

CONTINUING EDUCATION

Breast Cancer Lymphedema: Pathophysiology and Risk Reduction Guidelines

Sheila H. Ridner, MSHA, MSN, RN, ACNP

Purpose/Objectives: To review the normal physiology of the blood capillary-interstitial-lymphatic vessel interface, describe the pathophysiology of lymphedema secondary to treatment for breast cancer, and summarize the physiologic bases of the current National Lymphedema Network (NLN) risk reduction guidelines.

Data Sources: Journal articles, anatomy and physiology textbooks, published research data, and Web sites.

Data Synthesis: Lymphedema occurring after treatment for breast cancer significantly affects physical, psychological, and sexual functioning. About 28% of breast cancer survivors develop lymphedema. When arterial capillary filtration exceeds lymphatic transport capacity, lymphedema occurs. NLN risk reduction guidelines may decrease lymphedema risk.

Conclusion: Lymphedema is chronic and disfiguring. Most NLN risk reduction guidelines, although not evidence-based, are based on sound physiologic principles. Evidence-based research of the effectiveness of NLN risk reduction guidelines is indicated.

Implications for Nursing: Until evidence-based research contradicts NLN's risk reduction guidelines, nurses should inform patients with breast cancer about their risk for lymphedema, guidelines to reduce that risk, and the physiologic rationale for the guidelines.

Breast cancer is the most common cancer in women, with an estimated 203,500 new invasive cases diagnosed in 2002 (American Cancer Society [ACS], 2002). Although breast cancer is the second leading cause of cancer deaths in women, with an estimated 39,600 deaths in 2002, death rates have declined during the past decade, with the largest decline in younger women (ACS). Five-year relative survival rates by stage at time of diagnosis now are 96% for local stage tumors, 78% for regional stage tumors, and 21% for metastatic breast cancer (ACS). These statistics suggest that a growing number of women will survive breast cancer. About 2.5 million breast cancer survivors live in the United States (Col et al., 2001).

Lymphedema is a serious problem for many breast cancer survivors. Lymphedema results from an imbalance in capillary filtration and lymph drainage (Ramos, O'Donnell, & Knight, 1999), which leads to collection of fluid and protein in the extravascular and interstitial spaces of the affected limb. Axillary lymph node dissection, radiation therapy, and postsurgical in-

Key Points . . .

- ▶ Lymphedema is a serious problem for many of the 2.5 million breast cancer survivors in the United States.
- ▶ Upper extremity lymphedema that develops subsequent to treatment for breast cancer is thought to be related to the extent of axillary involvement, type of breast surgery, and radiation treatment that includes lymph nodes in the radiation field.
- ▶ Despite the lack of evidence-based research on lymphedema, most National Lymphedema Network risk reduction guidelines have a solid foundation in physiology and theoretically reduce the risk.

Goal for CE Enrollees:

To enhance nurses' knowledge about breast cancer lymphedema.

Objectives for CE Enrollees:

- On completion of this CE, the participant will be able to
1. Describe the pathophysiologic processes leading to development of lymphedema after breast cancer treatment.
 2. Discuss physiologic bases for National Lymphedema Network risk reduction guidelines.
 3. Discuss the nursing implications in the care of patients with breast cancer.

fections appear to be contributing factors (Coward, 1999). Lymphedema can occur during treatment or many years later (Ramos et al.; Stanton, Levick, & Mortimer, 1997) and often is chronic and disfiguring. Prevalence of lymphedema appears to be influenced by type of breast cancer treatment (Hull, 2000)

Sheila H. Ridner, MSHA, MSN, RN, ACNP, is a PhD candidate in the School of Nursing at Vanderbilt University in Nashville, TN. This research was funded by National Research Service Award #1 F31 NR07854-01. (Submitted September 2001. Accepted for publication April 11, 2002.)

Digital Object Identifier: 10.1188/02.ONF.1285-1293