

AVOIDING ALLERGIC REACTIONS IN SKIN

Pauline Beldon is Tissue Viability Nurse Consultant for Epsom and St Helier Hospitals NHS Trust

Patients with venous leg ulcers are more prone to allergic contact dermatitis from common dressings and treatments, so it is important to know how to recognise the symptoms and how to stop such allergies from recurring.

There are hundreds of different wound dressings available for selection in the UK. All trusts have a wound formulary which contains the various dressings to be used in that trust. This limitation of the variety and sizes of dressings is for both economic and clinical reasons. The trust formulary is usually selected by tissue viability/wound specialists, together with the formulary pharmacist and frequently members of the procurement department. The tissue viability nurse's role is to ensure that the wound dressing is as effective as claimed by its manufacturer, and that it is suitable for use on the range of wound aetiologies seen in the clinical area.

One important aspect of dressing selection is to identify and minimise or remove any potential skin sensitising agents from the dressing used. This ensures the patient's safety and reduces the risk of contact sensitivity of the skin surrounding a wound or ulcer. However, this is not always possible as sometimes a patient



Figure 1. Patient has developed a skin sensitivity to an adhesive bordered dressing. Note the inflamed skin in the shape of the dressing around the ulcer site.

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is not aware of any potential contact sensitivity until he/she has a dressing applied. A dressing may have been applied to one area of the body with no sensitivity problems, but when it is applied to another area a

problem arises. This is because the immune system is 'triggered' by the first application, with subsequent applications of the allergen causing a skin reaction, which in some cases can be severe (British Association of Dermatologists [BAD], 2009).

Patch test studies on patients with venous leg ulcers and other chronic wound conditions show that patients with venous leg ulcers have a greater tendency towards skin sensitivity or allergy than those in the other

group (Tavadia et al, 2003; Saap et al, 2004; Lim et al, 2007).

Patch testing — the literature

Patch testing should be done on a skin site where the irritation or dermatitis is not obvious. The allergens are mixed with a non-allergic material (the base) to a suitable concentration. They are then placed in direct contact with the skin, usually on the upper back, within small aluminium discs. Adhesive tape is used to fix them in place and the test sites are marked. The patches are left in place for 48 hours. On removal of the patches the area is left exposed for one hour and then an initial examination is performed by a dermatologist or dermatology nurse specialist. After this, areas are re-covered and a final examination is performed 48 hours later. The patient will be given information regarding the allergens which have caused a reaction so that he/she may avoid them in future.

Tavadia et al (2003) performed patch testing using the European standard series of sensitisers, antimicrobials and medicaments on 200 patients with venous leg ulcers. A majority (68%) were found to have a positive patch test, 51% of which had multiple allergies. The commonest allergies were to fragrances, antimicrobial agents, Intrasite® Gel (Smith and Nephew Healthcare), Hioxyl® cream (Ferndale), rubber accelerators and topical corticosteroids. Saap et al (2004) patch tested 54 patients with venous leg ulcers and discovered that 63% of them

had positive patch test results to one or more allergens.

Lim et al (2007) noted that there were no published studies examining the incidence of skin sensitisation in Asian patients and determined to investigate the rate of contact sensitisation in patients with chronic venous leg ulcers in Singapore, and the variation in the common allergens based on local practices, compared with those in Western countries. Forty-four patients were patch tested to the National Skin Centre standard series, steroid series, medicaments, topical Chinese medicaments, and to modern wound dressings. The overall rate of contact sensitisation was 61.4%. The common allergen groups were topical antibiotics (18.2%) and topical traditional Chinese medicaments (TTCM) (15.9%). Individually, colophony (11.3%), Saw Hong Choon skin ointment (Kam Bo Med, Hong Kong) (11.3%), Balsam of Peru (9.1%), and povidone iodine (9.1%) were among the most frequent allergens. The sensitisation rate among users of TTCM was notably high (41%). Lim et al (2007) concluded that a high rate of contact sensitisation was found, similar to previous reports from Western studies (Tavadia et al, 2003). The researchers noted that TTCMs played a major role as possible allergens in Asian patients, so a history of their use should be elicited during the initial assessment, and, where possible, patch testing should include the commonly used TTCMs.

These three recent studies (Tavadia et al, 2003; Saap et al, 2004; Lim et al, 2007)

Table 1.

Common allergens for venous leg ulcer patients

- ▶▶ **Colophony:** found in some bordered dressings with adhesive edges, some cohesive bandages, adhesive tapes
- ▶▶ **Dyes:** used in compression hosiery
- ▶▶ **Rubber accelerators:** such as carba and thiuram; found in some rubber gloves, compression bandages and hosiery
- ▶▶ **Lanolin:** found in common moisturisers and barrier creams
- ▶▶ **Emulsifiers:** Cetylstearyl alcohol, cetyl alcohol; prevalent in creams, e.g. aqueous cream, Diprobace® (Schering-Plough), corticosteroid creams and some paste bandages
- ▶▶ **Preservatives:** Parabens/hydrobenzoates, cloccresol; preservatives in some creams to prolong shelf life. Cloccresol is used in many corticosteroid creams

Table 2.

