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Introduction

This article presents the evidence-based rationale for one particular component of a treatment plan in complex but quite common scenario for community nurses – Lymphoedema Compression Bandaging (LCB). In recent literature LCB has become an umbrella term for both the traditional short-stretch Multi-Layer Lymphoedema Bandaging (MLLB) and the newer 2-layer systems of lymphoedema compression. By making explicit in this article the methodical process of appraising the evidence before a treatment plan was formulated, a deeper understanding is shared for reflection and discussion.

The patient

David* (name changed) who was 64 years old lived with his wife and worked part-time, having retired from over two decades in the armed forces. He enjoyed gardening and bowling.

David was diagnosed with complicated lymphoedema of the legs and genitalia, secondary to metastatic penile carcinoma. He reported that his right leg and scrotal swelling first occurred following surgery 21 years ago, which involved a partial penectomy (removal of penis and creation of urinary channel) and bilateral block dissection of inguinal lymph nodes. He also underwent two sets of 30 fractions of radiotherapy.

David experienced repeated attacks of cellulitis for which he took prophylactic antibiotics. Confounding issues were that he had a BMI of 43 and a history of hypertension, which was controlled by medication. David was aware of his weight problem and knew that his weight had an impact on his lymphoedema. He had difficulty getting in and out of his car, and as a result of a restricted range of movement at the hip and knee, any actions involving bending down were challenging. David also found getting clothes to fit challenging because of the size of his right leg, a situation exacerbated by the summer heat.

Previous management

David had an established treatment plan for his lymphoedema that involved skin care, exercise, massage and hosiery. He wore class 2 made-to-measure tights and a Whitaker Pouch (a compressive scrotal support) for scrotal swelling. Antibiotics were initially episodic but were now taken prophylactically on a long-term basis.

A deeper understanding of the condition

Lymphoedema occurs as a consequence of the lymphatic system failing to control the fluid equilibrium in the tissue spaces which results in swelling or oedema. The accumulating fluid is known as lymph; straw coloured, relatively protein-rich solution. David's lymphoedema was considered late stage II (Box 1.) where the presence of fibrin from stagnating proteins have contributed to the

development of shape distortion, firm, non-pitting subcutaneous tissues and hyperkeratosis (International Society of Lymphology, 2003). The occurrence of chronic inflammation is the result of accumulating cell debris and pro-inflammatory cytokines (Ridner, 2013). Theoretically, an intensive period of bandaging providing a casing against which voluntary muscular action could produce a resistive force would lead to increased lymph flow. Fibrin is thought to degenerate with the removal of proteins, cell debris and pro-inflammatory cytokines, leading to softer tissues, improved limb shape and removal of inflammation (Parsch and Moffatt, 2003). With this in mind a literature search was conducted to identify evidence relating to LCB; study reports were appraised using Critical Appraisal Skills Programme checklists (CASP, 2013). The key studies, from this clinician's perspective, are presented.

A clinician's appraisal of the evidence for Lymphoedema Compression Bandaging (LCB)

A comparative control trial undertaken by Damstra et al (2008) examined volume variations in relation to interface pressure (IP) in the application of short stretch bandages to leg oedema. The findings suggested IP drops when volume declines. Although a small study population (20 patients) and limited participant data weaken the validity of the findings, recognised tools considered consistent for measuring volume and pressure were utilised which strengthens the reliability of the findings. A subsequent randomised control trial (RCT) examined the variation in IP regarding volume reduction in breast cancer-related lymphoedema (Damstra et al, 2009). The study's results indicated low IP was just as effective as high IP in managing arm lymphoedema. The authors acknowledged statistical weakness due to the small study population (36 patients) but homogeneity was demonstrated regarding participant data which makes the results more generalisable. The use of recognised measurement tools reinforces the study's reliability. This trial may be of limited assistance regarding the management of leg oedema where arterial deficiency is suspected, as a high level of external pressure is required to counter the greater hydrostatic force (Damstra et al, 2009). The problems of assessing arterial sufficiency when the patient has oedema has been acknowledged elsewhere and was a consideration in this case study. Doherty et al (2006) suggested Ankle Brachial Pressure Index (ABPI) readings from thickened tissues may be inconsistent and consideration regarding the suitability of compression is required.

