Caring for patients with leg ulcers and an underlying vasculitic condition

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ABSTRACT
It is not uncommon for nurses in the community to encounter patients with leg ulceration combined with rheumatic disease, particularly rheumatoid arthritis (RA). The aetiology of the leg ulcers in these cases is rarely straightforward, and the management of the ulcers is correspondingly complex. Management may be further complicated in the presence of vasculitis, an uncommon disorder in which inflammatory changes cause degradation of blood vessels. Rapid deterioration and pain are the main challenges with these cases. This article discusses the aetiology of vasculitic ulcers, and presents two case studies that were successfully managed using a new hydrogel dressing.

KEY WORDS
Leg ulcers • Rheumatoid arthritis • Vasculitis • Infection • Pain • Actiform Cool

Impact on the patient
However uncommon, for any patient diagnosed with a vasculitic leg ulcer associated with rheumatic disease, the problems may seem insurmountable. Understanding this complex condition, dealing with the effects of powerful medication, perhaps feeling systemically unwell and in addition, coping with sometimes rapidly deteriorating and extremely painful ulceration can be overwhelming.

Support is also needed for nurses who care for these patients over the course of many months, and sometimes years. Often this can involve daily visits with long, complex dressings to one or more ulcer sites. Deciding on appropriate leg ulcer treatments and advising on pain control can raise anxieties, as can reassuring patients with uncertain prognosis. Although liaising with specialist units can be time consuming, it is important to maintain these channels of communication.

What is vasculitis?
Vasculitis is a term used to describe a group of uncommon diseases which produce inflammatory changes and necrosis in the blood vessel walls. Loss of integrity leads to bleeding, and compromise of the lumen leads to tissue ischemia and necrosis (Langford, 2003).

The outcome of this inflammation depends on the size, type and location of the vessels involved. Inflammation can affect the aorta and its branches, or may affect medium sized arteries through to small arteries, venules and arterioles (Scott, 1995). It is small vessel vasculitis that is most commonly associated with cutaneous changes, including nail fold infarct (Figure 1) and – potentially – leg ulceration (Figure 2).

Vasculitis may occur as a primary process or may be secondary to another underlying disease, e.g. RA, lupus or Sjögren’s syndrome. Other general features such as fever, weight loss and anorexia may accompany widespread inflammation. Therefore patients often feel systemically unwell.

Diagnosis of vasculitis
The diagnosis of vasculitis is often very difficult. If it occurs in combination of another illness such as RA, lupus or Sjögren’s syndrome then it may be suspected if new or worsened symptoms appear, e.g. weight loss, fever fatigue, palpable purpura or nail fold infarcts. A mononeuritis
multiplex (i.e. asymmetric neuropathy) is often suggestive of vasculitis in the absence of diabetes (Hellman, 1995).

In addition to detailed history and examination, laboratory tests (Table 1) help identify the existence and type of vasculitis and are also useful in identifying any infective influence on the condition. These are often carried out through a specialist unit and are not always available via general community services.

Appearance of a vasculitic leg ulcer
Characteristically, vasculitic ulcers are deep, with a punched out appearance, often with a reddish or bluish tinge around the edge. They are often extremely painful, and may deteriorate rapidly. There may also be an accompanying palpable purpuric rash.

Treatment of vasculitis
For nurses it is important to realize the implications of the underlying systemic condition associated with these serious, slow to heal and often recurrent ulcers. Despite modern and effective dressings, long-term systemic treatments are often needed to control the inflammatory process. Therefore, for some patients the short-to-medium term goal may not be complete healing, but a manageable, pain-free or pain-controlled ulcer which allows a reasonable quality of life. While therapies which may take months to gain control of the underlying disease are established, the nursing aim may simply be to bring the ulcer to twice-weekly dressing changes instead of daily, or perhaps to bring it to a condition which is suitable for skin graft.

Immunosuppressive therapies
Treatment will depend on the type, nature and severity of the vasculitis. In proven serious vasculitic conditions, powerful therapy is indicated. In initial stages, high dose oral steroid is generally initiated and may be accompanied by 2–6 weekly pulses of intravenous cyclophosphamide, an immunosuppressant drug used under specialist direction. It is important not to ignore the potential side-effects of these agents. Complications of steroid therapy are well documented (Griffiths, 2002). Careful monitoring of opportunistic infection, bone marrow suppression and haemorrhagic cystitis is necessary. There needs to be awareness of the potential for the subsequent development of bladder tumour and increased risk of other neoplasia (Brzeski, 2003). Mortality data suggests that while early deaths in vasculitis are the result of the active disease, late deaths may be caused by the complications of therapy (Langford, 1997).

