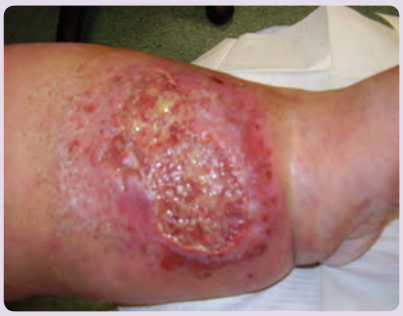
A new treatment for the management of a chronic venous leg ulcer

Author:
Sharon Dawn Bateman



This case study highlights the challenges of managing a patient with a hard-to-heal wound and lymphoedema. It explores the use of an advanced wound care treatment together with a holistic approach to care, which has led to a significant improvement in the patient's quality of life.

Page points

1. *42 year old patient presented with a chronic venous leg ulcer, complicated by gross lymphoedema*
2. *The wound was associated with severe chronic pain and background malodour*
3. *The patient's quality of life was severely impaired*

INTRODUCTION

Many clinicians will encounter patients who present with chronic, static and difficult-to-heal wounds. Chronic venous disease with ulceration of the lower limb is a common problem that results in significant morbidity, is expensive to manage clinically and adversely impacts upon the patient's quality of life and wound care experience[1]. It is essential that these patients are referred promptly to specialist wound care clinicians, who can implement evidence-based assessment and treatment plans, ensuring that the patient receives a high standard of quality-focused care. At times this will involve using new treatments and advanced wound care products.

BACKGROUND

Mrs D is a young woman aged 42 whose quality of life had been increasingly compromised over the past three years by a chronic venous leg ulcer. Treatment was complicated by gross lymphoedema, hypertension, reduced mobility and poor mental health requiring long-term antidepressant medication.

Mrs D first developed a venous ulcer in 2007 on her lower left anterior tibial region following a traumatic fall involving contact with the sharp edge of a piece of furniture. The resulting haematoma quickly developed into a small open ulcer, which continued to expand and deepen over the subsequent three years, with occasional intermittent minor improvements in wound size and depth. Although various dressings, therapies and compression bandages had been tried, there had been only small improvements with the ulcer always reverting back to its original static non-healing status. From time to time, the patient developed systemic infections that required intravenous antibiotic therapy, which was administered either in hospital or the local infection control/travel medicine clinic. The wound was associated with severe chronic pain and discomfort as well as a lingering background malodour, which caused the patient some embarrassment.

Mrs D lives with her husband, who supports her in maintaining as normal a quality of life as is practically possible, despite regular clinic visits and intermittent hospital admissions for treatment and physiotherapy. However, the chronic nature of her ulcer had resulted in Mrs D becoming depressed and even expressing a recurring wish for the leg to be amputated.

INITIAL ASSESSMENT

Mrs D was referred by her local general practitioner within the infection control/travel medicine department at the local university teaching hospital. On initial assessment the wound bed appeared sloughy with a central necrotic region and moderate maceration around the wound margin. The wound measured 9 x 4 x 0.4cm with a macerated 4cm periwound border *[Fig 1]*. The ulcerative region revealed small, visible areas of underlying healthy granular tissue. Microbiology results indicated that the wound bed was locally infected with the presence of *Staphylococcus aureus*, a common pathogen found in the infected chronic wound[2].

References

1. Etufugh NC, Phillips TJ. Venous ulcers. *Clin Dermatol* 2007; 25: 121-30.
2. White R. *Trends in Wound Care: a BJN monograph*. Wilts: Quay Books/ Mark Allen Publishing. 2002.

The wound was producing moderate levels of medium viscosity exudate and the surrounding skin appeared fragile, macerated and inflamed. Using a numerical 0–10 pain scale, where 0 is no pain and 10 is the most extreme pain imaginable[3], the patient's average pain score was 6/10 rising to 8/10 at dressing changes. This was despite regular opoid (morphine) analgesia.

