

A Novel Treatment Program for the Management of Acute Male Genital Edema/Lymphedema

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Abstract

Therapists certified in lymphedema management are skilled and prepared to address male genital edema mainly through manual lymphatic drainage and compression bandaging. That being said, there remains a need to further develop and establish treatment protocols in this area of edema management, especially in inpatient, acute care hospital settings. Many individuals who are hospitalized for various conditions may experience acute genital edema. Acute genital edema is a painful and self-limiting condition, which is difficult to treat. Early diagnosis and proper conservative management is essential to success and can even prevent surgery. At present, in circumstances when acute male genital edema (AMGE) is acknowledged, treatment methods are typically limited to medical intervention with use of medications such as diuretics, or compression slings are provided by therapists during acute hospital stays. This article describes a strongly effective, conservative method of reducing and resolving genital edema.

Keywords: Genital edema; Scrotal edema; Acute care; Edema; Lymphedema; Manual lymphatic drainage

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Introduction

The therapists carrying out the described AMGE intervention are all occupational therapists certified in lymphedema management. At the specific acute hospital setting where this intervention was established, there was a need for improved program development to effectively address symptoms of AMGE. Typical treatment was carried out with referrals to occupational therapy specifically for edema management and individualized for each patient referred to therapy. Through the process of treating various patients in both critical care and step-down units and being mindful of comorbidities - in some cases circumstances of multiple organ failure -- and taking into consideration patient ability to independently self-manage symptoms or the need to recruit support of family, caregivers, or nursing staff, this intervention progressed and has now become a part of standard occupational therapy edema management in this specific acute care setting. We aspire to raise awareness about AMGE and the need for improved conservative inpatient programming to address symptoms of AMGE [1].

Genital edema can be the result of an interruption to the lymphatic drainage of the genital area caused by tumor, surgical removal

of lymph nodes, radiotherapy and/or infection. Congenital disorders causing inadequate lymphatic's can sometimes lead to the development of this condition. In men, the penis, scrotum or both can be affected, presenting as swelling and pain. The skin may become prone to inflammation and infection due to the high levels of protein in the tissues and may become course and hardened. Difficulty in urination and sexual dysfunction can occur (Genital Oedema, 2010). Genital edema can also be caused by systemic diseases such as cardiac, liver and kidney diseases and can often present during acute hospital settings. Genital lymphedema causes irritating symptoms such as urinary troubles due to genital edema and genital lymphorrhea, which deteriorate patients' quality of life (Takumi, 2016). Acute Male Genital Edema (AMGE) can be extremely painful, occur suddenly or gradually, and can greatly impair functional mobility and participation in activities of daily living (ADL) [2].

AMGE is frequently overlooked and underreported by patients and health care providers, which can greatly delay the management of patients' symptoms. It is essential that all care providers do a thorough assessment to identify if this type of swelling is present so as to intervene early using conservative

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management approaches to reduce symptoms and prevent symptom progression. Occupational therapists specifically can have a critical role in identifying and addressing the unique needs of individuals with genital edema in an acute care setting [3].

Lymphatic's from the skin of the penis drain to the superficial inguinal and sub inguinal lymph-nodes. Penile shaft lymphatic's converge on the dorsum and ramify to both sides of the groin to drain into inguinal lymph nodes. Lymphatic's from the glans run deep to buck fascia dorsally to drain to the superficial and deep inguinal nodes bilaterally. Scrotal lymphatic's do not cross the median raphe and drain into the superficial inguinal nodes on the ipsilateral side (Wein et al.) [4].

Mainstream lymphedema training programs in the United States primarily focus on addressing lymphedema in the upper extremities and lower extremities. Training regarding the management of genital edema is not always provided or when it is provided, it may be done through a brief video training format that recommends one handed Manual Lymphatic Drainage (MLD) and daily multilayered bandaging. One of the authors, Clinical Professor Linda Liang, has found that MLD once per day is not effective in the acute care setting and that bandages usually drop off after less than two hours unless severe fibrosis is present [5]. The possible reason for the ineffectiveness of this intervention in the AMGE population is that unlike in the upper or lower extremities, the scrotum lacks connective tissue such as massive adipose tissues, skeletal muscles, large blood vessels, cartilage and bones. AMGE is relatively easy to drain and easier to refill clinically. Frequent manual lymphatic drainage (MLD) plays an important role in AMGE management. Liang found that performing MLD, followed by bandaging for two hours and then continuing with MLD once every hour, if possible, demonstrated significant progress [6].

