Pressure Pain Phenotypes in Women Before Breast Cancer Treatment

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OBJECTIVES: To explore associations between quantitative sensory testing (QST) and pretreatment pain, physical, and psychological characteristics in women with breast cancer.

SAMPLE & SETTING: 41 women with treatment-naive stage 0–III breast cancer at the University of Michigan Comprehensive Cancer Center in Ann Arbor.

METHODS & VARIABLES: Participants completed self-report surveys and QST within the month before breast surgery. Pressure pain thresholds (PPTs) were measured bilaterally at each trapezius with a manual QST algometer. PPT values were split, yielding low, moderate, and high pain sensitivity subgroups. Subgroup self-reported characteristics were compared using Spearman's correlation, chi-square, and one-way analysis of variance.

RESULTS: Lower PPT (higher sensitivity) was associated with higher levels of pain interference and maladaptive pain cognitions. The high-sensitivity group reported higher pain severities, interference, and catastrophizing and lower belief in internal locus of pain control than the low-sensitivity group.

IMPLICATIONS FOR NURSING: Individualized interventions for maladaptive pain cognitions before surgery may reduce pain sensitivity and the severity of chronic pain developed after surgery.

KEYWORDS pain; pressure pain sensitivity; breast; cancer; quantitative sensory testing

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About 25% of women diagnosed with invasive breast cancer experience cancer treatment–related chronic neuropathic pain (Andersen, Duriaud, Jensen, Kroman, & Kehlet, 2015; Belfer et al., 2013; Bruce et al., 2014). Chronic neuropathic pain is often poorly managed, in part because of the complexity of its assessment. Challenges in assessment include the following (Baron, 2009):

- Its presentation varies despite identical underlying mechanisms.
- It may be widespread or referred to body sites unrelated to the area of primary nerve injury, making pain location a poor indicator of true injury site.
- It can be difficult to differentiate from other acute neuropathic or nociceptive pain conditions.

Improper assessment may result in inappropriate, ineffective, and costly treatment or in analgesic or psychotropic abuse, which negatively affect the patient (Chiu et al., 2014; Macdonald, Bruce, Scott, Smith, & Chambers, 2005; Tevaarwerk et al., 2013).

Because current treatments for cancer-related chronic neuropathic pain (e.g., antidepressants, anticonvulsants) are inconsistently effective (Greco et al., 2014; Phimolsarnti & Waikakul, 2015), National Comprehensive Care Network (2018) guidelines recommend individualized and comprehensive treatment for chronic neuropathic pain. Individualization may be based on disease characteristics, genotype, symptom clusters, comorbidities, biopsychosocial and demographic risk factors, and/or pain profiles (Ahmedzai, 2013; Cherkin et al., 2016). Experimental pain testing, or quantitative sensory testing (QST), has been used to determine pain profiles in patients with chronic pain (Cardoso et al., 2016; Coronado, Bialosky, Robinson, & George, 2014; Frey-Law, 2016; Vaegter & Graven-Nielsen, 2016) and to titrate individualized interventions for women with breast cancer (Axelsson, Ballegaard, Karpatschof, & Schousen, 2014). However, research