Lymphology 40 (2007) 35-46

COMPARISON OF UPPER LIMB VOLUME MEASUREMENT TECHNIQUES AND ARM SYMPTOMS BETWEEN HEALTHY VOLUNTEERS AND INDIVIDUALS WITH KNOWN LYMPHEDEMA

S.H. Ridner, L.D. Montgomery, J.T. Hepworth, B.R. Stewart, J.M. Armer

School of Nursing (SHR), Vanderbilt University, Nashville, Tennessee, Research and Development (LDM), LDM Associates, San Jose, California, College of Nursing (JTH), University of Arizona, Tucson, Arizona, and Sinclair School of Nursing (BRS,JA), University of Missouri-Columbia, Missouri, USA

ABSTRACT

Lymphedema is a problem for breast cancer survivors. The proliferation of limb measurement techniques makes it difficult to know how best to measure an at-risk limb. Using a sample of healthy volunteers and individuals with lymphedema, this study: 1) examined the relationship between more commonly used circumferential limb measurement methods and newer measurement methods of infrared laser perometry and bioelectrical impedance; 2) compared self-reported arm symptoms in healthy volunteers and breast cancer survivors with known lymphedema; and 3) explored the relationships among self-reported arm symptoms and circumferential tape measurement, infrared laser (perometry), and single and multi-frequency bioelectrical impedance. Lymphedema index ratios were calculated to allow comparison among measurement methods. Measurement methods correlated strongly with each other. Fourteen symptoms were reported by one or more participants in the lymphedema group while participants in the healthy volunteer group reported only eight symptoms over the same time frames. Using $p \leq 0.001$, all measurement methods correlated with self-reported arm swelling in the past year, while only circumferential and impedance measurements correlated with firmness. Future research needs to include serial arm measurements to explore arm volume variation in healthy and lymphedema volunteers and to further investigate possible lymphedema index ratios cut points as lymphedema diagnostic criteria.