Previous wound management strategies

The venous ulcer had previously been managed using a daily application of a silver-impregnated antimicrobial dressing (Aquacel® Ag, ConvaTec), an absorbent cellulose dressing (Kerramax®, Ark Therapeutics), a large crepe bandage and an elasticated support bandage (Tubigrip, Mölnlycke Health Care). The bulky dressing regimen combined with the patient's lymphoedema further reduced her mobility and she had resigned herself to wearing shoes that were two sizes too large for her to accommodate the various dressings. This had a negative impact on the patient's ability to independently mobilise confidently in a safe manner. Various factors contributed to a gradually increasing BMI of 34, including a marked reduction in the ability to exercise, decreased pain threshold, a tendency to remain within the home, coupled with a low morale and reliance on 'comfort' eating.

In the three years prior to referral, various therapies and interventions had been used, including activated charcoal dressings, alginates, antiseptic products, antimicrobial therapies, foams, hydrocolloids, activated honey products, four-layer compression bandaging and surgical debridement. These interventions failed to achieve healing of the ulcer and the patient continued to visit the local teaching hospital five days a week for medical monitoring and dressing changes.

ONGOING MANAGEMENT

In view of the failure of the ulcer to heal, the option of using an extracellular matrix protein (Xelma®, Mölnlycke Health Care) was discussed with the patient.

Xelma is a topical application consisting of extracellular matrix proteins (amelogenins) in a viscous water solution of propylene glycol alginate (PGA). The amelogenin proteins have been shown to facilitate fibroblast migration and proliferation and synthesis of growth factors to stimulate new extracellular matrix components. When functioning normally, the cumulative effect of the new cells and the extracellular matrix growth can trigger wound healing[4].

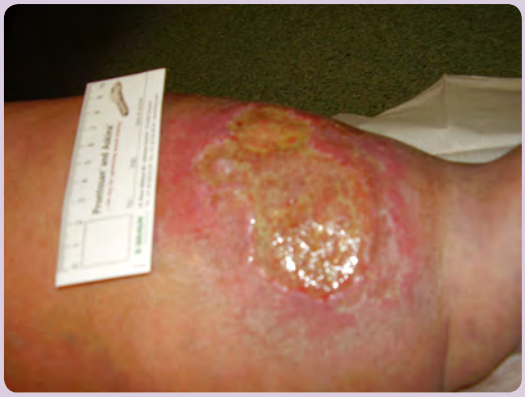


Figure 1 – The wound on presentation. Wound dimensions 9cm x 4cm x 0.4cm; necrotic, sloughy, high level of exudate

Although Xelma is recommended for use in chronic wounds without clinical signs of infection[5], it was deemed appropriate for use in this case as the patient had recently received two weeks of intravenous antibiotic therapy and the most recent microbiology swab was negative. Mrs D consented to the treatment stating that she was in severe pain, 'had tried everything else' and 'had nothing to lose'.

Application of an advanced therapy

Using an aseptic technique Xelma was applied to the wound bed each week over a 7-week period and a full wound assessment and evaluation of wound status was performed using the Wound Care Continuum model[6]. A non-adhesive foam dressing (Allevyn®, Smith & Nephew) was applied over the gel-based product and held in place with a thin support bandage (Tubigrip, Mölnlycke Health Care).

Application of the Xelma product was simple using the 1ml syringe supplied. In addition to the product a basic dressing pack and an adhesive secondary dressing (Softpore, Richardson Healthcare) was used. The patient commented that the procedure was 'quick' and 'painless' and felt very light once in place in comparison to the heavy, complicated regimen she had previously experienced.

To ensure that assessments were consistent and to limit variation in wound measurement data, the same clinician (clinical matron for

Page points

1. *Previous wound management strategies had failed to heal the ulcer which led to the patient becoming depressed and more housebound*
2. *A new treatment strategy using an advanced wound care product, Xelma, was initiated for 7 weeks*

References

3. McCaffery M, Pasero C. *Pain Clinical Manual (2nd ed).* St Louis: Mosby, 1999.
4. Mirastschijski U, Konrad D, Lundberg E, et al. Effects of a topical enamel matrix derivative on skin wound healing. *Wound Repair Regen* 2004; 12(1): 100-8.
5. Mölnlycke Health Care. *Xelma product information and clinical studies.* Available from http://www.molnlycke.com/com/Wound-Care-Products (accessed March 2010).
6. Gray D, White R, Cooper P, Kinglsey A. The wound healing continuum, an aid to clinical decision making and clinical audit. Applied Wound Management. *Wounds UK* 2004; (Suppl): 3-35. Available from http://cms2.selesti.com/media/applied_wounds_management_supplement.pdf (accessed March 2010)

wound care), undertook all aspects of the patient's wound care management, evaluation and documentation.