These findings have been presented at the 11th International Lymphedema Conference (2014), The World Congress of Lymphology, and American Occupational Therapy Association Conference [7]. As a result of these presentations, the requests from therapists certified in lymphedema management and generalists have increased in inquiring more about these treatment methods.

Method

Evaluation

The following detailed AMGE evaluation recommendations are to be completed in addition to a general, holistic treatment evaluation. To appropriately evaluate a patient' genital edema, Whitaker's (2009) tool is used for measurement. This is done by using the following criteria: measure the girth of scrotum (widest part, middle of scrotum), girth of neck of scrotum, the length of scrotum (base of penis to perineum) and circumference of penis. Measurements are taken daily in all cases to demonstrate outcomes. Skin assessment includes color, texture (soft, indurations or fibrosis), open wound, ulcers, crusts and other skin lesions. Pain Intensity Rating Scale (National Initiative on Pain Control, 2017) is used to measure pain levels, 0, no pain; 1-2,

mild pain; 3-4 and 5-6 moderate pain; 7-8 and 9-10, severe pain. Functional limitations including ADLs, functional mobility and urination issues related to genital edema should all be assessed and documented [8].

Intervention

In order to appropriately address the edema, the following interventions outlined below are recommended.

- MLD preparation: Inguinal nodes, lower abdomen or pubic areas and upper legs. This can often be bypassed if the patient has had recent abdominal surgeries or abnormalities.
- MLD sequence: Beginning at the penis, perform MLD in circular motion from distal to base of penis if the patient does not have catheterization. For a patient who has a catheter or skin issues, use pressure/squeeze method to drain fluid from penis to scrotum. Then perform MLD to scrotum. Start from scrotal raphe (the midline of the scrotum), place one hand under and one hand over and use circular motions to left and right side inguinal nodes. Repeat this cycle for about 5 to 10 minutes per patient's skin condition or physical tolerance for pain. Add fibrosis techniques if needed. If there are skin issues, use the pressure/squeeze method instead of MLD. The edema can decrease quickly if appropriate MLD is provided. Due to the loosen space which refills easily causing edema, it is more effective to perform MLD every hour if possible or as frequently as possible. Frequency will vary on a case by case basis. Educate the patient, family members and/or caregivers to perform above self-MLD every hour if necessary.
- Skin care: For appropriate skin care management, follow standard edema/lymphedema management techniques.
- Bandaging: Use two to three rolls of 6 cm x 4 m Transelast, which is a firm grip bandage that yields highly-elastic properties without containing elastic threading. This long-lasting bandage is both breathable and durable conforming well to contours such as fingers and genital area. If there is moderate to severe fibrosis, add a Profore #3, a light compression bandage part of the 4-layer wound care kit, on top of Transelast. Nursing staff, patient and/or family should be instructed to remove bandages in two hours and continue MLD hourly during daytime.
- Positioning/scrotal support/sling: Scrotum should be kept elevated with a towel roll wrapped in a pillow case for acute bed dependent patients. For patients who are ambulating, occupational therapists should provide standard or custom made scrotal support/slings, or instruct patient to wear biker shorts if appropriate.
- Exercises: Active, active assistive, or passive hip flexion and extension, abduction and adduction, external and internal rotation will help to decongest the lymphatic collections.
- Patient/family/caregiver education: Educate the patient and those providing support and care to the patient about the program and why self-management such as positioning mindfulness, exercise, frequent self-manual therapy, and

compression usage are all essential to reducing symptoms of AMGE. Demonstrate the effectiveness of the MLD sequence to genital areas [9].

Cases

In all cases, edema was noticed by care providers and a referral to occupational therapy was provided for evaluation and treatment of edema/lymphedema. All names of case studies below have been changed for the purposes of this article.

