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Allergic contact dermatitis caused by sodium dehydroacetate, not hyaluronic acid, in Ialuset[®] cream

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Modern dressings designed to promote healing are becoming more and more sophisticated. Hyaluronic acid, known for its role in the healing process, is a novel ingredient of these dressings. The molecule is commercialized under various galenical forms, such as cream, impregnated clothes, meshes, and microgranules. In particular, hyaluronic acid cream has been indicated in recent years as a skin healing cream for treating weeping wounds, including leg ulcers (1, 2). However, it is generally admitted that leg ulcers are at high risk for becoming sensitized to the topical drugs, this risk being estimated to be near 70%. In this context, new wound dressings are becoming more frequent as a cause of contact dermatitis (3–7).

We herein report 9 cases of contact eczema following application of hyaluronic acid cream.

Case Report

We retrospectively reviewed all patients seen in four distinct dermatological departments with proven contact eczema caused by hyaluronic acid cream between 2008 and 2010 (Table 1). A total of 9 patients were recruited, 6 of whom were women and 3 of whom were men. The ages of the patients varied from 17 to 93 years. Hyaluronic acid cream was prescribed for leg ulcers (5 cases), for traumatic wounds (2 cases), for cellulitis (1 case), and as an emollient for dry skin (1 case). In most cases, the clinical presentation was that of acute eczema, except for patient 9, in whom contact eczema was suspected because of a non-healing ulcer. The median time between the first application of the drug and the diagnosis of eczema was 1 month

in 5 cases. All patients were applied the cream daily. Eight patients were tested with the European baseline series (Chemotechnique[®], Vellinge, Sweden), 4 were tested with a leg ulcer series (Chemotechnique[®]) (cases 1, 2, 3, and 4), and all patients were patch-tested with the commercialized cream used (Ialuset[®], Genevrier, Antibes, France). Patch tests were read according to the guidelines of the International Contact Dermatitis Research Group. All patients tested positive (++) to the cream (Fig. 1). Multiple sensitizations were found in 6 patients (*Myroxylon pereirae* for 6 patients, fragrance mix for 3 patients, and lanolin and Amerchol[®] 101 for 2 patients). The components of the cream were kindly provided by Genevrier[®] (Antibes, France), and were tested in 7 patients. Of these, 4 were found to be positive for sodium dehydroacetate 3% (++) (Fig. 2), 3 were positive for Lanette[®] SX, and 1 (case 2) was negative for all of the cream components.

Discussion

To date, there is no reported case of contact eczema caused by Ialuset[®] cream. In this respect, our 9 cases provide evidence suggesting that there should be further investigation of this topical treatment as a possible cause of contact eczema in patients undergoing treatment with the cream for leg ulcers. In our cases, hyaluronic acid, the main active ingredient of the cream, was not the specific cause of the sensitivity reactions. Indeed, in the majority of these studied cases, the identified allergens were sodium dehydroacetate or Lanette[®] XS. Sodium dehydroacetate, a preservative used in cosmetic products, is usually well tolerated. However, in these cases, we believe that the combination of two factors may have contributed to the emergence of this substance as a possible allergen: its application on broken skin, and the potentiating role of propylene glycol, also found in the cream, which may have facilitated its absorption.

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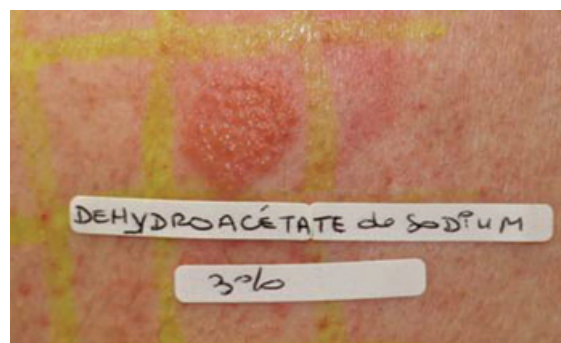
Table 1. Details of clinical characteristics and patch test investigations in 9 patients with suspected contact allergy to Ialuset® cream

Patient, age (years)	Sex	Indication	Galenical form	Reaction delay	Lesions	Results of patch testing with Ialuset® cream and ingredients	Baseline series
Patient 1, 86	F	Leg ulcer	Cream	ND	Periulcerative eczema	Ialuset® cream: ++ Lactic acid: IR Sodium dehydroacetate 1%: + (96 hr) Sodium dehydroacetate 3%: + (96 hr)	<i>Myroxylon pereirae</i> Fragrance mix I Budesonide
Patient 2, 76	F	Leg ulcer	Cream	ND	Periulcerative eczema	Ialuset® cream: ++ Ingredients: –	<i>Myroxylon pereirae</i> Fragrance mix I PPD
Patient 3, 61	M	Leg ulcers	Cream	2 months	Periulcerative eczema	Ialuset® cream: ++ Lanette® SX: ++ (48 and 96 hr) Methyl paraben: ++ (48 and 96 hr) Sodium dehydroacetate 1%: ++ (48 and 96 hr) Sodium dehydroacetate 3%: ++ (48 and 96 hr)	Thiuram mix <i>Myroxylon pereirae</i> Fragrance mix I Lanolin Paraben mix Amerchol® L101 Cetearyl (cetostearyl) alcohol
Patient 4, 93	F	Leg ulcers	Cream	ND	Periulcerative eczema	Ialuset® cream: ++ Lanette®: + (96 hr)	
Patient 5, 33	M	Traumatic wound	Cream and clothes	1 month	Eczema	Ialuset® cream: ++ Ialuset clothes: – Sodium dehydroacetate 3%: ++ (48 and 96 hr)	Chromium Cobalt Nickel <i>Myroxylon pereirae</i> ND
Patient 6, 75	F	Xerosis (legs)	Cream	3 weeks	Eczema	Ialuset® cream: ++ Sodium dehydroacetate 3%: ++ (48 and 96 hr)	
Patient 7, 57	M	Leg cellulitis	Cream	1 month	Eczema	Ialuset® cream: ++ Ingredients not tested	<i>Myroxylon pereirae</i> Methylisothiazolinone
Patient 8, 17	F	Traumatic wound	Cream	1 month	Eczema	Ialuset® cream: ++ Sodium dehydroacetate: – Lanette® SX: +	Negative
Patient 9, 90	F	Leg ulcer	Cream	ND	Non healing of ulcer	Ialuset® cream: ++ Ingredients not tested	<i>Myroxylon pereirae</i> Lanolin Amerchol® L101 Laurylglucoside Methylmethacrylate

F, female; IR, irritant; M, male; ND, not done; PPD, p-phenylenediamine.

**Fig. 1.** Patch test reading of ++ on D2 at the site of application of Ialuset® cream.

In conclusion, the incidence of contact allergy is known to be high in patients suffering from leg

**Fig. 2.** Positive patch test reaction to sodium dehydroacetate 3%.

ulcers. In this context, it seems important to clarify the implications of new sensitizing agents provided by modern wound dressings, and, as much as possible, to perform patch tests with all of the excipients' components.

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