The management of fluid leakage in grossly oedematous legs

Oedema occurs when there is an abnormal amount of fluid in the interstitial space. Normally about 85 per cent of the fluid that is filtered out of capillaries into this space is reabsorbed; the rest is drained by the lymphatic system (Tortora and Grabowski, 2000). A rise in capillary blood pressure causes increased quantities of fluid to escape from capillaries. As a result, filtration of fluid into the tissues exceeds the reabsorption rate of fluid into the circulation, leading to oedema (Tortora and Grabowski, 2000) (Fig 1).

Oedema of one limb may be indicative of venous or lymphatic disease, while bilateral limb oedema may be a symptom of heart or kidney disease (Gorman et al, 2000). Pitting oedema may indicate congestive cardiac failure. In ischaemic conditions, the cause may be limb dependency as patients try to alleviate pain by hanging the limb out of the bed (Stubbing and Chesworth, 2001).

Fluid that leaks from grossly oedematous legs will differ depending on the underlying cause. Transudate is excess fluid that is forced out as a result of elevated capillary blood pressure in the lower limb (Cutting and White, 2002). Fluid leakage resulting from failure of the lymphatic drainage system is called lymphorrhoea (Board and Harlow, 2002a). It is important to remember that fluid leakage can also be caused by a large wound or by some skin conditions that result in the formation of papules and vesicles (Moffatt and Harper, 1997).

Management of leaking interstitial fluid often centres on appropriate dressing selection. However, it is essential to take an interdisciplinary approach to managing patients to prevent complications, maintain skin integrity and promote independence.

Consequences of gross oedema A grossly oedematous limb is physically heavy to lift, affects mobility and well-being, and has a high risk of infection. If it is leaking fluid, it will feel wet and quickly become cold. The fluid will soil clothing and bedlinen, and could pose a safety problem if flooring becomes slippery.

Infection There is a risk of infections such as cellulitis or erysipelas, although the causative organism is rarely identified from skin swabbing (Regnard et al, 1997). Erysipelas can develop rapidly with acute onset of inflammation – it is characterised by a firm red margin and blistering. Cellulitis has a less rapid onset and ill-defined margins, and blistering is less likely to occur.

In both cases the patient will feel unwell and febrile, but will usually respond rapidly to antibiotic or antifungal treatment (Seal et al, 2000). The recurrence rate of erysipelas and cellulitis is significant (Dupuy et al, 1999) and management should focus on reducing the cause of oedema where possible.

It can be difficult to differentiate between varicose eczema and cellulitis. The former is characterised by scaling and crust ing, while the latter generally by shiny, tight skin (Quartey-Papaio, 1999). However, in some cases cellulitis may be concurrent with varicose eczema, making distinction difficult. Topical antimicrobials may be indicated, but if the whole lower limb is affected it is crucial not to exceed the recommended dose. In the acute phase of cellulitis or erysipelas the patient may need hospital treatment.
Compression therapy, elevation and exercise

Because reabsorption of fluid occurs when pressure in the tissues exceeds pressure in the capillaries (Tortora and Grabowski, 2000), the application of compression to the lower limb aids drainage of excess fluid back in to the capillaries by reducing the capillary pressure (Moffatt and Harper, 1997).

Graduated compression therapy can be applied using multilayer, short-stretch, intermittent compression bandages or compression hosiery. However, it can be difficult to achieve these to grossly oedematous limbs because of distortion of limb shape. Pain may also govern the decision to apply compression therapy. It can be difficult to determine the status of arterial supply in the lower limb using a hand-held Doppler device because of the oedema. Compression should not be applied to limbs with significant arterial insufficiency.

If gross oedema is caused by lymphatic failure, the use of specialist therapeutic massage techniques to aid lymph drainage may help (Board and Harlow, 2002c). Limb elevation is often recommended for dependent oedema. However, arterial insufficiency may make this undesirable because elevation will further reduce the blood supply to the lower limb (Moffatt and Harper, 1997). Great care must be taken when elevating limbs or applying compression therapy in patients with heart failure, as the increased volume of fluid return to the circulation may be catastrophic (Morison et al, 1997).

Exercise is important in managing oedema: muscle pump action assists reabsorption of fluid and drainage via the lymph system (Board and Harlow, 2002c).

Potassium permanganate Potassium permanganate is a mild antiseptic with astringent properties. There is a debate about its role in managing exuding wounds (Hollinworth and Quick, 1995). It may be useful in the short term for treating extensively leaking wounds, under supervision of a dermatologist. However, clinical experience would suggest it only offers brief respite.

Drug therapy Pharmaceutical agents, such as diuretics, are used to control circulating fluid volumes in the body. It is important to use these appropriately and not merely to reduce dependent oedema (Khan, 2000).

Evaluating outcome It is vital to record changes in limb volume, to assess the impact of clinical decisions. This may be as simple as measuring limb circumference.

This is important if compression hosiery is being used – as fluid levels reduce, compression bandages will need to be reapplied more frequently. The patient may benefit psychologically from seeing the difference in limb size.

Interdisciplinary care Nurses play a vital role in assessing, monitoring and providing psychological support. The patient may need to be referred to a dermatologist, microbiologist and vascular consultant. Occupational therapists can provide aids for activities of daily living, while physiotherapists can offer exercises and help with mobility. There can be a role for the specialist nurse in lymphoedema, particularly if limb size does not reduce in the short term. Although this is a distinct condition, the specialist nurse’s experience can be utilised for patients suffering similar difficulties.

Conclusion There are no easy ways to manage gross oedema and the resulting fluid leakage. It is vital to treat the underlying cause and reduce the risk of complication, such as infection and injury to wet, vulnerable skin.