Subsequently, Parsch et al (2011) performed an RCT to ascertain the ideal IP in controlling limb oedema. Findings suggested an excess of 60mmHg is unproductive in managing leg oedema but detailed argument is lacking. Details about randomisation and population characteristics were omitted, and multiple instruments were utilised to measure treatment effect threatening the study's reproducibility. However, their findings correlate with previously appraised trials in that IP drops as volume reduces thus supporting the need for frequent bandage reapplication. Each trial suggested the application of higher pressure initially which may compensate for the IP reduction. Parsch et al (2011) argued that the high pressure will not be sustained but will fall to a tolerable level for the patient. This need for high initial pressure was noted when considering David's treatment plan.

Inelastic short stretch bandages are traditionally utilised in LCB because of a combination of high working pressure, which causes immediate volume reduction, and low resting pressure, which is better tolerated during inactivity e.g. at night (Partsch and Moffatt, 2003). A prospective RCT undertaken by Lamprou et al (2011) compared traditional multilayer lymphoedema bandaging (MLLB) with the Coban 2 compression system (C2CS). Findings suggested the C2CS was as effective as MLLB at volume reduction. The inclusion of comprehensive details about randomisation of patients, along with reliable instruments used to measure treatment outcome compensates for a small study population (30 patients). This treatment approach adds to the clinician's options for treatment so that other considerations such as cost and patient comfort might be discriminating factors.

In the following year, an RCT reported by Moffatt et al (2012) examined application frequencies of the C2CS in comparison to MLLB. Findings suggest C2CS twice weekly provided the best volume reduction. Transparent reporting of the methods of randomisation used for allocating participants strengthens the reliability of the results. However, incorporating MLD along with bandaging confounds the validity of the results as the treatment effect has not been considered in isolation.

Franks et al (2013) performed a prospective cohort study that appraised the effectiveness of C2CS in lymphoedema management. The findings indicated it was successful at reducing the volume and improving tissue consistency, especially with leg lymphoedema. The wide confidence intervals reported indicate further studies should be undertaken before a definitive conclusion is reached.

Applying the evidence to practice

Under section 6 of the Nursing and Midwifery Council (NMC) Code, practice decisions should be based on best available evidence (NMC, 2015). After appraising the evidence, the following treatment plan was considered. Management of David's lymphoedema would involve a week's intensive course of LCB. In the first week of intensive bandaging, rapid volume loss is experienced therefore bandage changes need to be frequent to keep up the pressure (IP) on the oedematous limb. The evidence indicated that MLLB is considered as effective as the newer C2CS in reducing limb volume, but may be cheaper when frequently bandaging (Lamprou et al, 2011). C2CS could be introduced after the first week when bandaging frequency could reduce to twice weekly. Since C2CS is less bulky than the multiple layers of MLLB (Lamprou et al, 2011) it might encourage patient concordance i.e. David would be able to wear trousers more easily. Fewer episodes of bandaging would also reduce clinic visits creating more flexibility as appointments could fit around David's work schedule.

Fine tuning the treatment plan to the patient

Theoretically, it is suggested that in outpatient clinics where LCB does not occur daily, application of greater pressure will compensate for a rapid reduction in volume but this is balanced with seemingly contradictory evidence that pressures over 60 mmHg are not helpful (Partsch et al 2011). In practice, such recommendations prove difficult since, like many others, there are no instruments available to measure sub-bandage pressure or IP in our clinic accurately. Judgements will have to be made based on David's subjective report, along with an assessment of his peripheral vascular circulation. About the rapid fall-off of IP as initial volume reduces, assurance will be given that any discomfort felt should be short lived. David will be advised to monitor for any signs of peripheral circulatory impairment. He will be instructed to keep moving the bandaged limb regularly to relieve any discomfort experienced. If intolerance arises, he will be advised to remove the first layer of bandage however if problems continue David will be instructed to contact the service for further advice since bandage damage is a considered risk.

Supplementing the bandage treatment

An exercise programme will be prescribed to heighten the benefits of bandaging. Referrals will be made to Occupational Therapy regarding David's difficulty with car transfers and Physiotherapy to provide assistance with improving his range of movement at the hip and knee.

Discussion and reflection

Applying evidence-based practice: reflections of a lymphoedema nurse.

Background

The ideals of theoretical best practice and the reality of the limitations of clinical workplace will have resonance with the experience of many nurses and the source of dilemma in post-registration continuing professional development. The reflection is shared in this spirit.