The goal of initial treatment is to induce remission of the disease. Once this has been accomplished, the drug dose is lowered to reduce side-effects. Low-dose oral steroid, azathioprine and methotrexate have been used in less severe forms of vasculitis and as maintenance therapy after remission has been induced.

Role of antibiotics
Most venous ulcers are heavily contaminated with bacteria including *Staphylococcus* spp., *Streptococcus* spp., *Escherichia coli*, *Proteus mirabilis* and *Pseudomonas aeruginosa*. However, the routine administration of topical or systemic antibiotics has not resulted in reduced bacterial colonization or improved healing rates. Furthermore, this approach may be complicated by the emergence of resistant organisms (Alinovi et al, 1986). Thus, topical antibiotics should probably be avoided completely.

Systemic antibiotics should be reserved for patients who have the following signs and symptoms suggesting significant infection:
- Increase in pain
- Increasing erythema of the surrounding skin
- Rapid increase in the size of the ulcer
- Purulence
- Heat
- Oedema
- Increasing pain at site (Thomson and Taddonio, 1997).

Treating pain
Little research has been conducted into effective treatment of pain in patients with leg ulcers (Heinen et al, 2004). A review of 37 studies on leg ulcers by Persoon et al (2004) found that psychological and social wellbeing are limited by pain and immobility. These patients have a poorer quality of life and lower self-esteem. The review concludes that there are indications of under-treatment of pain. Interestingly, Hofman et al (1997) found pain was not
reported in nursing or medical reports; at most, it is cited as a sign of infection or underlying arterial disease.

Briggs et al (2004) emphasize the importance of wound dressing-related pain being managed more effectively by a combination of:

- Accurate assessment
- Suitable dressing choices
- Skilled wound management
- Individualized analgesic regimes.


Certainly, giving the patient some control over their pain and pain relief treatments will improve their day-to-day quality of life. Assessment and treatment of pain is therefore a major feature of care.

These short case studies look at the authors’ experience of two patients with severe vasculitic leg ulcers who, in addition to their complex medical needs, required input from rheumatology, vascular and district nursing services.

Case study 1
Mrs Smith is a 62-year-old lady who was admitted with cellulitis following a 4-week history of bilateral lower limb swelling and increasing pain. During this period, ulcers developed on her mid-leg over the tibial crest, lateral malleolus, and the dorsum of the foot (Figure 3).

In addition to these symptoms she gave a 9-month history of a peripheral neuropathy of uncertain origin and a left radial nerve palsy. Blood tests confirmed a vasculitic condition and immunosuppression therapy was commenced, initially with high dose oral prednisolone, and 2 weeks later intravenous cyclophosphamide pulses were introduced.

A leg ulcer assessment was carried out, and the ankle brachial pressure index (ABPI) recorded at 0.89.

Assessment of the ulcer bed noted a mixture of tissue from necrosis through to granulation, from black to red on the wound healing continuum (Gray et al, 2003).

In addition to these observations, the ulcer was extremely painful, with a sharply demarcated red border. Mrs Smith’s assessment did not suggest venous ulceration. There were no indicative signs of venous staining on the lower leg, no oedema, and no history to indicate venous disease.

As pain was a major factor, Mrs Smith required regular strong opiates with frequent additional administrations before a dressing change.

Treatment of the ulcer
The objectives of treatment were:

- To minimize pain at dressing change
- To remove slough and necrotic tissue from the wound base
- To maintain the integrity of the surrounding skin.

Dressings previously used, aimed at desloughing, had been partially successful. However, Mrs Smith found these dressings painful during wear and at removal.

Because of the high pain level experienced by this patient, the optimum wound environment for her was a moist wound bed. ActiFormCoolTM dressing (Activa) is described by the manufacturers as a ‘soothing dressing’, which will reduce pain and remove slough, and a decision was made to try it.

