

Title:

Assessment of Head and Neck Lymphedema with Ultrasonography

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Session Title:

Nurse-Managed Technology to Enhance Cancer Care Outcomes for Survivors With Breast Cancer or Head/Neck Cancer

Slot:

F 14: Friday, 28 July 2017: 2:30 PM-3:45 PM

Scheduled Time:

3:30 PM

Keywords:

assessment, head and neck cancer and lymphedema

References:

Deng, J., Ridner, S. H., Dietrich, M. S., Wells, N., Wallston, K. A., Sinard, R. J., ... Murphy, B.A. (2012). Prevalence of secondary lymphedema in patients with head and neck cancer. *Journal of Pain and Symptom Management*, 43(2), 244-252. doi: 10.1016/j.jpainsymman.2011.03.019

Deng, J., Ridner, S. H., Wells, N., Dietrich, M. S., & Murphy, B. A. (2015a). Development and preliminary testing of head and neck cancer related external lymphedema and fibrosis assessment criteria. *European Journal of Oncology Nursing*, 19(1), 75-80. doi: 10.1016/j.ejon.2014.07.006

Deng, J., Ridner, S. H., Aulino, J. M., & Murphy, B. A. (2015b). Assessment and measurement of head and neck lymphedema: State-of-the-science and future directions. *Oral Oncology*, 51(5), 431-437. doi: 10.1016/j.oraloncology.2015.01.005

Abstract Summary:

The purpose of this report is to present information regarding the use of ultrasonography for the assessment of head and neck lymphedema. Data collection is ongoing.

Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
The learner will be able to discuss the use of ultrasonography in the measurement of head and neck lymphedema.	To describe the ultrasound measure including measurement parameters and procedure.
The learner will be able to describe the correlation of head and neck lymphedema results between findings from ultrasonography and physical examination.	To understand head and neck lymphedema findings from both ultrasound measure and physical examination.

Abstract Text:**Purpose:**

Patients with locally advanced head and neck cancer are at high risk for the development of secondary lymphedema. Lymphedema is associated with damage to the lymphatic system and its surrounding soft tissues, from tumor infiltration, surgery, and radiation. We have found that head and neck cancer survivors frequently suffer from lymphedema. Lymphedema occurs both externally and internally. External lymphedema results in functional deficits (e.g., impaired swallowing and speaking) and restricted activities of daily living (driving and work-related tasks). Internal swelling causes functional impacts (e.g., difficulty chewing and respiratory distress). Aggressive identification and treatment of lymphedema is critical to ensure optimal function and quality of life. The purpose of this report is to present information regarding the use of ultrasonography for the assessment of head and neck lymphedema.

Methods:

A longitudinal design is used in the study. The study will enroll up to 30 head and neck cancer patients. Ultrasonography measures are obtained at baseline and at 3 months post head and neck cancer treatment, then compared to clinical assessment of lymphedema based upon physical examination. Ultrasonography measures are performed by an experienced sonographer, using an EPIC scanner (Phillips Healthcare Bothell, WA) and a standoff gel pad, in 5 preselected anatomical sites on each side of the face and neck. The sites measured include maxillary prominence, mid-mandible, superior and middle sternocleidomastoid muscles, and submental regions. Measurement variables for each site include distance of soft tissues and stiffness of soft tissues. For the purpose of data analysis, anatomical sites are grouped into four regions: peri-orbital, cheek, neck, and submental. SPSS 24.0 is being used to conduct statistical analysis. Area under the curve (AUC) values are derived from the ultrasound values (soft tissue distances at the anatomical sites) for each region. Detectable differences in the ultrasound values among the types of lymphedema will be tested using Kruskal-Wallis tests.

Results:

Data collection is ongoing. Preliminary analysis (12 patients has completed all the baseline and 3-month measures) indicates that the strength of the correlation between physical examination and ultrasonography varies based upon each region, however there are statistically significant differences in ultrasound measurement areas (AUC values) in the cheek, submental, and neck regions ($p < 0.05$). Sites without lymphedema demonstrate median elasticity velocities of 2.85m/s; sites with lymphedema show increased elasticity velocities (median value= 3.54m/s).

Conclusion:

These preliminary findings indicate that ultrasonography could be an important supplemental tool for quantifying the severity of lymphedema-related soft tissue changes.