

ORIGINAL ARTICLE

An unusual presentation of a common condition: Allergic contact dermatitis

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Allergic contact dermatitis commonly affects patients with chronic venous leg ulcers and can contribute to impaired wound healing. Many allergens have been identified, and despite the use of advanced dressings, the incidence of allergy has remained high. We discuss an unusual presentation of allergic contact dermatitis in a patient with a chronic wound. The patient's history was consistent with a recurrent venous leg ulcer, but on this occasion, the wound continued to deteriorate despite optimal treatment. This prompted further investigation, which included patch testing. Although the clinical features were not suggestive of allergy, the patch test was positive for several allergens, including Atrauman® dressings, which the patient was using at the time. This case highlights the importance of regular reassessment and accurate diagnosis for the management of chronic wounds. It also demonstrates that allergic contact dermatitis can contribute to delayed wound healing without causing the classical clinical features of inflammation of the surrounding skin, and even hypoallergenic, non-adherent dressings can be sensitising.

KEYWORDS

allergic contact dermatitis, chronic wound, delayed healing, dressings, venous leg ulcer

1 | INTRODUCTION

Contact dermatitis can have detrimental effects on wound healing; it has been shown to impair wound healing in animal models¹ and has been reported to cause non-healing wounds.² Two types of contact dermatitis are frequently observed in patients with chronic leg ulcers; irritant contact dermatitis, caused by exudate, and allergic contact dermatitis, caused by a contact allergen such as a specific type of dressing. Many studies have reported a high incidence of allergic contact dermatitis in patients with chronic leg ulcers.^{3–8} In a UK study of 200 patients with venous or mixed leg ulcers, positive patch tests were found in 68% of patients, with multiple allergens identified in 51%.⁵ A comparative study of patients with chronic leg ulcers and surrounding contact dermatitis and those with dermatitis alone

found that a significantly higher proportion of the leg ulcer group had at least one positive reaction on patch testing.⁷ The risk of allergy is related to the duration of ulcerative disease rather than the duration of the current ulcer.⁹ The prolonged use of topical treatments and dressings, disruption to the natural skin barrier, and chronic inflammation associated with venous ulcers are thought to contribute to the high incidence of allergic contact dermatitis in these patients.¹⁰ The use of occlusive compression bandaging is also expected to increase exposure and sensitisation to potential allergens.⁴ The nature of allergens is likely related to local wound care practice, that is, commonly used agents, and the rate of contact dermatitis remains high despite the now common use of advanced wound dressings.^{9,11} Therefore, patch testing should include patients' own products (past and current topical treatments and dressings) in

addition to standard series'.⁸ Examples of common allergens include fragrances, topical antimicrobials, and rubber accelerators.⁵ Non-adherent dressings are very rarely sensitising and have therefore been recommended for use in patients where contact dermatitis is suspected but patch testing is not readily available.⁵

Inflammation of the surrounding skin, particularly in the distribution of the dressings, is suggestive of allergic contact dermatitis; however, it should be suspected in any case of dermatitis in patients with chronic leg ulcers.¹⁰ The 2010 SIGN guideline recommends patch testing for patients with venous leg ulcers and surrounding dermatitis, especially when it does not respond to treatment with topical corticosteroids.¹² A study of 354 patients with chronic leg ulcers found that the rate of sensitisation did not correlate with the presence of eczema or erythema.⁹ Whilst dermatologists, who have ready access to patch testing and experience of allergic contact dermatitis, may know that it can occur without the typical features of dermatitis, wound practitioners are less likely to be aware of this. We describe an unusual presentation of allergic contact dermatitis in a patient with a chronic venous leg ulcer with the aim of raising awareness of this condition as a possible contributor to non-healing.

2 | CASE DESCRIPTION

A 50-year-old woman had a 15-year history of a recurrent venous ulcer in the left gaiter area. This started spontaneously as a small blister, which progressed to a chronic wound. Although it healed on multiple occasions with simple dressings and compression, it always recurred after 6 to 9 months. Her past medical history included antiphospholipid syndrome, which had caused multiple left femoropopliteal deep vein thromboses, for which she was on life-long warfarin. Despite multiple treatments, including a variety of dressings, topical and systemic antimicrobials, and compression bandaging, on this occasion the wound became increasingly painful and continued to enlarge. Her ankle-brachial pressure index was normal. She had a moderately raised C-reactive protein (48 mg/L) but a normal white cell count. A biopsy of the wound edge was non-specific, with changes consistent with chronic inflammation and no signs of dysplasia or malignancy. Tissue samples sent for microbiology were positive for *Proteus mirabilis* and *Corynebacterium striatum*, both of which were scanty growth.

