


The Laterality of Long-Term Pain Following Mastectomy

To the Editor:

Cancer pain, whether due to disease processes or treatment effects, is a powerful determinant of reduced quality of life. Indeed, recent evidence even suggests that pain is associated with cancer-related mortality,2,3 potentially as a consequence of its maladaptive effects on immune system functioning.4 As such, the prediction of who is at the greatest risk of experiencing pain and pain-related sequelae has become a topic of increasing interest. One potentially informative variable, which is rarely evaluated and not at all intuitive, is the side of the body on which pain is experienced. Since the publication of a review of evidence for the lateralization of pain roughly 25 years ago,5 a number of studies have evaluated whether the report, perception, experience, or impact of pain varies as a function of the side of the body on which it is experienced. Two opposing hypotheses have driven this line of research: first, one might expect that since a large majority of individuals are right handed, the right-sided occurrence of clinical pain affecting the limbs would interfere to a greater degree with daily activities and, therefore, be more bothersome and disabling than left-sided pain. In contrast, neuropsychological studies have suggested that the right hemisphere of the brain subserves the experience of negative emotions to a greater degree than the left hemisphere, indicating that pain complaints lateralized to the left side of the body might potentially be experienced as more disturbing than corresponding right-lateralized pain. Indeed, psychophysical studies have reported that standardized noxious stimuli applied to the left side of the body (in right-handed subjects) are experienced as more unpleasant than when identical stimuli are applied to the right side.6,7 Interestingly, some studies of chronic pain have confirmed that left-sided pain has a larger adverse effect on function than right-sided pain among dextral patients.8 Finally, preliminary evidence from a functional neuroimaging study of healthy adults undergoing experimental pain administration has provided supporting evidence for a right-lateralized somatosensory processing pathway.9

To our knowledge, only one study has evaluated whether pain symptoms following unilateral breast surgery are more common or severe on one side of the body relative to the other; an investigation of postmastectomy phantom breast sensations (i.e., a constellation of painful and nonpainful symptoms) in 89 women revealed no differences in sensation prevalence as a function of laterality.10 However, we recently reanalyzed our own data to shed additional light on this question. A total of 272 women were surveyed about their experience of pain approximately 2 years postmastectomy. In all, 134 had undergone unilateral left-sided mastectomy, 126 had right-sided mastectomies, and the remainder had bilateral surgery. Comparison of the right-sided and left-sided mastectomy groups revealed no differences (all P-values > 0.10) in ethnicity, age, education, marital status, time since surgery, presence of breast pain presurgery, axillary node dissection, frequency of cosmetic surgery, or the type of adjunctive postsurgical treatment received (e.g., radiation, chemotherapy, or tamoxifen\(^{10}\), AstraZeneca). In terms of pain-related symptoms, women who had undergone right-sided mastectomy were more likely to report the current presence of surgery-related breast pain, more likely to have experienced phantom breast pain, and more likely to describe themselves as disabled (see Table 1). Group differences in the severity of reported phantom breast pain were in a similar direction, but did not achieve statistical significance (P = 0.12). Interestingly, the groups did not differ in the reported prevalence of other, nonpainful, postmastectomy symptoms such as arm stiffness, arm swelling, numbness, or limitations in movement (all P-values > 0.10).
Collectively, these findings suggest that pain and pain-related sequelae (e.g., work disability) may be more common following right-sided mastectomy. It is unclear whether other types of surgeries show a similar laterality effect, but clinicians should be aware that invasive breast procedures may carry a higher risk for postoperative pain when performed on the right side of the body. The underlying mechanisms producing these effects are not presently clear, though one potential explanation is that the greater use of the right arm and shoulder more readily exposes sensitized areas on that side of the body to injury or pain-producing movements. We do not currently know whether these women would benefit from additional rehabilitation procedures after surgeries on the right side of the body, but future studies of pain-reducing or rehabilitative interventions should take laterality into account.

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References