

Introduction

Red legs syndrome is a common condition associated with venous and dermatological conditions that is frequently misdiagnosed as cellulitis, resulting in unnecessary and inappropriate treatment. Differential diagnosis is required to identify and treat the underlying cause. Management involves a combination of self-care, lifestyle changes, topical medications and underlayers/compression.

Red legs syndrome (RLS) presents as redness, warmth and tenderness of the lower limbs, without raised systemic temperature or malaise, in patients with a history of chronic venous disease, chronic oedema and dermatological conditions (Salmon, 2016; Wounds UK, 2019). It is more common in older people and those unable to self-care due to lack of support at home or reliance on the assistance of carers (Hayes, 2010; Elwell, 2014, 2020). The conditions and risk factors associated with RLS are given in Table 1.

Table 1. Conditions and risk factors associated with red legs (Elwell, 2014; Salmon, 2016; Wounds UK, 2019)

Conditions	Risk factors
Vascular eczema	Inability to self-care
Lipodermatosclerosis	Older age (>60 years)
Tinea pedis	History of/current deep vein thrombosis
Dermatitis	Poor mobility
Chronic oedema/lymphoedema	Obesity
Deep vein thrombosis	
Necrotising fasciitis	

Comprehensive assessment including medical history, clinical examination and simple investigations (see Table 2) is required for accurate diagnosis as various conditions can cause redness of the lower extremities. Red legs are often diagnosed as cellulitis (Elwell, 2020). With an 11% annual increase in UK hospital admissions for lower-limb cellulitis management (Driscoll et al, 2014) and misdiagnosis rates of 28–33% – the majority of which are venous eczema, lipodermatosclerosis and lymphoedema (Nazarko, 2013) – misdiagnosis is a growing issue. Differential diagnosis (see Table 2) prevents

Table 2. Identification and differential diagnosis of red legs (Hayes, 2010; Nazarko, 2013; Elwell, 2014)

Red legs	Cellulitis
<i>Clinical examination</i>	
Bilateral	Unilateral; very rarely bilateral
Painful/itchy	Painful/tender
No systemic symptoms	Systemic symptoms – fever, malaise, rigours, vomiting – may be present
Warm	Hot
Erythematous, inflamed	Erythematous, inflamed
Scaly, crusty skin (lipodermatosclerosis) or vesicles with woody skin (venous eczema)	One or a few bullae; non-scaly
Atrophe blanche (lipodermatosclerosis) or lesions on other body parts (venous eczema)	Absent
Haemosiderin staining (chronic venous disease) may be present	Absent
Lesions on other leg	No lesions elsewhere
<i>Associated medical history</i>	
Eczema, lipodermatosclerosis, tinea pedis, dermatitis, oedema/lymphoedema, deep vein thrombosis, varicose veins, poor mobility/self-care	Antimicrobial treatment, infection site (ulceration, trauma, fungal infection), previous cellulitis, recent travel, intravenous drug use, chronic oedema/lymphoedema
<i>Common investigation findings</i>	
White cell count normal	White cell count high
C-reactive protein normal (slightly elevated in acute lipodermatosclerosis)	C-reactive protein high

inappropriate treatment, unnecessary hospitalisation and patient distress (Clinical Resource Efficiency Support Team, 2005; Elwell, 2014; Wounds UK, 2019).

Medications (e.g. gabapentin and pregabalin), possible irritants (e.g. soaps and detergents) and dressings should be considered during patient assessment, as they can exacerbate RLS (Elwell, 2020). Antibiotics are ineffective and should be avoided; their use exposes the patient to side-effects and increases the risk of antibiotic resistance (Nazarko, 2013; Elwell, 2020). Physical and psychosocial factors that contribute to RLS, including obesity, limited mobility, poor self-care and prolonged dependency of the legs, need to be identified and addressed to reduce the chance of recurrence (Salmon, 2016; Elwell, 2020).

Management

A good skin care regimen and appropriate topical medications form the basis of best practice, see Box 1. Regular application of emollient is key for hydrating and soothing dry, itchy or scaly skin and reducing the risk of future flareups (NHS, 2017). Emollient ointments are most effective, as they are thick, greasy and very moisturising; whereas creams are not very greasy, so should be second line (NHS, 2017). Some products contain ingredients that can cause sensitivities, so a bland emollient is preferable.

Tinea pedis should be treated with an appropriate antifungal. The patient should also be given disinfectant to use in their socks/shoes to reduce the chance of reinfection.

