NATIONAL LYMPHEDEMA NETWORK

NLN

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LYMPH Link

Vol. 21, No. 1 January~March 2009

ISSN 1065-9951

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The NLN Mission Statement

The mission of the National Lymphedema Network is to create awareness of lymphedema through education and to promote and support the availability of quality medical treatment for all individuals at risk for or affected by lymphedema.

The NLN is dedicated to:

- *promoting research into the causes, prevention and treatment of lymphedema;*
- *securing adequate insurance coverage for medically necessary, safe and effective treatment;*
- *expanding the number and geographical distribution of lymphedema treatment facilities and certified therapists.*

To achieve these goals, the NLN disseminates information about lymphedema to healthcare professionals so they can appropriately counsel their patients on its avoidance, and prescribe safe, effective treatment for those affected by this condition. The NLN also provides this information to the general public.

Early Diagnosis And Treatment Intervention For Lymphedema— The New Standard Of Care

By Nicole L. Stout, MPT, CLT-LANA

RELEVANCE

2.3 million women are survivors of breast cancer (BC)[1]. Lymphedema (LE) is a common impairment diagnosed following the treatment for cancer. Breast cancer-related lymphedema (BCLE) incidence rates are documented between 33% and 48% following axillary lymph node dissection (ALND) and radiation therapy (RT)[2] and 5% to 14% after sentinel lymph node biopsy and RT.[3] BCLE impacts quality of life and upper limb function and may perpetuate chronic disability considering the progressive nature of the condition when left untreated.[2]

DIAGNOSING LYMPHEDEMA

Traditionally, the diagnosis of LE occurs after the condition becomes clinically apparent resulting in delayed treatment and a progression of the condition. This may be due to a general lack of understanding of the pathogenesis and presentation of the condition by the medical provider as well as a lack of awareness of effective treatment modalities. Past medical dogma surrounding LE management was that of a lifetime condition with no known treatment.

Through considerable evolution in medical practice and research, today we have well-founded treatment interventions for LE, as well as a growing awareness to the condition by a more astute medical community. Despite progress made in recognizing and treating the clinically apparent condition, limitations remain in the area of risk-reduction intervention and early detection. A further dearth exists in consensus as to the most appropriate diagnostic criteria and measurement methods. Evidence supports the contention that roughly 1/3 of women will develop BCLE and that there are sensory changes that occur in the limb before an overt swelling is visible.[4] Therefore, a prospective surveillance method aimed at education and early detection, is the most prudent approach to preventing the manifestation of the negative consequences of cancer therapies on the lymphatic system.

Measuring and diagnosing lymphedema is a contentious issue and arguments on all sides are fraught with issues of: appropriate diagnostic criteria, inconsistent measurement technique, inconsistent utilization of measurement modalities, and over-and under-diagnosis. The clinical standard should strive to achieve diagnosis at the earliest possible point of detection and offer the most conservative, effective treatment intervention. This standard will only be achieved with a paradigm shift towards risk reduction care and surveillance methodology to enable diagnosis at the earliest possible presentation. Early detection and treatment of lymphedema will prevent the progression of the condition to an advanced stage and may prevent associated functional limitations and disabilities, in addition to rendering a cost savings to the payer.

Continued on page 2

In This Issue

The NLN® *LymphLink* is published quarterly in January, April, July and October by the
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The goal of this publication is to provide information specific to the needs of lymphedema patients and health care providers.

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April / June 2009
ISSUE OF THE NLN *LymphLink*:
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Early Diagnosis... *Continued from cover*

PURPOSE

The purpose of the research trial "Preoperative assessment enables early diagnosis and treatment of lymphedema" was to investigate the efficacy of a prospective physical therapy screening method to accurately diagnose sub-clinical LE and to evaluate the effectiveness of an early intervention in patients recently treated for BC.

METHODS

A subset analysis of an intervention applied to a cohort of 34 women who developed lymphedema, drawn from a large IRB-approved study* (n=196) was conducted to evaluate its effectiveness. All patients were evaluated pre-operatively and followed at 3-month intervals after surgery with repeat measures taken of bilateral arm volume. Measurement was done using the Perometer®, an optoelectronic volumeter, which scans the limb with infra-red and generates a calculated limb volume from the after-image.[6]

DIAGNOSTIC CRITERIA

A conservative intervention was introduced if the change in limb volume equal to approximately 100 ml or 3% compared to the pre-op inter-limb measures with consideration for the contra-lateral limb, the criterion for subclinical LE in this study.