Case I

David is an 80-year-old male admitted to hepatobiliary services for a higher level of care, with a diagnosis of necrotizing pancreatitis, arterial fibrillation, hypotension, and respiratory failure. David initially presented with bilateral lower extremity (BLE) edema that later progressed to the genital region. The Occupational Therapist (OT) addressed BLE edema as well as his acute genital edema daily during his acute hospital stay. Due to the severity of the patient's medical condition, the patient was dependent for edema management. David's wife was educated about general edema management strategies as well as scrotal edema management techniques. The patient's wife was able to independently conduct the MLD sequence and was crucial to the integration of positioning strategies into David's daily hospital routine. The patient's wife was integrated in daily OT sessions [10]. This patient demonstrated reduction in scrotal measurements - initial evaluation 43 cm × 44 cm × 27 cm (with severe pain at genital area) to discharge: 26 cm × 26 cm × 16 cm with 40% deduction. Due to the consistent integration of daily genital edema management strategies (such as MLD, skin care, and positioning) at the recommended hourly frequency, this patient's acute genital edema and pain at genital area resolved in four days.

Case II

Robert is a 48-year-old male with a history of gallstones and pancreatitis who underwent an endoscopic retrograde cholangiopancreatography and interventional radiology embolization at an outside hospital. Patient was transferred to Keck Medical Center of USC with a bile leak and necrotizing pancreatitis. The patient underwent an exploratory laparotomy and pancreatic debridement. After developing scrotal edema during his acute hospitalization, this patient was referred to OT services for edema management [11].

At evaluation, Robert presented with significant scrotal edema, erythema, and reported a 7/10 level of pain on the genital areas. Robert also presented with difficulty and pain during urination. Due to Robert's acute medical state and lethargy, he was unable to participate in self-management strategies at initial evaluation.

His fiancé actively participated in his edema management sessions, completing all recommended interventions with patient. The scrotal edema reduced from 34 cm × 36 cm × 27 cm to 20 cm × 21 cm × 16 cm (baseline) with no pain reported after 4 days of receiving OT edema management services [12].

Conclusion and Future Direction

The current recommendations for AMGE management from lymphatic training schools in the United States do not adequately address the needs of individuals impacted by AMGE, a more thorough treatment approach for AMGE management is needed. Use of manual lymphatic drainage at a more frequent recommendation has demonstrated positive outcomes in the acute setting, where compression frequently becomes difficult due to various other factors (indwelling urinary catheters, frequent repositioning of patients in bed, reduced bowel/bladder control) [13]. The more frequently MLD is performed, better outcomes are achieved and less pain is reported. Rather than using foam and short stretch bandages, using conforming bandages directly or combining use of conforming bandages with un-stretched bandages provide better addresses scrotal contour and can be sustained for a longer period of time in an acute setting. Scrotal position can greatly influence edema as well as impact a patient's pain level and potentially prevent future onset of genital wounds during an acute hospital stay.

All the patients referred to OT for genital edema management were successful in reducing genital edema, reducing pain, and improving skin quality regardless of their medical conditions and whether or not they were also affected by having edema in other limbs (including bilateral lower extremity edema) [14]. This intervention was carried out by occupational therapists whose primary focus was to facilitate patient independence in self-management of symptoms. Due to the nature of critical care environments and patient health status, many of our patients were unable to complete self-MLD, positioning recommendations, or exercise recommendations independently. Due to this reason, family, nursing, and caregiver education all played a critical role in our intervention. It is essential to utilize a holistic perspective to care with this population as AMGE can have many functional implications [15,16].

This novel treatment approach for AMGE management can be utilized during acute hospital stays to promote the quality of care provided to patients. By comprehensively addressing symptoms we have shown that we can reduce symptoms of pain and promote skin quality with the goal of preventing skin break down and infection. By reducing the symptoms of AMGE, future studies should aim to assess the impact of reduced AMGE on promoting function in these patients as their genital edema may prevent them from comfortably participating in edge of bed or out of bed activities.

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