Questions to identify patients at risk of ACD

Have you ever had an allergic reaction/skin rash to:

- ▶▶ Sticking plaster or any wound dressing
- ▶▶ Any metals, e.g. earrings, rings, watchstrap
- ▶▶ Wool, lanolin
- ▶▶ Skin creams, e.g. E45®
- ▶▶ Dyes
- ▶▶ Perfumes
- ▶▶ Rubbers, e.g. gloves
- ▶▶ Any cream/ointment prescribed by a doctor

demonstrate the high incidence of skin sensitivity in venous leg ulcer patients. *Table 1* describes some of the commonest skin sensitisers/allergens for leg ulcer patients.

Allergic contact dermatitis

Allergic contact dermatitis (ACD) is a cell-mediated hypersensitivity (delayed type IV) to environmental allergens; i.e. an individual's immune system becomes sensitised to a specific allergen or allergens, e.g. components of

wound dressings or rubbers in bandages (Bourke et al, 2001). ACD occurs when a previously encountered substance or allergen comes into contact with the skin of a previously sensitised individual (Smith, 2004), hence a patient may initially not have a reaction to a particular wound dressing, but after a week symptoms begin to develop. The affected area may be oozing, draining or crusting and cause intense irritation and even acute pain for the patient (Figure 1).

Patient

In addition to the discomfort and inconvenience of their venous leg ulcer, these patients are at an increased risk of developing skin sensitisation or contact dermatitis as a result of using a dressing or bandage which contains one of the common allergens. It is vital that those practitioners providing a leg ulcer management service, or who regularly treat patients with leg ulcers, question the patient closely regarding any known allergies. If a patient reports any allergies, his or her potential for developing a contact sensitivity from an ulcer dressing and/or bandaging is increased. Thus, only simple wound or ulcer dressings should be used (Royal College of Nursing [RCN], 2006). Table 2 outlines questions to add to a leg ulcer assessment proforma which may help to identify patients who may be at risk of developing an ACD during treatment of their venous leg ulcer (Beldon, 2006).

Practice implications in patient treatment

Good infection control practice demands that nurses wear gloves when in contact with



Figure 2. On removal of bandaging this patient is discovered to have developed an acute allergic contact dermatitis to an ulcer dressing. Note the red, inflamed and wet appearance, however, the patient is not pyrexial and his white cell count is not raised.



Figure 3. Infected leg ulcers which have caused widespread inflammation of the leg. The patient does have pyrexia and a raised white cell count.

patients with a wound — this is vital to prevent cross-infection. However, the gloves contained in many wound-care packs are latex, and following frequent contacts may induce an ACD in patients, not to mention the nurses (Wilkinson and Burd, 1998). Substituting vinyl gloves may reduce the risk of ACD.

On removal of old bandages, carefully observe the skin for any inflammation and take note of any comments the patient makes regarding heat, irritation or any other sensations they may have noticed. When acute, ACD may mimic infection,

so differential diagnosis is important to avoid unnecessary use of antibiotics. Figure 2 shows the extent of damage to the skin caused by an acute allergic reaction to a dressing which has led to a painful, inflamed area, looking very similar to an acute infection, hence the need for careful assessment of the area. Take the patient's temperature and check the white cell count and C-reactive protein, which are the inflammatory markers that indicate infection, as misdiagnosis of infection could lead to the patient having unnecessary courses

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of antibiotics, which would be inappropriate and may lead to more side-effects (Beldon, 2001). Similarly, widespread ACD may be mistaken for cellulitis (Brown and Burton, 2005) (Figure 3).

It is common practice to wash venous leg ulcers in warm water in order to care for the whole limb and not just the ulcerated area. Emollients are commonly added in an attempt to moisturise the skin which can become dry under regular bandaging. They are meant to make the skin soft and supple and help to prevent any breaks or fissures which could act as a portal for infection. They also help to lessen insensible loss of moisture from the skin and so reduce the dryness which causes irritation and itching. However, since some emollients contain wool alcohols or preservatives

to prolong shelf-life, it is perhaps advisable to use only warm water (Cameron, 1998).

If an emollient is to be used, a simple emollient such as 50% liquid in 50% soft white paraffin is advisable. This contains no preservatives and so avoids any potential allergens. The emollient should be applied in the direction of hair growth to prevent clogging of the hair follicles, and thus minimising the risk of folliculitis.

