Andrea Stigant gives an overview of the role of the lymphoedema practitioner and using a case study approach provides information on lymphoedema and its treatment.

The lymphoedema practitioner is usually a key member of a specialist team that provides a high quality, evidence based service for patients with lymphoedema. The practitioner requires highly developed communication skills in order to provide appropriate assessment, to optimise independence and enhance the patient's quality of life through provision of a service that includes:

- A comprehensive assessment of the problem
- Accurate measuring and fitting of garments when appropriate
- Multi layer lymphoedema bandaging (MLLB) when appropriate
- Education and advice to patients and carers on skincare
- Lymph drainage massage techniques
- Exercise routines
- Provision of advice to other professionals.

Responsibilities
The main responsibilities of a lymphoedema specialist are to manage complex lymphoedema cases regardless of cause, liaising with other health care professionals as necessary. They also have a remit to support, educate and act as a resource for other professionals. There are challenges which mostly relate to geography as the practitioner can spend large amounts of time, in a car, between visits. The service that is provided in this area covers two PCTs in north and rural east Cumbria, an area of 1500 square miles. Because there is only one person at specialist level, there is a need to liaise with community nurses in order to educate them in specialist bandaging for lymphoedema, as they provide most of the daily care for these patients. The process of education begins with a definition and description of lymphoedema.

Lymphoedema
By acting as a one-way drainage system, the lymphatics maintain tissue homeostasis through the removal of excess fluid from the interstitial spaces. Failure or dysfunction of the system can result in lymphoedema, a condition characterized by the accumulation of fluid in the soft tissues (Board & Harlow, 2002). It is characterised by chronic swelling caused by the accumulation of lymph (Penzner, 2003) and can be classified as primary or secondary, depending on the cause (BLS, 2006).

Primary & secondary lymphoedema
Primary lymphoedema may be present at birth, develop at puberty or in mid-life and relates to the abnormal functioning of the lymphatic system, whereas secondary lymphoedema may occur following treatment for cancer, surgery, radiation therapy, recurrent infections or trauma (BLS, 2006). Lymphoedema is incurable, but there are ways to control and manage symptoms that can also help to improve quality of life, but, if left untreated, there is a risk that it may worsen over time (BLS, 2006).

The diagnosis of a secondary malignant lymphoedema may be a very important diagnostic sign for an unknown primary, but also for a tumor relapse (Witte et al., 2006). Diagnosis is a big challenge, because it is often associated with a long story of woe, severe pain and a big reduction in mobility and only early diagnosis and introduction of a tumor-specific therapy is able to prevent the progress of this disease (Soucek-Hadwiger & Doller, 2006).

Lymphoedema, whether primary or secondary, is an incurable and debili-
Lymphoedema

Figure 1: Prior to compression therapy

tating condition which has a negative impact on the quality of life of the sufferer and their family. Information with regards to diagnosis and treatment is often scarce and conflicting in nature. The primary aim of treatment must be to stabilise the oedema and empower the patient with the necessary skills to undertake self-care (Casey-Smith, 2000).

Treatment of lymphoedema

In order to treat the condition, the causative factors should be identified and there must be an understanding of the pathogenesis of both conditions and other forms of chronic oedema (Board & Harlow, 2002). Recognising lymphoedema early and treating it promptly is the best way to manage the condition and, without the appropriate and timely treatment, lymphoedema can lead to pain, recurrent infection, reduced mobility and impaired function (Casey-Smith & Casely-Smith, 1988). Unfortunately, it is not known which therapies are the most effective (Barclay et al., 2006) and old diagnostic techniques often caused more complications and recurrent cellulitis, which damages the superficial lymphatics and worsens the condition of the lymphoedema (Linnitt, 2005). Therefore, it is vital that practitioners, who can be nurses, physiotherapists or occupational therapists, are highly trained in caring for the patient with lymphoedema.