When the LE criterion was met, a Ready-Made Compression Class I sleeve and gauntlet were fitted by the physical therapist and issued for daily wear. The patient was advised to follow up for repeated measures in 4 weeks to assess the limb status. Upon follow up, the volumetric assessment was repeated with the Perometer®. When volume decrease was confirmed, a modified compression intervention was prescribed. The modified compression intervention involved continued garment wear only during strenuous exercise, heavy lifting, repetitive arm activity, the appearance of visible swelling or altered sensations of heaviness, fullness or aching. Patients were then seen in 3 months for repeated measures.

RESULTS

Patients diagnosed with sub-clinical LE demonstrated a significant volume increase (83 ml / 6.5 %) in the affected arm as compared to their baseline pre-operative measurement ($p = 0.001$) at approximately 6.9 months after their breast cancer-related surgery. With the use of a compression sleeve intervention for an average of 4.4 weeks, a significant ($p < 0.0001$) mean volume decrease (46 ml / 4.1%) was realized. Further, the cohort demonstrated the efficacy for the modified compression intervention when, at their follow-up visit, average of 4.8 months after the compression intervention, the limb volume was maintained.

DISCUSSION

Complete Decongestive Therapy (CDT) is the standard of care for patients with lymphedema. CDT involves a multi-modality intervention done daily over the course of 2-4 weeks and provides volumetric decongestion of the swollen limbs by >60%.[7] This intervention is purported to be effective in patients with Stage II or Stage III lymphedema. However, when a patient is at Stage I or Stage 0 (latency) there is no clear guideline as to how treatment intervention should be undertaken to maximize effectiveness and minimize the intensity of therapy.

At the earliest stages, lymphedema is noted to be reversible with elevation. Although the swelling may exacerbate and remit at this early presentation, the constituency of the fluid congestion is still protein-rich and, with stagnation, will promote chronic swelling and fibrosis. A presentation of lymphedema that exacerbates and remits, or one that is only marginally clinically apparent, is not insignificant and must be addressed with an appropriate intervention. The intervention used in this trial effectively decreased the limb volume to a near-normal level and maintained it over time. The early intervention protocol is outlined in Table 1.

The earliest diagnosis of lymphedema will enable the most effective and least invasive intervention. This diagnosis cannot be accurately made without a pre-operative assessment of limb volume. This 'normal' notation of limb volume will allow the practitioner to diagnose a change in limb volume over the course of a prospective protocol. Regular interval assessment is vital to monitor limb volume and to reinforce education for risk reduction. Only when limb volume is

TABLE 1. PROTOCOL FOR EARLY DIAGNOSIS AND MANAGEMENT OF LYMPHEDEMA

PRE-OPERATIVE ASSESSMENT	POST-OPERATIVE SURVEILLANCE *(3 month intervals to 1 year and 6 month intervals after that)*
• Volumetric measurements of both extremities • Establish normal baseline inter-limb volume difference • Education for signs and symptoms of lymphedema • Education for risk- reduction practices	• Repeat volumetric measurements and assess change over time • Reinforce education for risk reduction

NO Change in Limb Volume
- Continue with interval assessment

YES > 3 % Limb Volume Change Noted
- Intervention: Compression Sleeve and Gauntlet for daily wear and return in 4 weeks for reassessment
- Repeat volumetric measurement in 4 weeks

NO change in volume or increased volume
- Assess patient compliance with intervention
- Assess for presence of fibrosis in the limb
- Clinical Decision regarding CDT initiation vs custom garment vs referral to MD

YES – Volume reduction
- Modified Intervention: Continue garment wear ONLY during heavy lifting, exercise, repetitive upper extremity activity, air travel, or if visible swelling is present
- Continue interval assessment

monitored in the context of a pre-operative, prospective surveillance protocol, will an accurate, early diagnosis of lymphedema be made.

CONCLUSIONS

Pre-operative assessment, prospective surveillance, and early intervention may have prevented the onset of irreversible BCLE in this small cohort. The garment intervention significantly reduced the affected limb volume to nearly that of the unaffected limb and therefore provides effective treatment when sub-clinical LE (> 3 % limb volume change from baseline) is detected. Further research is warranted to confirm the long-term clinical effectiveness and cost-effectiveness of this preventive model compared to a traditional impairment-based model.

All patients undergoing cancer treatment should receive pre-operative clinical assessment of their limb volume and should be followed in a prospective manner to expedite effective diagnosis and treatment of lymphedema.

Note: This research was published in Cancer 2008:112:2809-19. Stout Gergich, N and Pfalzer, L. et al. "Preoperative Assessment Enables the Early Diagnosis and Treatment of Lymphedema."

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A complete list of references for this article is available on the National Lymphedema Network website www.lymphnet.org, ❑