ActiFormCool is a hydrogel sheet comprising three layers:

- A white backing sheet which must be removed before applying the dressing
- The hydrogel matrix, which absorbs fluid and maintains a moist wound environment
- A blue film layer that can be left in place or removed. Leaving it in place ensures that the wound bed remains moist. However, if a wound is producing high levels of exudate, the film can be removed and the moisture vapour transfer rate increases. This reduces the amount of fluid held within the dressing.

A decision was made to leave the top film layer in place to keep the dressing very moist, in order to reduce pain and remove slough. The hydrogel sheet held wound exudate within the gel (Figure 4) and protected the surrounding skin from the effects of maceration.

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Table 1. Laboratory tests for vasculitis

<table>
<thead>
<tr>
<th>Blood tests</th>
<th>May increase</th>
<th>May decrease</th>
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<tbody>
<tr>
<td>Erythrocyte sedimentation rate</td>
<td>Haemoglobin</td>
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<tr>
<td>C-reactive protein</td>
<td>Serum proteins</td>
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<tr>
<td>Platelets</td>
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<td>White cell count</td>
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<tr>
<th>Specific immunological tests</th>
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<tr>
<td>Rheumatoid factor (RF) is positive in 60–80% of patients with rheumatoid arthritis. May be positive in other autoimmune conditions, e.g. Sjögren’s syndrome</td>
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<tr>
<td>Antinuclear antibody (ANA) suggests the presence of an underlying connective tissue disorder</td>
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<td>Complement. Low serum complement may be present in certain vasculitic conditions</td>
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<tr>
<td>A positive test for antineutrophil cytoplasmic antibodies (ANCA) may indicate systemic vasculitis, e.g. polyarteritis, Wegener’s granulomatosis, etc.</td>
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Figure 3. Mrs Smith’s left leg on admission.
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The dressing was removed without trauma by irrigating with saline. Disturbing the wound was painful for Mrs Smith, but the ease of removal of the gel minimized this, and the pain quickly settled when the new dressing was in place. The leg was then supported by application of wool and crepe bandage from toe to knee.

Most slough and necrotic tissue were removed at the second dressing change, and Figure 5 shows the wound 3 weeks later. The dressings were changed three times weekly.

Mrs Smith has now been referred to the plastic surgeons for assessment for skin grafting. ActiFormCool continues to be the dressing of choice as it is maintaining healthy granulating tissue, and continues to be comfortable during wear time.

Case study 2

Mrs Jones is a 61-year-old lady with a 3-year history of Sjögren’s syndrome (Box 1). She presented with a leg ulcer on her left leg of 4 months’ duration and was referred from a community leg ulcer clinic.

The ulcer was considered to have a venous element, and Mrs Jones’ ABPI was 0.9. Because of her history of an inflammatory autoimmune condition, high compression bandaging was deemed unsuitable. Therefore, reduced compression was applied to the leg. Initially, good improvement was noted, and the ulcer reduced in size. However some weeks in to treatment, the ulcer bed became sloughy and an increase in circumference was noted. This was accompanied by increasing pain. A purpuric-type rash developed over the lower limbs, more noticeably in the ulcerated leg. The appearance of the rash indicated active vasculitis (Figure 6), therefore compression bandaging was discontinued.

Over a period of a few weeks Mrs Jones’ general condition deteriorated. She had an intermittent widespread rash and fever and felt generally unwell. Her drug therapy included a reducing dose of oral steroid and an immunosuppressive therapy of azathioprine. She was admitted to hospital and blood tests confirmed a vasculitic condition which required high-dose oral steroid and intravenous cyclophosphamide pulses.

The following 14-week period saw the ulcer deteriorate and the area rapidly increase in size (Figure 7). The ulcer was sited over the tibial crest and was almost circumferential. Other small satellite ulcers formed. Pain from the wound was a major problem, and was at times rated ‘worse than the worst possible pain’. Mrs Jones spent her every waking hour thinking about the ulcer. She found the dressing changes extremely traumatic events. In addition to regular and increasing slow-release morphine tablets, she required additional morphine and lorazepam before dressing changes. During the actual procedure, Entonox gas was self-administered.

The ulcer was noted to have signs of infection present and swab cultures were reported as positive for methicillin-resistant Staphylococcus aureus (MRSA). The ulcer was treated with topical silver nitrate, and the dressing was changed as necessary. The ulcer slowly improved, and after 14 weeks had healed completely.