Today lymphoedema is usually managed by a combination of strategies aimed at protecting and decongesting the oedematous limb(s) and stimulating the development of supplementary lymphatic pathways to control swelling in the long-term (Barclay et al., 2006). There are five main types of treatment:

- Care of the skin to prevent damage and infection
- Compression of the limb with elastic sleeves or stockings, or bandaging
- Exercise to help the lymph flow
- Positioning of the limb and regular movement to use gravity and muscle movement to drain fluid
- Massage to help disperse fluid that has built up and move it away to areas where it can drain normally

Compression

The mainstay of management is physical decongestive treatment, of which compression therapy is one of the four elements. The simplest and most cost-effective method of applying compression, and an essential component in the long-term management of lymphoedema (Williams & Williams, 1999), is with elastic compression garments. For compression to be a success, it is essential that the garments are a perfect fit and there is appropriate selection of compression class and stacking material (Hampton, 2003). A wide range of garments is available in the UK; however, there is limited literature to guide therapists in their appropriate selection (Williams & Williams, 1999).

Manual lymphatic drainage

There are tiny vessels throughout the human body, which, under normal circumstances, remove the tissue fluid that is constantly leaking out of the other small blood vessels, and return it back into the circulation. Lymph is collected from the arms, legs, trunk and body cavities by a complex network of lymphatics and is returned back into the circulation via a larger lymphatic (the thoracic duct) in the base of the neck. Lymphoedema principally involves the legs (80 per cent), although the arms, genitalia and face can also be affected (Hong et al., 2004).

The blood vascular and the lymphatic system play complementary roles in tissue perfusion and fluid reabsorption. Despite its critical role in mediating tissue fluid homeostasis, intestinal lipid absorption, and the immune response, the lymphatic system has not received as much attention as the blood vascular system, largely due to a lack of knowledge about the molecular regulation of lymphatic development and function (Hong et al., 2004).

A very specialised type of massage called manual lymphatic drainage (MLD) is an important part of the treatment of lymphoedema. To be effective in treating lymphoedema, it is important to use the correct technique. The aim of the massage is to stimulate or move the excess fluid away from the swollen area so that it can drain away normally.

Massage in lymphoedema produces loosening of subcutaneous connective tissue, formation of large tissue channels and release of lipid droplets that enter the lymphatics. By this mechanism, massage helps reduce the amount of fat cells in the lymphoedematous leg (Eliska & Eiskova, 1995).

Patients and/or their carers can be taught to perform a simplified version of this massage, known as simple lymph drainage (SLD). This form of self-massage can be performed at home between visits from the lymphoedema practitioner to maintain the stimulation of the lymphatic system. For some patients with mild uncomplicated swelling this may be the technique of choice.
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Elephantiasis
Disturbances in blood capillary exchange of fluid, macromolecules, and cells across intact and abnormal micro-vascular beds deranged lymphatic travel are integral interacting components in disorders of tissue swelling. Lymphoedema, or low-output failure of the lymph circulation, is often indolent for many years before lymphatic insufficiency (failure) and tissue swelling emerge and persist. Superimposed occult or overt infection (lymphangitis) are probably major contributators to progressive limb deformity (elephantiasis) (Witte & Witte, 1995). Long-standing lymphoedema is characterised by oedema in the skin and subcutaneous tissue of fluid, extravaslated plasma proteins, and other macromolecules: impaired immune cell trafficking (Witte & Witte, 1995).

Elephantiasis nostras verrucosa is, therefore, a rare, chronic, deforming disorder characterised by hyperkeratosis and papillomatosis of the epidermis with underlying woody fibrosis of the dermis and subcutaneous tissue (Schissel et al., 1998). Chronic lymphoedema can be congenital or secondary to infection with surgery, radiation, neoplastic obstruction, obesity, portal hypertension or chronic congestive heart failure playing pivotal roles in the pathogenesis. Without appropriate intervention, the slowly progressive cutaneous changes will culminate in massive and grotesque enlargement of the affected body region (Schissel et al., 1998). The therapeutic goal therefore, must be to reach a stable disease without symptoms, which means reducing the lymphoedema to the latent stage (Soucek-Hadwigler & Doller, 2006).

