Compression therapy for paediatric lymphangiohemangioma: A case report

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Key words

Compression therapy, lymphangiohemangioma

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Abstract

Background: In this case report, the author examines inelastic compression bandage treatment for unilateral lower-limb lymphoedema, secondary to a congenital lymphangiohemangioma in a 11-month-old child. Compression therapy for adults is a well recognised treatment for unilateral lymphoedema but remains less well defined for children. **Aim:** To determine the effects of inelastic compression bandaging on lymphoedema in a paediatric single case study. **Method:** Once baseline circumferential measurements of the mid dorsum and ankle were taken, a made-to-measure, class-1, below-knee compression garment was fitted. **Results:** Treatment with an inelastic bandaging system capable of providing reduced (20–30 mm Hg) pressure to the site resulted in a clinically significant improvement in the lymphoedema. **Conclusion:** A 1-month bandaging protocol allowed for sufficient improvement to progress to fitted made-to-measure garment therapy.

Compression therapy, whether by intermittent pneumatic compression or by inelastic compression bandaging for lymphoedema in adults is a well-established clinical practice (Lamprou et al, 2011; Feldman et al, 2012), both for primary lymphoedema and for lymphoedema secondary to causes such as cancer, the treatment of cancer, burns, varicose vein surgery, harvesting of veins, wounds, infection, scarring, deep-vein thrombosis, scarring, and chronic venous insufficiency, but this is not an exhaustive list (Blome et al, 2013). By comparison, the treatment of paediatric lymphoedema is less well substantiated in the literature (Connell et al, 2009; Papendieck, 2011; Schook et al, 2011; Mendez et al, 2003). Presented here is a case study of a paediatric patient treated for unilateral lower-limb lymphoedema, secondary to a lymphangiohaemangioma.

Background

In May 2012, an 11-month-old girl was referred to the author's lymphoedema service by a consultant plastic surgeon to assess progressive swelling associated with lymphangiohaemangioma, which had been present from birth. The aetiology of these lesions was unclear and the only remarkable feature of the history was a viral infection contracted by the mother during the pregnancy. Karyotyping of the lesion demonstrated no abnormalities; a finding not uncommonly observed in lesions in this area of the body (McCoy et al, 1995).

On examination, the majority of the swelling was visible on the dorsum of the right foot, including the toes that were curled under the foot (*Figure 1a*). The swelling extended uniformly to mid calf, but was minimal in nature compared to the forefoot. It was felt that the swelling in the calf area would disappear once the child was walking and eliciting the calf muscle to aid drainage as there was no obstruction in the lymphatic system above the ankle. The skin condition was unremarkable, tissues were soft in nature and there was no history of cellulitis.

The intervention included a two-layer lite compression system that was applied three times a week for a month. Prior to referral, compression using an elastic bandage had been attempted without apparent effect. Given that the infant would soon be able to walk, initial therapy was restricted to skin care, kinesiotaping and manual lymphatic drainage. This conservative treatment was initially implemented due to the fact that the child was not walking and these chosen treatments would not interfere with foot and movement development. The parents could also carry these out on a regular basis, thus avoiding multiple disruptive hospital sessions.

Methods

Baseline circumferential measurements with the child in supine were taken of the mid dorsum of the foot and ankle prior to bandaging and each time after the removal of the bandages before reapplication was implemented. Following this, a made-to-measure, class-1, below-knee compression garment was fitted.

Figure 1(a). Patient's foot on initial presentation.(b) Patient's limb with compression bandage applied. (c) Patient's foot following a 4–week treatment regimen.

After the infant was capable of walking, an inelastic bandage (3M Coban™ 2 Layer Lite Compression System) was applied. The bandage was applied to the leg below the knee including the foot in a toe boot application (*Figure 1b*) as the toes were too small to individually wrap. The patient's own tights were placed over the bandaging to stop the child interfering with them and the mother was issued scissors to remove the bandaging if the patient became distressed in any way, such as crying or tugging at the bandage indicating it was causing some discomfort. Following this session, the patient was observed walking independently with no changes in gait pattern compared to pre bandaging and no interest in the bandage.

Results

No problems were reported on the second day of treatment and there was no apparent slippage of the bandage. No skin damage or redness was observed on removal of the bandage. The leg was remeasured, washed, dried and moisturised and the patient was re-bandaged and reviewed again 2 days later. The patient was bandaged in total three times per week for four weeks. Sequential measures of the circumference indicated a reduction in volume of approximately 3 cm over the course of treatment with the inelastic bandage (*Figure 1c*).

Summary

The problem management of this patient represented unique features. Intermittent pneumatic compression was not practical in this case and the exact compression values needed to reduce the oedema were undefined. Inelastic compression using the 3M Coban 2 Layer Lite Compression System has been shown equivalent to multi-component systems in adults (Lamprou et al, 2011; Partsch et al, 2011) and the level of compression provided by the Coban 2 Layer Lite system was in the range of 20–30mm Hg (Schuren et al, 2012).

However, sub-bandage pressure was not measured during this case study due to lack of equipment, so application was cautious and the response from the child to the bandage was monitored closely for any distress or signs of discomfort. For any future studies in paediatrics, sub-bandage pressure needs to be monitored. Furthermore, it would be beneficial if additional circumferential measurements (i.e. every 4cm of the affected limb) were obtained, however, this would prove challenging on a constantly moving young child.

Conclusion

The successful reduction in circumference indicates that this bandaging system and treatment protocol were effective in reducing swelling and improving the shape of the affected limb with no complications. The study represents (to the author's knowledge), the first such case of successful compression therapy using this approach. A critical caveat, however, is that bandaging is a skill that takes time to learn and should not be undertaken without appropriate training, especially in the paediatric lymphoedema population.

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