Use of a monofilament fibre debridement pad to treat chronic oedema-related hyperkeratosis

Moffat et al (2003) report that 1.33 people in every 1000 of the UK population have chronic oedema, although the true prevalence is likely to be higher. Chronic oedema is often associated with a range of skin conditions, including hyperkeratosis. This article describes the use of a monofilament fibre debridement pad to reduce hyperkeratosis on the legs of a 57-year-old man with a long-standing history of bilateral lymphovenous oedema. As part of an holistic care programme, the monofilament fibre debridement pad was found to quickly and effectively reduce hyperkeratosis.

KEY WORDS
- Chronic oedema
- Hyperkeratosis
- Monofilament fibre debridement pad

The aetiology of chronic oedema is complex. Failure of the lymphatic system to transport fluid, protein, and waste products from the body tissues results in oedema, and oedema of >3 months' duration is considered chronic (Hedger, 2008). Chronic oedema is commonly secondary to chronic venous insufficiency (lymphovenous oedema), which is believed to be largely attributable to raised venous hypertension increasing capillary filtration and, therefore, an increased lymphatic load that gives rise to a build-up of fluids in the tissues (Mortimer and Levick, 2004; Williams, 2009).

BACKGROUND: MANAGEMENT OF CHRONIC OEDEMA

The management of chronic oedema is best undertaken in a multidisciplinary environment. Bianchi et al (2012) explain that compression therapy (either in the form of compression bandaging or compression hosiery), skin care, and exercise are all essential components of the holistic management of chronic oedema.

Compression therapy

The gold standard of compression therapy for the management of chronic oedema is cohesive, short-stretch, inelastic bandaging (International Lymphoedema Framework, 2012). When correctly applied and monitored, this intervention is acknowledged to be the most effective therapy for achieving safe and timely limb-volume reduction (Osborne, 2009; Bianchi, 2012).

Skin care

A range of skin changes are known to be associated with chronic oedema, including fibrosis, gravitational eczema, and hyperkeratosis (Whitaker, 2012). The strong relationship between chronic oedema and poor skin health makes skin care an important element of holistic oedema management plans (Lymphoedema Framework, 2006; Bianchi et al, 2012; Whitaker, 2012). Traditionally, chronic oedema skin care has involved washing and emollient use to maintain skin integrity and suppleness (Lymphoedema Framework, 2006).

Hyperkeratosis is the over-proliferation of the keratin layer of the skin and usually manifests as discoloured scales on the skin's surface. Hyperkeratosis increases the risk of bacterial infection, and is unsightly and uncomfortable for the patient.

Removal of hyperkeratosis is must be safe and atraumatic (Whitaker, 2012). Many clinicians are reluctant to physically remove hyperkeratosis (i.e. using forceps) due to the risk of interrupting skin integrity, which may lead to cellulitis, although there is little evidence to support this position. A monofilament fibre debridement pad (Debrisoft®; Activa Healthcare) provides a new method of safe, gentle, effective hyperkeratosis removal. Further, the pads can by used by patients as part of their self-care routine to prevent further build-up of hyperkeratotic skin.

The following case study illustrates how effective compression bandaging, in conjunction

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"Mr H's skin care regimen comprised washing his legs with emollients and water, followed by the use of a monofilament fibre debridement pad (Debrisoft®; Activa Healthcare) to remove the hyperkeratotic skin."

with thorough skin care using the monofilament fibre debridement pad, can achieve rapid skin improvement and oedema reduction.

CASE REPORT

History and presentation

Mr H is a 57-year-old man with a long-standing history of chronic, bilateral, lower-limb lymphovenous oedema. The management of both Mr H's oedema, and the associated skin changes had proven challenging in the past. Mr H had received care from both lymphoedema and dermatology services in the past.

Following a routine review at the lymphoedema clinic, a clear deterioration of Mr H's condition was observed; the volume of both legs had visibly increased, and extensive hyperkeratosis was present below the knees (*Figure 1*). In view this deterioration, a period of intensive treatment – incorporating skin care and compression bandaging – was commenced.

Management plan

Previously, Mr H's oedema had been managed by the wearing of compression hosiery. Due to the increase in leg volume – in conjunction with skin changes – compression hosiery was no longer considered appropriate and was discontinued. Mr H was commenced on cohesive, short-stretch, inelastic compression bandages (Actico®, Activa Healthcare), applied as per the manufacturer's instructions.