Lymphorrhea
Lymphorrhea is the leakage, or weeping, of lymph fluid through the skin surface, when large beads of fluid appear on the skin and trickle from the affected areas. The causes of lymphorrhea are varied and may be the result of lacerations, abrasions, or trauma of the altered dry skin of longstanding oedema or may also occur in an acute oedema where the shiny, taut skin has stretched so rapidly that it splits, causing a leak. The lymphorrhea skin feels very cold, wet and uncomfortable and the fluid can rapidly soak dressings and collect in shoes with clothing and bed linen requiring frequent changes. Also, the break in the skin acts as an entry for bacteria and cellulitis is an ever present threat. If infection occurs, there will be pain and inflammation and further increased amounts of fluid leakage. The following case study describes a patient with lymphoedema who readily developed cellulitis, and how the care improved the patient’s quality of life.

Case study
The patient in this case study is a 50-year old morbidly obese lady we will call Mrs Jones. Mrs Jones has been obese since early adulthood but, throughout her adult life she had very large legs that were out of proportion to her obesity. There was a family history of leg swelling and, therefore, when her legs were large, it had been accepted as part of the ‘norm’ for her family.

The swelling had worsened since she fractured her tibia and fibula in 1977 and this could suggest a primary lymphoedema that had been complicated by secondary lymphoedema following trauma. Although there was no identified trigger for infection, in 2002 and 2005, she developed cellulitis which subsequently resolved with oral antibiotics.

Mrs Jones had social problems and spent much of the time discussing these during the first assessment. There were obvious mobility difficulties due to the swelling and to excess weight, and Mrs Jones could only walk 100m before becoming short of breath and needing to rest. Her husband helped with chores at home, undertaking tasks that she was unable to manage. The bathroom was upstairs in an attic and she could rarely manage the stairs, therefore, she used a commode in a bedroom on the first floor.

Mrs Jones legs were very uncomfortable from the knees down and her aim of treatment was to “to get a bit of relief from the discomfort”. The skin on her legs was dry fragile and broken, and there were lymphangiomias (an abnormal mass of lymphatic vessels) and papillomatosis (a disorder with numerous wart like growths) with lymphorrhea from two sites. The subcutis (a layer of connective tissue beneath the dermis) felt fatty and rubbery and there was also a great deal of hyperkeratosis (a thickening of the outer layer of the skin), which made caring for the skin extremely challenging.

The severe swelling of both legs was worse below knee with the left larger than the right. Although there was obesity, the trunk was not affected by lymphoedema. The leg shape was distorted with proximal-distal ratio of 0.3 and deepened skin folds above both ankles and all the toes were affected. Mrs Jones had previously been seen in vascular clinic where no arterial problems were found.

The lymphorrhoea had previously been treated with visco-paste bandages to dry it up and settle the associated inflammation. Mrs Jones was then supplied with made to measure circular knitted below knee stockings but unfortunately found them too:

- Difficult to apply due to elasticity
- Impossible to maintain in place as they rolled down
- Uncomfortable as they gathered in deepened skin folds

Consequently she had been unable to wear them.

Assessment
The lymphoedema specialist undertook the first assessment in the lymphoedema clinic. A course of below knee bandaging was discussed to bring the size of her legs down, followed by made-to-measure flat knitted compression stockings. Immediately a reluctance was encountered on the part of Mrs Jones regarding the need be bandaged because of the perceived lack of mobility she felt she would have due to the bulky bandages. A discussion between the vascular nurse specialist, lymphoedema specialist and the district nurses led to a selection of a cohesive short stretch bandage as the best option for this lady. They would produce less bulk at the foot and therefore the patient’s own shoes could still be worn. The cohesive qualities of the bandage made it less likely to slip, it being possible to leave in situ for up to seven days, and the brand chosen came in longer rolls (requiring less bandages) making them a cost-effective solution to all of the problems. Previously action short stretch bandage system would have been used but this would have required daily reaplication due to the amount of slippage encountered.

