

ECZEMA ASSOCIATED WITH VENOUS LEG ULCERS

When associated with venous leg ulcers, eczema is known as gravitational eczema, stasis eczema, varicose eczema or venous eczema, due to its relationship to the underlying cause. These terms describe the skin changes that occur as a result of venous hypertension where venous pressure is increased in the legs because of incompetent deep and superficial veins. The exact pathophysiology is unclear although it is understood to be associated with leakage of blood products into the surrounding tissues and the activation of the inflammatory cells that cause the skin changes (Draper, 2011). This article will describe how venous eczema develops and what signs and symptoms to look out for. It will also discuss the management of venous eczema, including best practice in the use of emollient preparations.

“In both acute and chronic eczema, skin changes can lead to an increased risk of infection and reduction in the barrier function of the skin.”

Eczema is an itchy, inflammatory disorder of the skin (Cameron, 2007) and can be classified into acute or chronic eczema. Acute eczema presents as inflamed, itchy, wet skin that often has blisters visible on the skin surface. However, chronic eczema presents as dry, scaly patches of itchy skin. In both cases, skin changes can lead to an increased risk of infection and reduction in the barrier function of the skin.

Acute eczema can occur as a result of a contact allergy, whereas chronic eczema is more likely related to chronic disease, such as venous hypertension. In both cases, the skin reaction can range from mild to severe and as such the management plan will change accordingly. Venous eczema is common especially in older people and is reported to affect 20% of people over 70 years of age. Approximately 10% of people with

varicose veins go on to develop skin changes (Nazarko, 2009)

Eczema and venous disease

Venous eczema may be present on the lower leg with or without the presence of ulceration. It may be the precursor to venous ulceration and, therefore, should be identified at an early stage by healthcare professionals to ensure preventative treatments are in place (Hoffman, 2010).

Monk and Graham-Brown (1992) suggested that varicose eczema coincides with underlying venous disease, however, how it develops and its relationship to venous dysfunction is unclear.

The venous system is made up of deep and superficial veins that are linked by perforator veins. Veins have valves that allow blood to travel either back to the heart or from the deep to the

superficial veins via the perforators (Anderson, 2008).

Venous hypertension occurs when the valves become damaged through trauma, surgery, venous thrombosis, pregnancy and obesity. Blood flows back into the deep veins causing an increased volume and a rise in pressure. This causes venous congestion, leading to a loss of nutrients and oxygen that cannot reach the skin and underlying tissues. Skin changes, such as eczema, occur as a result. As the veins become engorged, the walls of the veins stretch allowing fluid, proteins and red blood cells to leak out into the tissues. This causes skin irritation leading to venous eczema. Patients with venous leg ulcers show a greater tendency towards allergy than the general population because of this (Saap et al, 2004).

Signs and symptoms of venous eczema

As a result of the underlying disease process, the skin on the lower leg changes and the higher the degree of venous disease the more pronounced the skin changes can be. The inner aspect of the lower leg is the first to be affected (Rycroft et al, 2010). Chronic venous eczema appears as dry, scaly, itchy patches on the lower leg (*Figure 1*). The skin scales that are commonly seen are flakes of keratinised epidermal cells, which lie on the skin surface (Rycroft et al, 2010). With chronicity and prolonged inflammation, the scales become thickened and are often described as hyperkeratosis (All Wales TV Nurse Forum, 2014).

In the case of acute eczema, the skin becomes red, wet and itchy. Occasionally, there can be skin scaling depending on the chronicity of the venous disease. Acute eczema on the lower leg is often associated with a contact or irritant sensitivity reaction. It can often be difficult



Figure 1. Patient with venous leg ulcer. Note dry, scaly, eczematous skin on leg.

to determine whether the eczema is a result of an immune mediated allergic response or an irritant reaction (British Dermatological Nursing Group [BDNG], 2012). Patients with chronic venous eczema have an increased risk of sensitivity due to the impairment of the skin's natural barrier function (Cameron, 2007).

Wilson et al (1991) suggested that skin changes resulting from venous eczema impair the skin's natural barrier function and when occlusive dressings and bandages are applied to an area of vulnerable skin, this may create the perfect environment for the development of an allergic contact dermatitis.

