National Lymphedema Network

Position Statement of the National Lymphedema Network

Screening and Early Detection of Breast Cancer-Related Lymphedema: The Imperative

By the NLN Medical Advisory Committee; April 2011

Breast cancer-related lymphedema (BCRL) is a progressive, debilitating condition affecting millions of breast cancer survivors with a significant negative impact on quality of life, employment and health. BCRL is not limited to arm swelling alone. Many survivors have complex symptoms which include breast and truncal swelling. The amount of breast cancer-related arm edema can range from mild to severe, but once the condition starts, there is the possibility of progression to more severe lymphedema.(1) Even in early stage breast cancer, one study showed that when lymphedema progressed, lymphedema therapy could not completely reverse it.(2)

In the past, there was no evidence to suggest that early detection could make a difference in treatment outcomes, but this has changed. Surgeons and oncologists were previously taught that treatment could wait until patients reported symptoms or swelling became visible. There is now a body of evidence emerging demonstrating that waiting to treat breast cancer-related lymphedema when it becomes visible and symptomatic may not be optimal. Just as with breast cancer itself, lymphedema can be detected at early, even a subclinical, latent stage amenable to treatment and that may reverse the progression to chronic, irreversible lymphedema. Breast cancer treatment is now moving into an era of advanced genetic assays and markers that can risk-stratify individuals for targeted treatment. Early lymphedema detection is still in its infancy, as mammography was at its inception. Because we cannot risk-stratify for BCRL, we must screen and provide education regarding signs, symptoms, and risk reduction activities to all breast cancer survivors; for they are all at-risk for lymphedema.

Fu et al. demonstrated that patient education has a positive association with patients' behavior, symptoms, and cognitive outcomes. It is, therefore, imperative that all breast cancer survivors be screened and provided education regarding signs, symptoms and risk reduction activities since they will be at-risk for lymphedema. This simple, early intervention may reduce progression of lymphedema to an irreversible stage.(3)

From 2001-2006, the National Institutes of Health (NIH) and the National Naval Medical Center (NNMC) Breast Care Center launched a prospective study of 196 newly-diagnosed BC patients.(4) The study began collecting data on the participants prior to their surgery and then in three-month intervals following their surgery for up to one year. During that time, researchers were able to identify through the use of perometry (an optoelectronic infrared device) the development of subclinical lymphedema in 43 of the women. At that point, the lymphedema was not visible to the naked eye and the patients were not reporting any symptoms. Intervention was implemented once the volume change equaled approximately 83 mL or three percent volume change compared to the pre-op measure. The lymphedema patients were treated with an off-the-shelf compression sleeve and compression gauntlet, which was worn for four weeks. Effects from the intervention were seen in about 4.4 weeks (average decrease of 48 mL) with reduction maintained at an average follow-up of 4.8 months. Preoperative assessment, prospective surveillance, and early intervention may have prevented the onset of irreversible lymphedema in this cohort of 43 patients who experienced this three percent volume change. The authors reported that compression sleeve and gauntlet significantly reduced affected limb volume to nearly that of the unaffected limb and, therefore, provided effective treatment when sub-clinical lymphedema was detected.(4) This promising pioneering research lays the foundation for rigorous research with a larger sample, randomized controlled group, and longer follow-up which can yield Level 1 evidence for Best Practices in surveillance and early intervention for post-breast cancer lymphedema.

Recently, follow-up work by Stout and colleagues was published in The American Journal of Physical Medicine and Rehabilitation showing that lymphedema most likely starts in the deep subfascial compartments of the arm.(5) By the time lymphatic fluid reaches the point of reflux into dermal lymphatics, the lymphedema is well on the way to Stage II, a less reversible stage. The work of Stout et al. complements

National Lymphedema Network - 411 Lafayette Street, 6th Floor, New York, NY 10003
www.lymphnet.org - nln@lymphnet.org - 646-722-7410

earlier work by Stanton et al. who used quantitative lymphoscintigraphy, to demonstrate that at seven months postoperative, women who were destined to develop BCRL had increased lymphatic flow in muscle and subcutis of both arms, relative to women who did not develop BCRL.(6)