Box 1. Treatment for RLS management (adapted from Elwell, 2020)

- Soap substitute
- Bland emollient to soothe and hydrate skin
- Antifungal treatment and disinfectant to treat tinea pedis
- Antipruritic creams and antihistamines to address itching
- Topical steroids to reduce inflammation and itching

Itchy, sore or inflamed skin should be promptly treated with a 2-week course of potent steroid cream, such as Betnovate, followed by up to a month of lower-potency steroid cream (Elwell, 2020). Antipruritic creams can be applied to the legs to reduce itching and antihistamines taken to break

the itch–scratch cycle. The anti-pruritic properties of zinc and/or ichthammol may also be effective in breaking this cycle. This prevents the condition worsening and reduces the risk of wounds and infection resulting from scratching. An antibacterial or soothing underlayer, e.g. Ichthopaste (Figure 1), Viscopaste PB7 (Figure 2), DermaSilk garments or Skinnies, provides a protective layer, reducing the incidence of scratching, particularly at night (Elwell, 2020). Underlayers can be worn 24 hours a day and are designed to be used under compression hosiery.



Figure 1. Ichthopaste



Figure 2. Viscopaste PB7

Patients with swollen legs or venous insufficiency should be assessed for and offered long-term compression (see Table 3), in the absence of red flags for peripheral arterial disease (Salmon, 2016; Wounds UK, 2015). If chronic oedema or lymphoedema of the foot or toes is present, toe caps should be used under compression/ bandaging (Elwell, 2020). Therapeutic-level compression can be administered promptly and safely, even in the absence of an ankle–brachial pressure index, using the British Lymphology Society Vascular Assessment Tool (British Lymphology Society, 2018).

Table 3. Compression hosiery for conditions associated with red legs (adapted from Wounds UK, 2015)

Conditions	With oedema	Without oedema
<i>Primary prevention</i>		
Mild to moderate varicose veins, Ankle flare, Mild hyperkeratosis	18–21 mmHg Off-the-shelf Flat-knit made-to-measure	14–17 mmHg Off-the-shelf Circular knit/made-to-measure
Hyperpigmentation, Venous dermatitis		18–14 mmHg Off-the-shelf Circular knit/made-to-measure
<i>Ongoing maintenance and early/medium intervention</i>		
Varicose eczema/contact dermatitis, Atrophie blanche, Severe varicose veins, Moderate hyperkeratosis	22–32 mmHg Off-the-shelf Flat-knit made-to-measure	18–24 mmHg Off the shelf Circular knit/made-to-measure
Chronic oedema (toes, feet, leg)	40 mmHg (hosiery kit)	40 mmHg (hosiery kit)
<i>Intensive management</i>		
Acute or chronic lipodermatosclerosis, Severe hyperkeratosis, Lymphoedema/lipoedema	34–46 mmHg Flat-knit made-to-measure	40 mmHg (hosiery kit), if appropriate

Patient circumstances and preferences – independent/reliant on carers/in a care home, mobility, symptoms, preferred fabric, etc – should be considered. Silk inserts, functional zones, Velcro/zip fastenings, wraps, application aids, different garments at night and extra pairs may be appropriate and aid compliance (Elwell, 2020).

Pain, if present, should be assessed and suitable analgesia provided. Patients should be advised to take the treatment as prescribed to avoid the chance of breakthrough pain.

Patient wellbeing and education

Educating patients about their condition and involving them in its management will aid concordance and reduce the likelihood of recurrence.

Regular walking, with or without walking aids, and specific activities to aid mobility, such as chair-based exercise, yoga and pilates, should be recommended (Elwell, 2020). There are guides (www.thebls.com/pages/everybodycan) and free videos online that patients can be directed to. Patients should be advised that:

- Exercise works the muscles, which:
 - Increases venous and lymph flow
 - Reduces swelling
 - Improves RLS
 - Helps maintain a healthy weight
- Being overweight exacerbates symptoms.
- Healthy eating will speed up recovery.

Education about self-care, how to apply treatment and how to monitor their RLS (see Box 2) is essential. The importance of moisturising should be emphasised and patients offered the option of trying alternative emollients if they do not like the one they are given. Highlight that continued use will prevent skin breaks and dry skin forming in the future (Salmon, 2016).

Box 2. Advice for patients (adapted from Elwell, 2020)

- Keep nails short and clean to reduce damage from scratching
- Avoid scented soaps and detergents
- Wash affected areas daily with a soap substitute
- Dry thoroughly, particularly between the toes and skin folds, then apply emollient
- Moisturise with an emollient, ideally 3–4 times a day
- Wait 30 minutes after moisturising before applying topical steroids
- Exercise regularly (walk and/or perform chair exercises)
- Photograph legs using smart phones to monitor treatment progress; include circumference measurements if oedema is present
- Keep a chart/calendar and add a face (happy, neutral, sad) each day to identify whether treatment is working

Involving the patient in the selection of compression hosiery and explaining how the garments/fabrics work to support veins/ reduce swelling without restricting movement or making the legs hot will likely increase their correct use (Elwell, 2020). Patients without carers can be advised to use self-care aids (Elwell, 2020):

- A sponge or tissue held in a long-handled or telescopic grabber to dry between toes.
- Separate radiator paint rollers (cleaned regularly) and a telescopic handle to wash and moisturise with.

