel C) and aqua purificata. Patch tests to SSO were positive in all 3 reported patients. 2 of the patients also had a positive patch test to fragrance mix, one as a solitary finding without reactions to the individual fragrances, the other with positive reactions to composite mix, cinnamyl alcohol and oak moss.

SSO is a mixture of the mono- and di-esters of sorbitol and its mono- and

Table 1. The results of patch tests in patients 1, 2 and 3 after 4 days

	Patient 1	Patient 2	Patient 3
Adaptic®	3+	2+	2+
SSO	3+	3+	3+
Fragrance mix 1	neg	2+	2+
Oak moss	NT	neg	2+
Cinnamyl alcohol	NT	neg	1+
Composite mix	NT	neg	2+

neg, negative; NT, not tested; SSO, sorbitan sesquioleate.



Fig. 4. Ventral sides of the lower legs of patient 2. The rectangular form and the sharp border are prominently noticeable on the left lower leg.

di-anhydrides with oleic acid. Sorbitan esters are oil-soluble, water-dispersible, non-ionic surfactants, which function as water-in-oil emulsifiers. SSO is present as an emulsifier in topical medicaments and cosmetics. It is also present as an emulsifier in fragrance mix and in composite mix. Patients may be falsely regarded as having an allergic reaction to fragrance mix and composite mix if they are not concomitantly patch tested with SSO (1).

SSO is a rare sensitizer in patients with leg ulcer. Mallon and Powell reported 340 patients with leg ulcers who were patch tested. 5 of these patients were noted to be allergic to SSO (2). In another study, 1 patient was reported with contact urticaria to SSO in corticosteroid ointment.

In 737 patients with suspected cosmetic-related or drug-related contact dermatitis who were patch tested with 6 emulsifiers, only 7 patients had a positive reaction to SSO (3).

Wound dressings may contain potential allergens, which may more easily lead to a contact allergy in a skin with a compromised epidermal barrier. Patients may be exposed to many topical drugs and dressings if healing of the skin is poor. Sensitization may occur in such patients, and may increase if the epidermal barrier

remains compromised for prolonged periods (4, 5).

To the best of our knowledge, contact allergy to Adaptic® non-adhering dressing because of SSO has been reported only incidentally (6).

Conclusion

The results of the patch tests in all 3 cases are consistent with a contact allergy to Adaptic® wound dressing on the basis of sensitization to the emulsifier SSO.

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