These studies provide insight into the pathophysiology of BCRL and the rationale for early intervention, potentially including compression garment use when lymphedema is early or latent. Early lymphatic insufficiency most likely occurs in the subfascial and subcutis in a state of lymphatic overload in susceptible individuals. At this point in its evolution, the lymphedema is in more of a liquid state amenable to simple compression. Once the lymphedema refluxes into the skin, chronic dermal changes begin to occur that can lead to the fibrosis characteristic of Stage II lymphedema. Stage II lymphedema is less reversible due to chronic inflammation, fibrosis, and progressive lymph stasis that can further damage fragile dermal lymphatics. Stage II lymphedema generally does not respond as well to simple sleeve compression but is usually only successfully treated with classic lymphedema therapy known as CDT (Complete Decongestive Therapy). CDT treatment is described in the National Lymphedema Network Position Paper: "The Diagnosis and Treatment of Lymphedema."(7) CDT consists of a reductive phase incorporating full compression bandaging, manual lymph drainage (MLD), lymphatic exercise, and skin care to meet the individual patient therapy needs, followed by an indefinite maintenance phase.

Although the limited numbers of participants in these studies(4, 7) were able to utilize off-the-shelf garments, compression garments must fit the limb appropriately in order to be beneficial. One of the highest risk factors for developing BCRL is obesity which would prevent many patients from utilizing ready-made garments. According to National Health and Examination Survey (NHANES), one-third (33.8%) of U.S. adults are obese.8 A significant number of lymphedema patients are obese or overweight and, therefore, would not be able to utilize the off-the-shelf garments. Moreover, these studies do not address other BCRL symptoms such as breast or truncal swelling.(4, 7)

Providing individualized early cost-effective interventions for symptoms of BCRL, which may include compression bandaging, custom garments, weight management, and exercise, may impact outcomes such as symptom distress, quality of life, and efficient use of limited healthcare resources.

In April 2011, the Avon Foundation held a symposium. Later they published a White Paper calling for awareness and adoption of standards for screening and early detection of BCRL.9 Based on the increasing evidence of improved outcomes and reduced disability from early treatment, the National Lymphedema Network Medical Advisory Committee wrote a Position Paper entitled, "Screening and Measurement for Early Detection of Breast Cancer-Related Lymphedema."10

Sadly, there is currently a lack of education regarding lymphedema not only in the general public but also in the field of healthcare professionals. The greatest hope for breast cancer survivors to have access to early detection, early treatment, and education for lymphedema is if the major breast cancer advocacy organizations and programs, such as NABPC, take a strong stand on this important issue.

References

1. Armer JM et al. Post Breast Cancer Lymphedema: Incidence increases from 12 to 30 to 60 months. Lymphology 2010. Sept (43)3: 118-27).
2. Bar-Ad, V et al. Time Course of Mild Arm Lymphedema after Breast Conservation Treatment for Early Stage Breast Cancer. International Journal of Radiation Oncology Biology Physics. 2010; 76(1):85-90.
3. Fu, MR., Chen, C., Haber, J., Guth, A., & Axelrod, D. (2010). The effect of providing information about lymphedema on the cognitive and symptom outcomes of breast cancer survivors. Annals of Surgical Oncology, 17(7), 1847-1853. Epub 2010 Feb 6. PMID: 20140528. DOI 10.1245/s10434-010-0941-3.
4. Stout-Gergich, N et al. Preoperative Assessment Enables the Early Diagnosis and Successful Treatment of Lymphedema. Cancer. 2008; 112: 2809-19.
5. Stout, N et al. Segmental Limb Volume Change a Predictor of the Onset of Lymphedema in Women with Early Breast Cancer. PMR 2011; 3:1098-1105.
6. Stanton, A et al. Lymphatic drainage in the muscle and subcutis of the arm after breast cancer treatment. Breast Cancer Res Treat. 2009 Oct; 117(3):549-57.
7. National Lymphedema Network Position Paper, The Diagnosis and Treatment of Lymphedema (2011) /pdfDocs/nlntreatment.pdf).
8. National Health and Examination Survey; http://www.cdc.gov/obesity/data/trends.htmlAccessed 2/16/2012.
9. http://www.avonfoundation.org/assets/le-meeting/le-white-paper.pdfhttp:/... (2011).
10. National Lymphedema Network Position Paper, Screening and Measurement for Early Detection of Breast Cancer Related Lymphedema (2011) /pdfDocs/nlnBCLE.pdf.