Common leg ulcer allergens include hydroxybenzoates (also known as parabens) and chlorocresol, which are preservatives found in creams and wool fat, including lanolin used in some ointments. However, the newer types of lanolin-based emollients rarely cause adverse reactions (Stone, 2000). Propylene glycol is used in humectant emollients to help the skin absorb moisture and cetosteryl alcohol, which is an emulsifier also found in emollients, are both also potential sensitisers.

Management of venous eczema

The successful management of venous eczema is twofold and consists of treating the underlying venous hypertension and rehydration of the skin. If the underlying cause is not treated, the outcome of any other treatment regimen is unlikely to be successful.

Venous hypertension is best treated with compression therapy in the form of compression bandages, compression hosiery or compression garments. These increase blood flow through the veins and reduce pressure in the capillaries allowing fluid to drain from the tissues to reduce oedema. This, in turn, allows more nutrients and oxygen to be delivered to the skin reducing the risk and development of venous eczema (Anderson, 2008).

Alternatively, venous surgery in the form of foam sclerotherapy or venous ablation will block the incompetent veins and re-route the venous blood to the other healthy veins in the leg.

Venous eczema will improve with compression therapy because venous hypertension is reduced, however, the skin in the lower legs also benefit from the application of topical emollient



Figure 2. Selection of topical emollients.

therapy. Research undertaken by Held et al (2001) suggests that emollients accelerate regeneration of the skin barrier function following disruption when the most lipid-rich emollients are used.

Emollient therapy

The term ‘emollient’ implies a material that softens and smoothes the skin both to the touch and to the eye (Loden, 2003). The aim of emollient therapy is to rehydrate the epidermis and, in particular, the stratum corneum, which is the top layer of the skin, and to reduce the signs and symptoms of dry skin, such as scaling and itching (All Wales TV Nurse Forum, 2014).

Emollients work either by occlusion, where moisture is trapped into the skin or by drawing moisture into the stratum corneum from the underlying dermis. The mechanism of action depends on the constituents of the emollient (Rawlings et al, 1994).

Occlusive emollients contain oils such as paraffin, which form a layer of oil on the skin to prevent moisture evaporation. They do not fully absorb into the skin, whereas humectant emollients penetrate into the stratum corneum where they attract and retain water. They contain substances

such as urea or glycerine which, on penetration of the epidermis, they draw water in from the dermis (Loden, 2003).

There are also emollient preparations available to help with itching and also with added antiseptic properties to prevent infection (Table 1).

Emollient preparations are commonly found as creams, ointments and lotions, however, gels or mousses are also available (Figure 2). Ointments contain the highest number of lipids, which make them greasy, while creams are less greasy than ointments and, as such, are more acceptable to patients. However, creams contain preservatives and because of the higher risk of sensitisation as previously described they are best avoided on the lower legs of patients with venous disease. Lotions have a higher water content making them easier to absorb, however, they have a lower impact in the hydration of the skin.

The consistency of an emollient is affected by the type of lipid within it, such as oil or wax, the proportion of the lipid to water, the ambient temperature and what other additives are in the product (BDNG, 2012) They should, therefore, be

prescribed to meet the individual’s specific needs based on a full skin assessment and diagnosis of venous eczema. Table 1 describes a selection of emollients, their constituents and where they should be used or avoided. This should be taken as a guide only as there are still many unanswered questions as to exactly which emollient should be used, how frequently they should be applied, where and when they should be applied and how to use them alongside other therapeutic products (BDNG, 2012).

Emollients should be prescribed depending on the individual requirements needed to rehydrate the skin. Emollient wash products include soap substitutes that reduce the drying effects caused by off-the-shelf soap products, as well as bath/shower additives that are either added to water or used in the shower. These are mainly oil-based, fragrance-free and non-foaming and aim to reduce the drying effects of water by leaving a layer of oil on the skin. Some emollient wash products have antimicrobial properties for skin that is infected, however, they should not be used routinely for non-infected skin (Primary Care Dermatology Society and British Association of Dermatologists, 2006).

It is important that healthcare professionals recognise that emollients should be applied as soon as possible after the skin has been bathed to ensure that the moisture is trapped against the skin and not lost through evaporation. The use of emollient wash products are an essential part of the complete emollient package of care and patients should be educated on their effective use.