RESULTS

At each weekly assessment and dressing change within the outpatient department, there was a reduction in both circumference and depth of the wound. The necrosis and associated malodour had resolved by week 2 and by week 3 there was a gradual reduction in slough and associated exudate production such that a granulating wound bed was visible. The excoriated and macerated periwound border showed a noticeable degree of epithelialisation at week 3 *[Figs 2 and 3]*.

At week 3, the patient's mood and general appearance had also improved; she was smiling and took more care over her appearance, wearing bright-coloured clothing and make-up. She talked to the nurses in more depth and had started inviting her husband to join her in the clinic room for her dressing change; her husband had not seen the actual wound for two years.

She had accepted assistance from the community social worker, occupational therapist and physiotherapist, who she now allowed to visit her for assessment at home. The care package that had been put together by the team had led to a visible improvement in both her mobility and ability to function more independently at home without her family's assistance. Mrs D had been provided with a mobility chair, which meant she was able to leave the house and take part in recreational pursuits with her family and friends. She stated that she felt 'her life coming back to normal'.

Weeks 4 and 5 highlighted a noticeable reduction in the level of exudate with the patient needing to change the secondary dressings only every third day compared to the twice daily changes that were necessary at weeks 1 and 2 *[Figs 4 and 5]*. This allowed the patient to venture from her home for longer periods of time without worrying about finding a suitable location where she could change her dressings in private.

Mrs D's pain score on referral had been on average 6/10 despite a multi-pharmacological analgesia regimen. However at week 2 this was 2/10 and thereafter remained at 1/10 with the patient experiencing only a 'mild discomfort'. The patient's analgesia regimen was reduced, giving her increased stamina and allowing her to be more alert for longer periods during the day.

Using the new dressing regimen there was a noticeable reduction in overall wound size and depth with documented reduction markers of: 30% in width; 50% in length; and 75% in depth. Throughout the treatment period the wound produced negative microbiology results, avoiding the need for systemic antibiotic therapy.

At the end of the 7-week period *[Figs 6 and 7]*, Mrs D was pleased with the treatment results as she had begun to believe the wound would never heal. She stated that her quality of life had improved as she was now pain free and her medication had been reduced to reflect this. The malodour from the ulcer had almost entirely resolved and there was minimal exudate. In addition, the lighter dressing

Page points

1. *At week 3 there was a decrease in exudate and slough leading to fewer dressing changes*
2. *There was a marked improvement in the patient's mental health and she was able to become more mobile using the lighter dressing regimen*
3. *By week 7 the patient was pain free and the wound was reduced in size and depth*

Useful links

Ark Therapeutics
ConvaTec
Mölnlycke Health Care
Richardson Healthcare
Smith & Nephew

Further reading

Best Practice for the Management of Lymphoedema: an international consensus
Lymphoedema bandaging in practice
Template for practice: Compression hosiery in lymphoedema
Wound infection & pain made easy

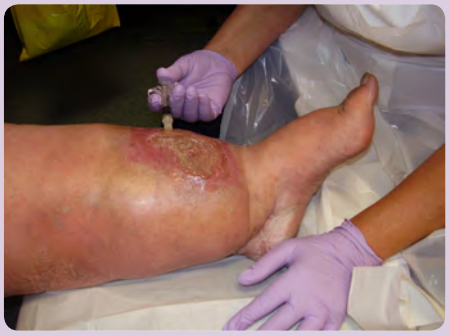


Figure 2 – Week 2: wound dimensions 8cm x 3cm x 0.3cm; sloughy, moderate exudate

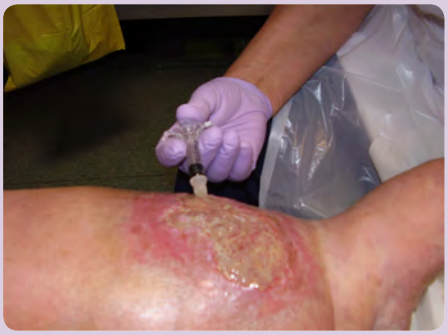


Figure 3 – Week 3: wound dimensions 7.5cm x 3cm x 0.1cm; sloughy, moderate exudate