Box 1. Sjögren’s syndrome

Sjögren’s syndrome is a slowly progressive, inflammatory autoimmune disease, affecting primarily the exocrine glands. It affects more women than men (ratio 1:9). It is commonly present in patients with chronic inflammatory disorders, including rheumatoid arthritis and lupus. In the absence of other autoimmune disease, the syndrome is classified as primary Sjögren’s syndrome. It is characterized by mucosal dryness manifest by dry mouth (xerostomia) and dry eyes (xerophthalmia). These symptoms may also affect the skin, upper respiratory tract, gastrointestinal tract and vagina.

Source: Anaya and Talal, 1997
resistant *Staphylococcus aureus*. Appropriate intravenous antibiotic therapy was initiated. This did help in alleviating some of the painful symptoms, however, Mrs Jones was not able to reduce her analgesia.

**Treatment of ulcer**
The main objective of the treatment was to reduce pain at dressing change.

The same rationale applied as in Mrs Smith’s case, and ActiformCool was chosen as an appropriate dressing.

The gel sheet could be cut so that all areas were covered. Mrs Jones liked the cool feeling when the gel was applied. The blue backing film was left in place to keep the wound bed very moist by reducing vapour transmission.

Mrs Jones’ pain levels decreased during wear time, and at the first dressing change. Mrs Jones rated her pain level at 3, down from 8. The dressing was removed easily by gentle irrigation with saline. Dressing changes were carried out on alternate days.

Over the next week, Mrs Jones no longer required additional opiate or Entonox before dressing changes. She continued to take lorazepam, but as her confidence in the dressing grew this was also discontinued.

Although there was no reduction in circumference of the ulcer, it was noted the ulcer appeared shallower.

Due to the extensive tissue loss, referral was made to plastic surgery. This led to skin grafting being carried out with a 95% immediate take. Initially, there was some deterioration, but all areas are now improving. At the time of writing there is 90% epithelialization (Figure 8).

After a long hospital admission, Mrs Jones is now at home supported by district nurses. She continues on powerful systemic therapy for her underlying vasculitic condition.

**Discussion**
Accurate assessment is necessary to diagnose the correct underlying aetiology of leg ulceration (Moffat, 2004). Undue emphasis should not be placed on an ABPI within normal range, as this is an indication of arterial flow and not diagnostic of venous ulceration (Vowden and Vowden, 2001). Instead, it should be interpreted with the full medical history and presenting signs and symptoms.

In both these case studies, ABPI was within range for high compression bandaging, but was contraindicated by the history. Pain was a predominant feature of the wounds and was closely related to wound care and dressing changes. Loftus (2000) advises that pain reduction should be a major consideration when introducing a new treatment. Choice of dressing in these cases was dependent on the dressing’s ability to reduce pain, and be removed without trauma.

The experience of using ActiformCool dressing mirrors that reported by Hampton (2004). In Hampton’s study of 20 wounds, pain and exudate levels were significantly reduced.

The wounds presented here are difficult to treat because of the underlying pathology. However, they responded well to use of the hydrogel sheet dressing, which was demonstrated by:

- Reduction in pain
- Removal of slough
- Comfortable throughout wear time
- No strike-through during wear time.

**Conclusion**
Vasculitic ulcers may be painful and difficult but that does not prevent the symptoms from being addressed through appropriate wound care. In these two case studies ActiformCool was shown to be an appropriate dressing, which achieved low trauma at dressing change and created an environment within the wound that facilitated the removal of slough and necrotic tissue.

For both these patients, it is important to remember drug therapy remains necessary for control of their systemic condition. A supportive environment is required in...
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these conditions, where inflammatory disease, powerful medication and leg ulceration are closely linked. In these complex cases it is important to establish effective communication links between specialties involved and primary care. Often the district nurse is best placed to observe changes related to the leg ulceration and to the patient’s general wellbeing. An understanding of the underlying condition is therefore essential.

**KEY POINTS**

- Underlying cause of leg ulcers in most rheumatic conditions is multifactorial.
- Support is needed for community nurses who care for these patients for many months and sometimes years.
- Vasculitic ulcers can be difficult to diagnose and treat.
- Complex systemic therapies may be required to treat underlying disease.
- Good communication links between primary and secondary care are essential.