‘Leave-on’ emollients, such as ointments and creams, are designed to be applied to the skin and left in place to begin hydrating the skin. They should be applied on a regular basis to

Table 1. Emollient preparations (this list is not exhaustive). Adapted from the Joint Formulary Committee, (2007).

Emollient	Indications	Comments
Aqueous cream	Soap substitute	Originally developed as a soap substitute and not a leave-on emollient. Has a high water content, which makes it less effective for dry skin. Moncrief et al (2013) identified that aqueous cream showed potential damage to skin with compromised barrier function when used as a leave-on product
Diprobase® (Schering-Plough)	Leave-on occlusive emollient. Ointments should be used for patients with venous eczema	Avoid the cream in venous eczema as it contains preservatives that may cause reactions
Doublebase™ (Dermal Laboratories)	Leave-on occlusive product with emollient and humectant properties. Range of bath, shower and wash products, as well as gel. It has a high oil content	Doublebase Dayleve gel is particularly effective when patients are unable to apply frequently as it has high oil and glycerol content
Epaderm™ (Mölnlycke Health Care)	Leave-on emollient available in cream and ointment. It can also be used as a soap substitute	Contains cetostearyl alcohol, which can be a potential sensitiser
E45 (Forum Health Products Limited)	Leave-on emollient available as a cream or lotion	Contains hypoallergenic lanolin, parabens and cetostearyl alcohol; all are potential sensitisers in venous leg ulcer patients
50/50 white soft paraffin and liquid paraffin	Leave-on emollient. Dry, scaly skin. Suitable under compression bandages. Very greasy so patient acceptance unless occluded is low	Paraffin-based emollients pose a fire risk, especially when used in high quantities
Hydromol® (Alliance Pharmaceuticals)	Highly occlusive leave-on emollient. Available as an ointment, cream, bath and shower emollient and an intensive emollient with 10% urea	Contains no fragrances, colour of preservatives, but does contain cetostearyl alcohol. Avoid the intensive Hydromol on moist or broken skin as may cause skin irritation
Balneum® (Almirall Limited)	Balneum is a humectant leave-on emollient, which contains 5% urea	Urea is not an allergen as it is found naturally in the skin.
Balneum® Plus (Almirall Limited)	Balneum Plus contains urea and lauromacrogols, which help to sooth and relieve itchy skin	Urea is not an allergen as it is found naturally in the skin. Lauromacrogols have properties of a topical anaesthesia and anti-pruritic
Dermol® (Dermal Laboratories Limited)	Antimicrobial emollient. Available as a wash, shower, bath, lotion and cream	It is advisable to stop Dermol preparations when the infection has cleared. Contains cetostearyl alcohol

maintain their effectiveness and also prescribed in sufficient quantities to provide an effective occlusive barrier to prevent water loss (Joint Formulary Committee, 2007). It is recommended that between 250–600 g of emollient is used weekly, depending on the dryness of the skin. For patients with venous eczema where application is to the legs only, between 50–100 g may be a more realistic amount per week especially if they are in compression bandages which may be changed 2–3 times weekly.

Topical steroids can also be effective in the management of venous eczema in the acute phases. Steroids reduce inflammation that is often associated with venous eczema, however, they should only usually be prescribed for a maximum of 2 weeks (Langoen and Lawton, 2009). Once the inflammation settles, the steroid preparation should be reduced gradually and then stopped. There is still a debate regarding whether or not the emollient or the steroid preparation should be applied first (BDNG, 2012). In cases of extremely dry inflamed skin, the emollient would usually be applied first to soften the skin prior to application of the topical steroid. However, if an occlusive emollient is used this may affect the absorption of the steroid, unless enough time is left in between applications.

Summary

Venous eczema can be challenging to manage partly because of the intensive regimen of skin care that is required. The skin must be rehydrated to reduce the itching and dryness and also to prevent secondary infection. A robust emollient regimen will ensure the skin's barrier function is not compromised and together with effective compression therapy the venous eczema should be able to

be controlled. Each patient should be treated on an individual basis as there may not be one emollient preparation that suits everyone's specific needs. **WE**

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