

Management of Upper Limb Lymphedema

Lymphedema after cancer is a condition in which excess fluid collects in tissue, causing swelling as a result of removal of lymph nodes and vessels during surgery or radiotherapy (Langbecker et al. 2008). In patients with chronic lymphedema, large amounts of subcutaneous adipose tissue may form. Although incompletely understood, this adipocyte proliferation may explain why conservative treatment may not completely reduce the swelling and return the affected area to its usual dimensions (MEP, 2006). In the UK, a large-scale prevalence study found that 28% of women who were treated for breast cancer and were still surviving had lymphedema (Mortimer et al. 1996).

Lymphoedema can result in functional impairment, reduced self esteem, distorted body image, depression, anxiety, and problems with sexual, family and social relationships. Psychosocial assessment will highlight areas that require referral for specialist intervention and factors that may have an impact on management and concordance with treatment (Framework, 2006).

In unilateral limb swelling, both the affected and unaffected limbs are measured in order to assess for lymphedema (appendix 1). The difference in limb volume is expressed in millilitres (ml) or as a percentage. Oedema is considered present if the volume of the swollen limb is more than 10% greater than that of the contralateral unaffected limb (Framework, 2006). Circumferential and subjective measurements are most commonly used to diagnose lymphedema (Langbecker et al. 2008).

Many treatment options are available for lymphedema, but none offer a permanent reduction or elimination of arm swelling (Donald et al. 2003). A study by Langbecker et al. (2008) reviewed techniques used by health care professionals in the management of lymphedema. The most common techniques used were prescribed self-massage, moderate exercise, wearing protective garments, compression garments, and education. Swimming in a pool and raising the affecting limb when sitting were also commonly advised. While plausible physiological models exist for the role of manual lymph drainage, hosiery, bandaging and compression garments in alleviating lymphedema, there is little supportive evidence for or against a particular physical treatment for lymphedema (Langbecker et al. 2008).

Compression garments

Compression garments can be used in management of patients who have mild upper limb lymphoedema with minimal subcutaneous tissue changes and shape distortion. Where there is considerable soft pitting oedema, inelastic bandaging will be required to reduce and stabilise the swelling prior to the application of compression garments (Framework, 2006).

A patient with lymphedema should be fitted with an elastic sleeve from wrist to axilla if the edema is mild; if the oedema is moderate, the fitting should take place after the reduction of swelling. A statistically significant reduction in edema has been reported in women who wore compression garments for six consecutive hours per day. Using these garments during exercise, physical activity, and air travel is recommended (Petrec et al. 2000)

Collins et al. (1995) used CT scanning to assess the effect of compression garment therapy in 27 women with unilateral lymphedema. They found significant decreases in the cross-sectional area of subcutaneous compartments: the mean decrease was 9% in the proximal portion and 26% in the distal portion of the limb. Compression garments should be replaced every 4 to 6 months, or when they begin to lose their elasticity. Patients may be noncompliant with using compression garments because the garments are unsightly, uncomfortable, difficult to put on and expensive. Customised, lightweight and colourful garments may be an option for comfort and wear (Harris et al. 2001)

Lymphatic massage

Manual lymphatic drainage (MLD) aims to reduce swelling by encouraging lymph flow. The efficacy of MLD remains to be proven but there is no doubt that they are of immense value in providing psychological and symptomatic benefits. MLD is a gentle massage technique that is recognised as a key component of decongestive therapy. MLD aims to encourage fluid away from congested areas by increasing activity of normal lymphatics and bypassing ineffective or obliterated lymph vessels. Deep, heavy-handed massage should be avoided because it may damage tissues and exacerbate oedema by increasing capillary filtration (Framework, 2006). MLD is effective only if there are still some lymphatics left, so that they can be activated (Leduc et al. 1998).

Intermittent pneumatic compression (IPC)

IPC consists of an electrical air compression pump attached to an inflatable plastic garment that is placed over the affected limb. The garment is inflated and deflated cyclically for a set period, usually about 30-120 minutes. IPC is thought to reduce oedema by decreasing capillary filtration, and therefore lymph formation, rather than by accelerating lymph return (Framework, 2006). IPC is not effective alone and should always be used in conjunction with MLD (Leduc et al. 1998).

Exercise

A pilot study by Donald et al. (2003) assessed fourteen subjects who had undergone breast cancer treatment and subsequently developed unilateral lymphedema. An eight week progressive, controlled upper-body exercise programme was found to have no significant affect on the volume of upper limb lymphedema in this subject group. Exercise involving the affected arm may be beneficial in controlling lymphedema. Although some clinicians have recommended avoidance of rowing, tennis, golf, skiing, squash, racquetball or any vigorous, repetitive movements against resistance, there is no published evidence to suggest that these activities promote or worsen lymphedema (Harris 2001). No exacerbation of existing lymphedema or development of new cases of lymphedema occurred in 20 women with breast cancer who competed in the strenuous sport of sailing dragon boats (Gottlieb et al. 1995). Some experts have recommended that women with lymphedema wear a compression sleeve during arm exercises

Other modalities

Physical therapy modalities such as laser treatment, electrical stimulation, transcutaneous electrical nerve stimulation (TENS), cryotherapy, microwave therapy and thermal therapy, have been used for lymphedema in breast cancer patients but require further, rigorous evaluation before recommendations can be made (Harris et al. 2001).

In conclusion, the management of upper limb lymphedema requires a multidisciplinary approach. The use of compression garments, lymphatic drainage techniques, and exercise seem to be the most commonly recommended techniques and can be adopted as self-management for the patient. As previously mentioned, it is unlikely that the affected limb will fully return to its original size but self management can maintain or reduce the volume of the affected limb.

References

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Appendix 1

Upper limb lymphedema assessment

- Ask the patient to sit with the arm supported on a table with the hand palm down
- On the ulnar aspect of the arm measure with a ruler and record the distance from the nail bed of the little finger to 2cm above the ulnar styloid. Mark this point on the patient. This determines the starting point
- Mark the same point on the contralateral arm
- Lie a ruler along the ulnar aspect of the arm and mark the limb at 4cm intervals from the starting point to 2cm below the axilla
- With the limb in a relaxed position, measure the circumference at each mark, placing the top edge of the tape measure just below the mark
- Note measurements above the elbow
- Repeat the process on the other limb. Ensure there are the same number of measurements for both arms
- Document the position the patient was in when measurements were taken

(MEP 2006)