

Magnetic Resonance Imaging and Contralateral Prophylactic Mastectomy: The “No Más” Effect?

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In a recent study using the Surveillance, Epidemiology, and End Results (SEER) database, Tuttle et al. reported that the use of contralateral prophylactic mastectomy (CPM) among patients with unilateral invasive breast cancer markedly increased from 1998 to 2003.¹ The primary objective of the study in this issue of the *Annals of Surgical Oncology* by Sorbero et al. was to determine if preoperative magnetic resonance imaging (MRI) is associated with higher CPM rates. The authors report that patients who underwent breast MRI were more likely to undergo CPM. Why would an MRI *cause* a breast cancer patient to choose CPM? The proposed explanation goes something like this: a patient with unilateral breast cancer has an abnormal finding identified in the contralateral breast by MRI; this finding leads to additional diagnostic procedures (second-look ultrasound); these diagnostic procedures lead to biopsy of the contralateral breast. Even if the histological findings are not malignant, the anxiety induced by MRI leads the patient to cry “no más” and she requests CPM to prevent similar future experiences. Although this work by Sorbero et al. is an important hypothesis-generating study, the actual relationship between MRI and CPM is not so clear.

In most retrospective studies, the actual intent of a particular diagnostic test or the choice of a specific treatment is difficult to determine; for example, physicians may be more likely to recommend breast MRI for a newly diagnosed breast cancer patient with a known *BRCA* mutation, infiltrating lobular histology, multicentric disease, or dense breast tissue on mammography. Physicians may also be more likely to recommend CPM for patients with these same characteristics; for example, lobular

histology was associated with a significantly increased CPM rate [odds ratio = 2.18; 95% confidence interval (CI) 2.01–2.34] in the SEER analysis. Unfortunately, these specific characteristics were not available from the database in the Sorbero study; thus, the authors could not control for these potential confounding variables. Moreover, the authors did not report whether the MRI was a staging procedure for a patient with an established breast cancer or a screening procedure on a high-risk patient. Finally, the results of the MRI were not reported in this study. If the contralateral breast was normal on MRI, then patients may be less likely to undergo CPM. On the other hand, if the contralateral breast was abnormal on MRI and additional diagnostic procedures were performed, then patients may be more likely to undergo CPM.

Given these limitations, the authors evaluated the use of MRI and CPM in two time periods: 1998 through 2000 (early) and 2003 through 2005 (late). When both time periods were analyzed together, the authors found that MRI was associated with a significantly higher CPM rate. However, since MRI was rarely used for clinical staging of breast cancer in the USA before 2001 (only 4.1% in this series), the results from the early group of patients do not reflect current breast cancer practice and are not relevant. When the authors analyzed the late group, they found no overall significant association between MRI and CPM rates. However, a potential confounding factor is that breast MRI may not be performed for patients who have already decided to undergo CPM, thus diminishing a potential association between MRI and CPM. When the authors evaluated young patients (<51 years old) in the late period, they found that MRI was significantly associated with higher CPM rates. However, these younger patients with unilateral breast cancer are more likely to have *BRCA* mutations and to undergo both MRI and CPM.

Since the CPM trends that were observed in the SEER database (1998 to 2003) preceded the widespread clinical

use of breast MRI, the “no más” effect is probably not the main explanation for recent trends in breast cancer surgery in the USA. Although abnormal breast MRI findings may influence a patient’s decision to undergo CPM, other factors are probably more important. Increasing awareness of genetic breast cancer and genetic testing probably contribute to observed trends. Using an international *BRCA* registry of patients with unilateral breast cancer and *BRCA* mutation, Metcalfe et al. reported that 49% of patients in the USA underwent CPM.² Also, improvements in mastectomy and reconstruction techniques may contribute to increased CPM rates. Finally, surgeons may be partially responsible for increased CPM rates in the USA. In a review of the National Prophylactic Mastectomy Registry, Montgomery et al. reported that the most commonly cited reason for CPM, as cited by patients, was physician recommendation.³ For unclear reasons, surgeons may simply

recommend CPM more frequently. Future research should concentrate on understanding the complex decision-making processes between breast cancer patients and surgeons. Ultimately, decision aids should be developed to assist breast cancer patients.

REFERENCES

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