Due to severe pain and worsening appearances of the wound despite optimal treatment as an outpatient, she was admitted to hospital for bed rest and intensive wound treatment (see Figure 1). This included alternate-day potassium permanganate and acetic acid soaks, Atrauman® dressings (PAUL HARTMANN Ltd, Heywood/Lancashire, UK), and 3-layer compression bandaging. She also underwent patch testing to rule out any element of allergic contact dermatitis. This was done to the British Society of Cutaneous Allergy

Key Messages

- allergic contact dermatitis can impair wound healing and is reported to have a high incidence in patients with chronic venous leg ulcers
- an unusual presentation of allergic contact dermatitis in a patient with a recurrent venous leg ulcer is discussed
- although rare, hypoallergenic, non-adherent dressings such as Atrauman® can be sensitising
- regular reassessment and consideration of the underlying diagnosis and any contributing factors are vital for optimal wound care

(BSCA) standard series, our departmental medicament and lower leg series (Chemotechnique Diagnostics, Modemgaten, Sweden). The patches were applied to the back using Finn chambers® on Scanpore tape (Vitaflor Scandinavia AB, Goteburg, Sweden). Readings were taken according to the International Contact Dermatitis Research Group criteria,¹³ read at Day 2 and Day 4, with results as shown in Table 1.

She had several positive reactions to *Myroxylon per-eirae* (balsam of Peru) and fragrance mix 1 (both of unknown relevance), Inadine™ (Systagenix, West Sussex, UK) and povidone iodine (of past relevance), and Atrauman® dressings (of current relevance). As a result, the Atrauman® dressings were stopped, and the patient was treated with a topical corticosteroid. Following this, the pain and the appearance of the wound improved (see Figure 2).

3 | DISCUSSION

Protection and treatment of the peri-wound skin is considered to be a vital part of optimal wound care. Contact dermatitis can impair wound healing and is particularly



FIGURE 1 The appearance of the wound on admission to hospital. At this time, the wound was being dressed with Atrauman® dressings. The wound bed appears inflamed and unhealthy. The surrounding skin, however, is generally healthy, with minimal erythema at the superior wound edge

TABLE 1 Positive patch test results

Product tested	Reading at Day 2	Reading at Day 4
Atrauman [®] dressing	–	+
Inadine [™] dressing	+	++
Povidone iodine (10%)	+	+
<i>Myroxylon perei</i> (balsam of Peru) (25%)	+	+
Fragrance mix 1 (8%)	++	++



FIGURE 2 The same wound 3 weeks later. There is a marked improvement; the wound bed contains areas of healthy granulation tissue, the edge is epithelialising and there has been a reduction in size

common in patients with venous leg ulcers. It should be suspected when there is inflammation of the surrounding skin, typically in the distribution of the dressings. During our clinical practice, we have noticed that a reduction in pain and an improvement in the appearance of the wound following removal of dressings can also be suggestive of allergy.

We have described a patient who was unexpectedly diagnosed with allergic contact dermatitis, with an allergy to Atrauman. In this case, the finding of a positive patch test was surprising for several reasons. First, the patient did not have typical features of allergic contact dermatitis. She did have occasional flare-ups of dermatitis which were likely stasis-related and responded well to treatment with a topical steroid ointment. Secondly, when contact dermatitis is suspected, it is our routine practice to stop using advanced dressings and topical treatments and use a simple non-adherent dressing, such as Atrauman[®], as well as requesting patch testing. Atrauman[®] is a non-adherent polyester mesh impregnated with neutral triglycerides. It consists of a

support fabric made of hydrophobic polyester tulle impregnated with an ointment that contains Caprylic/Capric/Myristic/Stearic Triglyceride and Bis-Diglyceryl Polyacyladipate-2 (from product information sheet). It is marketed as a hypoallergenic product, and allergies to it are rare. We were, unfortunately, unable to obtain the individual chemical constituents of the Atrauman[®] to investigate exactly which constituent of the dressing was causing the allergy.

This patient had a history of recurrent venous ulceration; however, on this occasion, the wound continued to deteriorate despite optimal treatment, which prompted further investigation, including a biopsy and patch testing. Although the clinical features were not suggestive of allergy, the patch test was positive for the dressings she was using at the time, which was exacerbating the wound and delaying healing. This case demonstrates the importance of regular reassessment during the care of chronic wounds and ensuring the correct underlying diagnosis, as well as considering possible contributing factors. The cause of chronic wounds is often multifactorial, and a comprehensive history and examination should be carried out, with subsequent re-review if healing is not progressing as expected with optimal treatment.

CONFLICT OF INTEREST

The authors have no conflicts of interest.

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