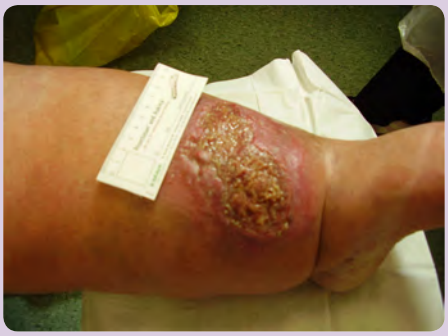


Figure 4 – Week 4: wound dimensions 7cm x 2.8cm x 0.1cm; granulating, low exudate

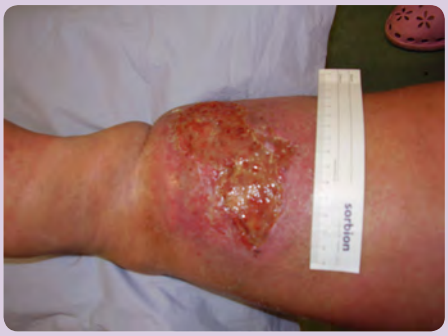


Figure 5 – Week 5: wound dimensions 7cm x 2.5cm x 0.1cm; granulating, with low exudate

regimen no longer interfered with her choice of dress and footwear.

Discussion

Wound care specialists in both primary and secondary care settings must update themselves constantly about new products and advanced therapies to ensure that they make appropriate and informed choices when managing their patients' wounds, particularly those of a difficult-to-heal, static nature. Ultimately, patients deserve and expect the highest standard of wound care available. It is vital for clinicians to have sufficient knowledge and skills to recognise when a wound has become static and to know how and when to intervene at the appropriate time. This is essential for new and innovative treatments to be used effectively within the management of chronic wounds such as venous leg ulcers.

CONCLUSION

The use of an extracellular matrix protein (Xelma) in the treatment of this patient's chronic leg ulcer has led to an overall reduction in wound size and depth, which had not previously been achieved using a variety of dressing regimens and medical therapy. This was accompanied by a demonstrable improvement in Mrs D's physical and psychosocial wellbeing. Although at the time of publication, the wound has not reach full closure, recent follow-up revealed a further reduction in wound size and depth (3.2cm x 1.1cm x 0.01cm) using a basic dressing regimen.

AUTHOR DETAILS:

Sharon Dawn Bateman, Dip BSc MA, Corporate Clinical Matron Wound Care, South Tees Hospitals NHS Trust, James Cook University Hospital, Middlesbrough, UK

Page points

1. *Clinicians need to keep up to date with new products to ensure patients receive the most appropriate treatments*
2. *The application of Xelma led to an overall reduction in wound size and depth and to an improved quality of life for the patient*

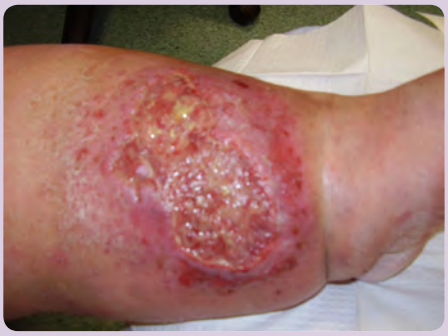


Figure 6 – Week 6: wound dimensions 6.8cm x 2.5cm x 0.1cm; granulating with very low exudate

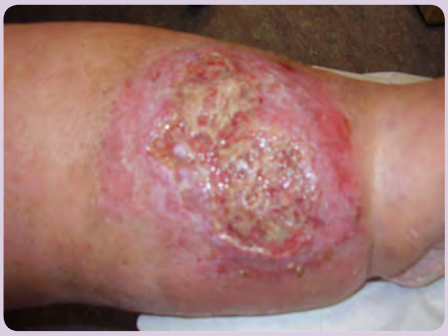


Figure 7 – Week 7: wound dimensions 6.8cm x 2.3cm x 0.01cm; granulating with very low exudate