

CONTACT POINTS

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Allergic contact dermatitis to regenerated oxidized cellulose contained in a matrix employed for wound therapy

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We describe a case of a 40-year-old non-atopic woman with recurrent leg ulcers because of the factor V Leiden mutation who developed a severe eczematous lesions of the skin surrounding an ulcer of the right leg after the use of a protease-modulating matrix (Promogran®, Johnson and Johnson, Gargrave, Skipton, UK). The patient was patch tested with the SIDAPA (Italian Society of Allergological, Occupational and Environmental Dermatology) standard series, a piece of the device as is, of the bovine collagen (Zyderm®, Collagen Corporation, Palo Alto, CA, USA) as is, a piece of the gauze containing only regenerated oxidized cellulose (Tabotamp®, Johnson and Johnson, Gargrave, North Yorkshire, UK) and of a fold towels in pure cellulose (Foscart, Bassano del Grappa, Italy). Patch tests gave a positive reactions to nickel sulphate and Promogran® as is. We showed that the sensitizing agent was regenerated oxidized cellulose, a substance the treatment of ulcers and as is in and in combination with collagen in surgery for intraoperative hemostasis. The case reported suggests that regenerated oxidized cellulose can cause allergic contact dermatitis.

Key words: allergic contact dermatitis; protease-modulating matrix; regenerated oxidized cellulose; ulcer.

Case report

A 40-year-old non-atopic woman with recurrent leg ulcers because of

hypercoagulation caused by the factor V Leiden mutation, presented to our unit with eczematous lesions of the skin surrounding an ulcer of the right leg. The ulcerative lesion had been treated for 3 months with a protease-modulating matrix (Promogran®, Johnson and Johnson, Gargrave, Skipton, UK), containing bovine collagen and regenerated oxidized cellulose. Clinical examination also showed multiple papulo-vesicular lesions scattered over the limbs and the trunk. The symptoms regressed after suspension of the treatment and 15 days therapy with topical corticosteroids (mometasone furoate) and oral antihistamine. After healing, the patient was patch tested with the SIDAPA (Italian Society of Allergological, Occupational and Environmental Dermatology) standard series and the following products: a 1 × 1 cm piece of the device as is, 0.2 m² of the bovine collagen (Zyderm®, Collagen Corporation, Palo Alto, CA, USA) as is, a piece of 1 × 1 cm of a gauze containing only regenerated oxidized cellulose (Tabotamp®, Johnson and Johnson, Gargrave, North Yorkshire, UK) and finally with a 1 × 1 cm piece of a fold towels in pure cellulose (Foscart, Bassano del Grappa, VI, Italy). Patch tests were performed using the AlchambersTM (Euromedical, Calolziocorte, LC, Italy). Readings were made after 2 and 4 days. Positive reactions (++) were observed at day 2 and day 4 to nickel sulphate and Tabotamp® as is; 10 healthy subjects patch tested as controls with the above mentioned substances showed no reactions.

Discussion

Allergic contact dermatitis (ACD) is a common complication of leg ulcers (1). The chronic nature of the affection, the skin barrier impairment and the need for prolonged application of topical agents may disclose the sensitizing capacity of chemical agents that are commonly well tolerated. We report an unusual case of allergic contact dermatitis to a topical agent containing bovine collagen and

regenerated oxidized cellulose used for wound therapy. We showed that the sensitizing agent was regenerated oxidized cellulose, a substance used in combination with collagen, in the treatment of ulcers and as is in surgery for intraoperative hemostasis.

Other adverse reactions to regenerated oxidized cellulose are neurological complications (paraplegia and optic neuropathy) (2–3), visceral granuloma, which can mimic a neoplasm (4) and cutaneous necrosis after cervicofacial lifting (5).

Although there are in literature other reports of ACD to cellulose-derived polymers (6–9), this is the first report of ACD to oxidized regenerated cellulose. This substance is a polyanion that includes 2 potentially biologically reactive components, namely uronic acid and a fibrous component (10). However, many other unidentified chemical agents are present in the product (10). Even if we do not yet know which of all these is the sensitizing component in regenerated oxidized cellulose, we cannot exclude that ACD can be related to additives or to its degradation products rather than the main components. Infact, the latter are polymer with high molecular weight whose penetration into the skin is likely to be difficult. Finally, the case herein reported suggests that regenerated oxidized cellulose can cause ACD, especially when contained in products designed to a prolonged skin exposure.

References

1. Tavadia S, Bianchi J, Dawe R S, et al. Allergic contact dermatitis in venous leg ulcer patients. *Contact Dermatitis* 2003; 48: 261–265.
2. Dogan S, Kocaeli H, Doygun M. Oxidised regenerated cellulose as a cause of paraplegia after thoracotomy: case report and review of the literature. *Spinal Cord* 2005; 43: 445–447.
3. Arat Y O, Dorotheo E U, Tang R A, Boniuk M, Schiffman J S. Compressive optic neuropathy after use of oxidized regenerated cellulose in orbital surgery: review of complications, prophylaxis, and treatment. *Ophthalmology* 2006; 113: 333–337.

4. Somani B K, Kasthuri R S, Shave R M, Emtage L A. Surgicel granuloma mimicking a renal tumour. *Surgery* 2006; 139: 451.
5. Abs R. Le Surgicel® à l'origine d'une nécrose cutanée dans un lifting cervico-facial: un cas clinique. *Ann Chir Plast Esthet* 2004; 49: 43–46.
6. Schwartz B K, Clendenning W E. Allergic contact dermatitis from hydroxypropyl cellulose in a transdermal estradiol patch. *Contact Dermatitis* 1988; 18: 106–107.
7. Hamada T, Horiguchi S. Allergic contact dermatitis due to sodium carboxymethyl cellulose. *Contact Dermatitis* 1978; 4: 244.
8. Castelain M, Veyrat S, Laine G, Montastier C. Contact dermatitis from nitrocellulose in a nail varnish. *Contact Dermatitis* 1997; 36: 266–267.
9. Jordon W P, Dahl M V. Contact dermatitis from cellulose ester plastic. *Arch Dermatol* 1972; 105: 880–885.
10. Pierce A M, Wiebkin O W, Wilson D F. Surgicel: its fate following implantation. *J Oral Pathol* 1984; 13: 661–670.

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