There was an immediate need for improved skin care and there needed to be a push for more exercise, as her sedentary life was partly responsible for the deterioration in her lymphoedema. A course of bandaging (cohesive short stretch bandages) was arranged between the lymphoedema specialist and the district nursing team at a time that was convenient to Mrs Jones and all of those caring for her.

Liquid Paraffin 50 percent, mixed with 50 per cent white soft paraffin is an ointment known as 50/50. This was applied...
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![Figure 2: After compression hosiery](image)

liberally to Mrs Jones legs to soften the hyperkeratosis and moisturise the skin. Non-adherent dressings were applied to areas of lymphorrhoea.

Protection

A cotton tubular bandage was placed next to her skin to help protect it and to ensure there were no reactions to any unnatural materials that were used for padding. Orthopaedic wool was used to pad the leg out to cone shape in order to achieve graduated compression with the short stretch bandage. It would have been preferable to use textured foam padding to break down areas of fibrosis and to fill in deepened skin creases but the need for this would have to be assessed at each visit. Since this is a specialist skill, and since the community nurses were undertaking bandaging, it wasn’t feasible to do this. The toes were individually bandaged with five centimetre conforming bandage.

An eight centimetre cohesive short-stretch bandage was used in spiral clockwise, toes to knee method at 100 per cent stretch. A second eight centimetre bandage layer was similarly applied in a spiral anti-clockwise, toes to knee method. A further layer of 12cm bandage was applied, again at full stretch in a figure of eight from the ankle to the knee.

Bandaging is undertaken daily for first week, the legs washed and creamed with 50/50 at each visit. After achieving a good size reduction in first week, the care was changed to bandaging twice weekly. The skin condition greatly improved and skin care routine altered to 50/50 on areas of hyperkeratosis, with Diprobase elsewhere.

Encouragement

Initially Mrs Jones found the bandages restrictive and refused to leave the house. However, she claimed her legs felt more comfortable from day one with the support and as time went by she tolerated the bandages well. Mrs Jones needed constant encouragement to increase her exercise, and it was suggested she should climb up and downstairs as her breathlessness allowed. However, she became very short of breath after one flight and was reluctant to do more. She was subsequently encouraged to increase her walking exercise instead.

Reduction in limb volume resulted in the original areas of lymphorrhoea drying up within the first few days and, although a further area became a problem, unexpectedly, it subsequently healed.

After seven weeks of treatment, Mrs Jones was measured for European compression class 2 hosiery. It would have been more appropriate to apply compression class three but it was felt that she was unlikely tolerate or be able to apply these independently. Her husband worked from 9am and it was not feasible for him to help. It was also important for Mrs Jones to be motivated to self-care.

Photographs were taken with Mrs Jones permission, in order to monitor changes. The changes were so dramatic, with a three litre reduction in one lower leg, that Mrs Jones cried when she saw the photographs. She said she could not believe that a problem, experienced for so long, could be resolved in such a relatively short period of time.

Independence

One week later Mrs Jones was applying her stockings independently. Her husband remained supportive by encouraging her to go for walks and to increase her exercise levels. At last, she is able to use the toilet in the attic more often, although it does still make her short-of-breath. Mrs Jones now goes out almost every day to see friends and family and talks openly about her weight problem, lack of esteem and confidence. She has decided that her next step into her new life may be to have gastric banding surgery to help weight loss.

Conclusion

The cohesive short stretch bandages were an excellent choice as they stayed in place, required fewer applications and were well tolerated by Mrs Jones. This proved cost-effective in terms of nursing time as the daily bandaging regime was reduced to twice weekly. It also allowed treatment to take place in the community thereby reducing the need for specialist visits. The district nurses were already familiar with the bandages for leg ulcer management and therefore, found it easy to apply the principles of short stretch to this technique. Because of the ease of application and Mrs Jones compliance to treatment, compression hosiery could be used and quality of life was restored to Mrs Jones.

References


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