Mr H's skin care regimen comprised washing his legs with emollients and water, followed by the use of a monofilament fibre debridement pad (Debrisoft) to remove the hyperkeratotic skin. The pad was moistened with water and applied to the affected area in circular motions with gentle pressure. This method of hyperkeratosis removal was selected for use in Mr H's case following the positive results achieved at the lymphoedema clinic with the product in similar cases, and following recommendations from lymphoedema specialist colleagues. Following completion of the skin care regimen, the compression bandages were applied.

In line with the extent of Mr H's oedema and clinical experience, it was agreed that Mr H would attend the lymphoedema clinic three times in the week following initial presentation to receive skin care and bandage reapplication as described above.

Outcomes

Over the course of 1 weeks' management, Mr H experienced a dramatic improvement in the condition of his skin (*Figure 2*), and rapid limb-volume reduction. The improvements in skin quality and oedema were more significant and rapid than had previously been achieved for Mr H during previous periods of treatment.

DISCUSSION

The case presented here highlights the importance of an holistic care plan for the

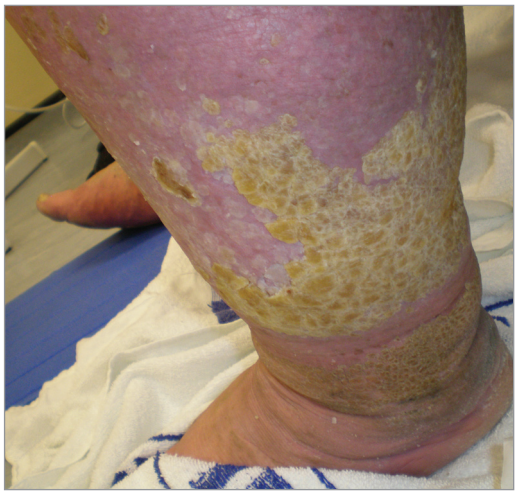

Figure 1. Mr H's left leg at presentation. Note the extent of the oedema and hyperkeratosis.

Figure 2. Mr H's left leg 1 week after presentation. Note the reduction in oedema and hyperkeratosis.

"As part of an holistic programme of care, a monofilament fibre debridement pad effectively managed the complex, chronic skin changes associated with lymphovenous oedema in the case presented here."

management of chronic oedema – addressing not only limb volume, but also the complex skin changes that may occur.

In cases of chronic oedema, hyperkeratosis needs to be reduced, and tissues softened, in order to achieve reductions in limb volume (Williams, 2009). The monofilament fibre debridement pad proved to be an effective and patient-friendly method of managing Mr H's hyperkeratosis. Cost minimisation in this case was achieved by the pad yielding positive results rapidly, meaning that Mr H required fewer ongoing appointments. With his hyperkeratosis well managed, it is also likely that input from other specialist services, such as dermatology, will be unnecessary. Further, by effectively managing Mr H's hyperkeratosis, possible skin complications, including cellulitis, were avoided. Long-term, the monofilament fibre debridement pad will be a valuable addition to the patient's self-care routine, allowing him to address the build-up of hyperkeratotic skin in an ongoing way.

In Mr H's case, using a monofilament fibre debridement pad to manage hyperkeratosis in conjunction with compression bandaging resulted in a significant and rapid improvement in his oedema. It is probable that use of the pad enhances microcirculation by softening the tissues, maximising the uptake of fluids by the superficial dermal lymphatics (i.e. improving drainage). Semi-elastic fibres (anchoring filaments) connect superficial lymph capillaries to connective tissue. The ability of the anchoring filaments to stretch facilitates uptake of lymph via the capillaries (Board and Harlow, 2002).

CONCLUSION

This case also highlights the importance of undertaking an holistic programme of care for chronic lymphovenous oedema. The results achieved in this case suggests that improving the condition of the skin of patients with chronic oedema makes interventions to reduce limb volume more effective. The case also highlights the role that a monofilament fibre debridement pad can play in the effective management of the complex, chronic skin changes associated with chronic oedema. The rapid and effective results achieve made this programme of care both cost- and time-effective, and – importantly – improved the patient's quality of life. Additional case studies using this management plan – and studies that explore the specific effects of the monofilament fibre debridement pad on oedematous skin – are required. WUK

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DISCLAIMER

This article was supported by Activa Healthcare (www.activahealthcare.co.uk).