As said above, it should be noted that it is possible for patients with venous ulceration to develop a skin sensitivity to an emollient, so those containing lanolin or cetylstearyl alcohol should be avoided (Cameron, 1998). It is vital that the nurse is conversant with emollient preparations and their constituents prior to application (Brown and Butcher,

2005). Table 3 outlines some common emollients and their constituents.

Selecting dressings and bandages

If the patient states known allergies to products such as rubber gloves, various creams, etc. to minimise the risk of an allergic reaction, it is vital to select only those dressings which avoid all known potential skin sensitisers. Using simple, non-adherent ulcer dressings, such as N/A Ultra® (Johnson and Johnson) or Mepitel® (Mölnlycke Health Care) for ulcer beds, which are for low to moderately exuding wounds, or Sorbion Sana® or Aquacel® (ConvaTec) hydrofiber dressing for moderate to heavily exuding ulcer beds, can help to reassure patients and nurses that no skin reaction will occur.

If the patient feels that the wool padding layer, which is vital under compression bandages to protect the skin, is irritating, the nurse should interpose a cotton tubular bandage, such as Stockinette™ (Medlock Medical) or Tubinette™ (Mölnlycke Healthcare) between the skin and wool layers. This does not include those cotton tubular bandages which are slightly elasticised and have a coloured line through them, as these contain a small amount of elastane which may trigger a skin reaction in those patients with known allergy to rubber or rubber accelerants.

Some compression bandages contain latex or colophony and are best avoided in patients with a known allergy to those sensitisers. However, this can pose a problem if that particular

Table 1.

Common emollients and their constituents (adapted from Burr, 1999)

Common emollients used in primary care	Type of product	Key constituents
Hydromol® cream (Ferndale)	Fragrance and lanolin free cream	Arachis oil, liquid paraffin, sodium pyrrolidone, sodium lactate, isopropyl myristate
Epaderm® (Mölnlycke Health Care)	Emollient	Yellow soft paraffin, emulsifying wax
Diprobase® cream (Schering-Plough)	Cream/ointment	Liquid paraffin, white soft paraffin
Oilatum® cream (Stiefel)	Cream	Arachis oil
E45® (Crookes Healthcare)	Cream, wash and bath oil	Hypoallergenic lanolin, white soft paraffin, light liquid paraffin, anhydrous paraffin
Balneum Plus (Almirall)	Bath oil and cream	Soya oil and mixed lauramacrogols cream, urea
Dermol® 500 lotion (Dermal)	Antimicrobial emollient lotion	Benzalkonium chloride, chlorhexidine hydrochloride, liquid paraffin, isopropyl myristate

Key points

- ▶▶ Venous leg ulcer patients have a high disposition towards skin sensitivity.
- ▶▶ Leg ulcer assessment should include skin assessment.
- ▶▶ Avoid use of rubber/latex gloves.
- ▶▶ Minimise the risk of skin sensitivity by avoiding dressings and bandages which include latex, dye, or colophony.

bandage is the most appropriate for an individual patient's venous leg ulcer, lifestyle and limb shape. Some compromise should be reached and using the pure cotton tubular bandage both inside and outside the compression bandage may help. Alternatively, another bandage could be selected as it is rare for only one type of compression bandage to be appropriate for a patient.

Nurses or practitioners who are regularly involved in the management of venous leg ulcers must be conversant with the constituents of wound dressings, emollients and bandages to reduce the risk of allergic contact dermatitis for their patients.

Treatment of allergic contact dermatitis

Treatment is likely to involve the use of steroid preparations in addition to emollients and should be led by a nurse specialist or clinician in dermatology, leg ulcers or wound management.

Patient education

All nurses are responsible for

health promotion. In those patients with chronic venous ulceration or who are elderly and have suffered an ACD, it is important to question them closely regarding their purchase of over-the-counter soaps, creams and lotions. The patient's skin may be very dry and require an emollient, perhaps one has been used which contains common sensitisers for those with leg ulceration, such as lanolin, cetylstearyl alcohol and perfume. For the practitioner to be able to advise a patient on a suitable emollient, it is important that they are familiar with the range of emollients available (Burr, 1999).

Conclusion

Venous leg ulcer management can be fraught with difficulties due to the patient's underlying comorbidities. Allergies to ulcer dressings and bandages pose just one such problem. Consequently, patients with venous leg ulcers deserve a comprehensive assessment, which should include the possibility of allergies to minimise the risk to the patient. **WE**

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Glossary

Contact dermatitis: Dermatitis and eczema are interchangeable, they mean the same thing

Folliculitis: Infection of the hair follicles

Patch testing: A means of testing whether a substance which comes into contact with the skin is causing inflammation of the skin