Evidence Based Practice – an expectation of modern practice

Every healthcare professional aims to make clinical decisions and treatment approaches based on the best available evidence. Clinical decisions are no longer the sole responsibility of a doctor; every clinician is expected to work autonomously; each has the authority to make decisions determining courses of action within their sphere of expertise (NMC 2015). Basing decisions merely on experience or gut instinct is not sufficient, a transparency of decision-making is expected, whenever possible justification has to be supported by empirical evidence. Factors such as financial restraints and professional accountability have led to the introduction of processes of Evidence-Based Practice (EBP) (Veeramah, 2016). EBP is a system whereby a combination of effective and trustworthy empirical data combined with patient preference and clinical experience are utilised in the formulation of treatment decisions (Parahoo, 2006). Study findings identify a high regard for EBP in

the nursing community, with claims that it encourages care of a high standard and is vital for the progression of the nursing profession (Veeramah, 2016; Majid et al, 2011).

The six-step process of EBP requires development of skills at every level (box 2) (Flemming and Fenton, 2001). A study undertaken by Majid et al (2011) explored nurses understanding and responsiveness to EBP. Difficulties interpreting clinical problems into structured, answerable questions were identified. Individuals who had attained advanced nursing qualifications had an improved self-perception about undertaking EBP type activities. However, Gerrish et al (2011) found that not all clinicians at a higher level deemed themselves competent in every aspect of EBP. Newly qualified nurses face challenges from a different perspective, their pre-registration training assists in developing a level of competence about the assessment of research, however, a lack clinical judgement and knowledge of patient preferences makes embracing EBP fully, difficult (Ferguson and Day, 2007). Evidence-based decision-making is a complex process requiring multiple considerations, and each element cannot be considered in isolation. Flemming and Fenton (2001) identified four different elements to it (box 3), and argue circumstances will dictate which aspect will take precedence over the others.

Summarising the lessons learnt - making use of guidelines

This article is a critical reflection on a case study, where explicit consideration of EBP enhanced the decision-making process which resulted in an achievable, cost-effective treatment plan which was considerate of the patient's needs. The patient, "David", had work commitments which, when combined with limited service availability, affected the choice of possible bandaging options. Multi-layered Lymphoedema Bandaging (MLLB) is a core component of intensive lymphoedema management. A major obstacle identified in the research was lack of time in the working day to be able to search and critique the research. The sheer volume of evidence and variability of quality of research makes this task a challenging one. National guidelines such as those by NICE or SIGN have been formulated to make the job easier and more practical for the clinical nurse/AHP. Guidelines are a series of proposals for the treatment of specific conditions to assist clinical decision making. Limited time availability makes sifting through the sheer volume of evidence impractical; guidelines save the clinician time as the guidance are based on selected high-quality research and thus discourage ineffective treatment approaches. However, it is not suggested that guidelines should be perceived as the sole source of reference in clinical decision making. Guidelines are formulated on a high-quality evidence base but which may be formed in artificial experimental conditions, whereas clinical practice environments are complex and clinical decisions need to correspond with both practitioner and patient preferences (Fenton and Flemming, 2001). Further, Allen and Harkins (2005) argued that referring to clinical guidelines had become more time consuming and potentially confusing due to publication of many guidelines by different organisations. For example, in the management of lymphoedema, there is one core group of guidelines produced by the Lymphoedema Framework (e.g. LF 2006) and the International Lymphoedema Framework (ILF 2008-15). However, there are also guidelines created by other similar groups e.g. IUP Consensus document (2013). This is further complicated by considering the common multipathologies of many

patients with chronic lymphoedema. For the HCP caring for these patients with multi pathologies, the multiplicity of guidelines applicable to the patient can be confusing and contradictory.

Summary

An appraisal of the evidence concerning a particular patient supported the clinical view that incorporating an intensive period of LCB would help improve the shape and appearance of the moderate/severe lymphoedema suffered. Appraising the evidence provided an opportunity to formulate a treatment plan, which is not only based on the best available evidence but also patient centred. Recognising from the evidence, the importance of referring to allied health professionals to supplement the care our clinic could give ensured a rehabilitative approach to care that would assist the patient to fulfil their potential holistically. Conducting a structured reflection on how evidence is sought then applied in practice was a useful academic and life lesson for this practitioner.

Key Points

- C2CS is just as effective as MLLB at reducing limb volume in managing lower limb lymphoedema.
- Multiple lymphoedema compression bandage systems can be incorporated into a treatment plan
- Appraising research evidence assists in formulating a treatment plan that is patient centred and cost effective.
- Evidence based practice is a complex process requiring multiple considerations and competancies
- Clinical guidelines can save the clinician time when formulating evidence based treatment plans.

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