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# Evaluating Patients With Chronic Pain After Breast Cancer Surgery

## The Search for Relief

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**C**HRONIC PAIN AFTER BREAST CANCER SURGERY OCCURS in approximately 50% of patients.<sup>1,2</sup> The severity is variable, but sensory disturbances including paresthesias and phantom breast phenomena occur in approximately 47%.<sup>3</sup> Potentially, this problem may increase with higher incidence of detected breast cancer and improved survival.<sup>4,5</sup> Reasons for chronic discomfort after surgery are varied and complex, but nerve damage associated with axillary lymph node dissection is the most commonly reported cause and is associated with a doubling in prevalence compared with cases without this procedure.<sup>1</sup> Interactions among treatment modalities such as type of breast surgery, axillary procedures, adjuvant chemotherapy, and radiation therapy add to the difficulty involved in the overall evaluation.<sup>1</sup>

In this issue of *JAMA*, Gärtner and colleagues<sup>6</sup> report findings from a cross-sectional study from Denmark that evaluated women undergoing an operation for unilateral primary breast cancer and documented the prevalence, location, severity, and frequency of persistent pain and sensory disturbances in 12 well-defined treatment groups. More than 3000 women completed questionnaires that addressed issues of specific regions of symptoms, severity of pain, frequency of symptoms, physician visits due to pain in the operated region, use of analgesics or other treatment for pain in the operated region, and pain in other locations. The responses were also analyzed with regard to age of the patient and treatment modalities for the breast cancer.

The results are compelling. Almost half (47%) of the respondents reported pain in one or more areas, and 52% of those patients rated the discomfort as severe or moderate. As many as 76% of patients with severe pain experienced discomfort on a daily basis. The breast area was the most frequently reported site of pain, followed by the axilla, the arm, and the side of the body, and 40% experienced pain in other nonsurgical areas. The use of analgesics was rela-

tively prevalent; other modalities for relief of pain such as physiotherapy and massage were also used.<sup>6</sup>

Predictive factors most significantly associated with chronic pain included young age (18-39 years), especially if the patient was treated with breast-conserving surgery. Treatment with adjuvant radiation therapy, but not chemotherapy, increased the risk for development of pain. Mastectomy carried a higher risk for moderate and severe distress compared with breast-conserving surgery. Axillary node dissection was more often associated with frequency of pain as well as severity of pain than sentinel node biopsy, regardless of the type of surgery to the breast. Patients with complaints of pain in other areas of the body were more likely to develop increased pain in the surgical site (65%) compared with women without pain in nonsurgical sites (37%). Sensory disturbance was more frequently reported by younger patients. The likelihood for development of any sensory discomfort was highest for patients treated with breast-conserving surgery, axillary lymph node dissection, and chemotherapy with breast radiation therapy or breast and local-regional radiation therapy. Of patients who reported sensory disturbances, 65% also experienced a type of pain suggesting that sensory abnormalities and nerve injury may lead to increased pain risk.<sup>6</sup>

Comparisons with other studies examining this issue may be difficult due to inconsistencies in definitions of chronic pain, different measurements of pain, studies from single institutions, changes in mix of surgical techniques and adjuvant treatment over time, and variable intervals in assessment of pain after surgery. Insufficient numbers of patients may also limit conclusions. An advantage of the study by Gärtner et al<sup>6</sup> is the large number of patients, 3253 nationwide, compared with other studies with 85 to 1600 patients.<sup>1,3,7-10</sup> The larger population provides better risk estimates for all treatment modalities. Also, treatment principles are standardized at all breast cancer treatment facilities in Denmark according to European guidelines<sup>11</sup> and national

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protocols designed by the Danish Breast Cancer Cooperative Group.<sup>12</sup>

However, the 47% frequency of pain in the Danish patients is comparable with other studies documenting rates of approximately 50%.<sup>1</sup> The findings of sensory disturbances in 58% of the study patients was also similar to previous studies.<sup>3</sup> The investigators<sup>6</sup> also found that the most significant predictor of chronic pain and sensory disturbances was age younger than 40 years, an association more definitively reported than in other studies.<sup>3,13,14</sup> However, the most valuable finding reported by Gärtner et al<sup>6</sup> may well be identification of predictors associated with highest risk for development of pain, and these predictors had not been sufficiently emphasized to date. Thus, clinicians are now more cognizant of these high-risk patients, so that appropriate therapies may be initiated early.

Measurement of pain prevalence was limited to a finite time period. Additional knowledge of the natural history of chronic pain after breast surgery may be further defined by assessment of pain over multiple intervals after surgery and other treatments. The effect of widespread use of modern systemic adjuvant chemotherapy regimens and various endocrine therapies on pain outcomes may also be of further interest. History and physical examination of the patient and diagnostic imaging procedures almost always provide further insights into the underlying etiology of discomfort. Although results from the Danish population may be difficult to generalize to other patient procedures with more varied ethnic groups, socioeconomic conditions, and health care systems, the findings provide a plausible estimate of chronic pain and sensory disturbances after treatment for unilateral primary breast cancer.

Psychosocial characteristics of patients also may influence the perception of pain and the sensation of pain can affect quality of life, an individual's feeling of well-being, and activities of daily living. Impaired quality of life can be affected by chronic pain to an even greater extent than by type of breast cancer surgery.<sup>13</sup> Additionally, chronic pain may be associated with shorter duration of education and single marital status.<sup>3</sup> Patients' expectations for postsurgical pain and fatigue after breast excisional biopsy or lumpectomy can be affected by acute presurgical distress, previous experience with same surgical procedure, anxiety, presurgical pain and fatigue, and age.<sup>15</sup> Consideration of these factors in analysis of pain also may help to identify high-risk patients.

Chronic pain after breast cancer surgery is an important clinical issue that demands careful attention. In addition to nerve injury from breast surgery and axillary procedures, other etiologies of pain should be considered, including bra-

chial plexus infiltration by tumor; compression injury to the brachial plexus from lymphedema; radiation-induced ischemic plexopathy, injury, and fibrosis; carpal tunnel syndrome; and second primary tumors.<sup>16</sup> Patients at high risk for the development of postsurgical pain syndrome should be identified, should have therapy initiated early, and the effects of early intervention should be assessed. Management requires a multidisciplinary approach that includes evaluation by surgeons, medical oncologists, radiation oncologists, pain management specialists, psychologists and psychiatrists, social workers, and experts in rehabilitation medicine. Thus, the findings reported by Gärtner et al<sup>6</sup> should prove helpful in the search for achieving effective relief of pain after breast cancer surgery.

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