Zinc and skin integrity

Zinc is essential for growth, immune function, tissue maintenance and wound healing (Kogan et al, 2017). The skin contains approximately a fifth of the body's total zinc, with the epidermis containing the highest concentration (Eagle, 1999; Maher, 2015). Zinc deficiency is associated with older age and morbidities such as dermatological disorders and chronic wounds – common factors in RLS – as well as poor diet (Lansdown et al, 2007; Kogan et al, 2017).

The application of topical zinc oxide has been reported to soothe red, irritated skin, reduce wound debris, improve healing rates, promote epithelialisation, and to have antioxidant, antifungal and antibacterial actions (Fincham Gee, 1990; Eagle, 1999; Lansdown et al, 2007; Pasquet et al, 2014; Maher, 2015; Kogan et al, 2017). Zinc oxide is predominantly used to treat chronic dermatological conditions and lower limb

ulcerations. Viscopaste PB7 (10% zinc oxide) and Ichthopaste (6.32% zinc oxide and 2% ichthammol) are cotton bandages suitable for use in patients with RLS (Figure 3). Zinc oxide paste bandages provide a protective barrier, reduce inflammation in venous eczema and provide a moist healing environment when skin integrity has been lost (Williams, 1999; Lansdown et al, 2007). It is important to note that steroid creams can be used in conjunction with zinc oxide paste bandages; however, clinicians need to be mindful that the steroid may absorb more quickly due to the occlusive nature of the bandage, therefore reducing the period of effectiveness. When compared with an alginate dressing in patients with venous disease, the application of Viscopaste PB7 (10% zinc oxide) resulted in significantly faster healing of ulcers (Stacey et al, 1997).



Figure 3. Viscopaste PB7 and Ichthopaste cotton bandages

RLS is a result of chronic inflammation associated with dermatological conditions and chronic venous disease (Salmon, 2016). Ichthammol has a predominantly anti-inflammatory

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Zinc testimonial

Within our Tissue Viability team at Torbay and South Devon NHS Foundation Trust, we have always viewed zinc dressings as an essential component of our wound care dressings armoury. Primarily, we have used zinc oxide-based dressings for lower limb cellulitis, red legs, and leaky legs. We have progressed from just using zinc dressings on the lower limb for leg ulceration, which is considered the traditional place for zinc dressing application, to using them for other types of wounds on different parts of the body, thereby utilising the healing qualities of zinc oxide in as many ways as we can.

We recently started using Ichthopaste Bandage for those patients who have red, swollen, wet legs and we have found this is working extremely well on reducing both the inflammation and subsequent pain levels. The dressing is very easy to apply and our patients have reported how comfortable it is when in place. Having a

lower dose of zinc does seem to be more comfortable for some of our patients who have expressed issues regarding this and in turn allows an extended wear time between dressing changes. The 2% ichthammol present in Ichthopaste Bandage appears to soothe irritated and inflamed skin very quickly, meaning an overall reduced length of time that dressings need to continue.

As a Tissue Viability team, we are really pleased to have a variety of zinc oxide dressings from which to choose the most appropriate for specific wound issues, and this assists us in reducing wound healing times.

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mode of action (Eagle, 1999; Williams, 1999; Boyd, 2010) and is useful in treating wet, itchy eczema and psoriasis (Eagle, 1999; Williams, 1999; Boyd, 2010). Ichthopaste contains 2% ichthammol and 6.32% zinc oxide, combining the benefits of both compounds.

Ichthopaste and Viscopaste PB7 are cooling and soothing when applied, providing comfort from inflamed and itchy skin. Patch testing is always recommended for 48 hours prior to initial use and may be appropriate if zinc oxide sensitivity is suspected (Maher, 2015). These cotton bandages do not contain elastic fibres, therefore practitioners should allow for swelling to occur without tightening during the inflammatory phase of healing, by using one of the following application methods:

- Pleating the bandage following each turn
- Applying the bandage then cutting it following each turn
- Cutting the bandage into strips before application.

Ichthopaste and Viscopaste PB7 can be applied as an adjunct to compression in patients with venous insufficiency and may be used as the primary dressing over the wound. They should be covered with a retention bandage, garment or compression therapy and can be left in place for up to 7 days or changed more frequently, depending on the patient's treatment plan.

Summary

RLS is a common yet often misdiagnosed condition. It should be managed with good hygiene, emollients, topical medications, underlayers (e.g. medicated bandages) and compression. Patients should be educated about their condition and encouraged to self-care to aid healing and reduce the risk of recurrence.

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