

LETTER TO THE EDITOR

Contralateral Prophylactic Mastectomy Overtreatment: Expectations from Personal Genomics for Tailored Breast Cancer Surgery

TO THE EDITORS:

In 2007, Tuttle et al. published a population-based study on contralateral prophylactic mastectomy (CPM) for breast cancer.¹ Based on the Surveillance, Epidemiology and End Results database, the authors found a 150% increase in the rate of CPM among U.S. patients who were treated from 1998 to 2003.

Is there an established evidence-based recommendation that justifies this dramatic increase in CPM rate? Did this trend continue after 2003?

Arrington and colleagues highlight these questions.² In a recent issue of the *Annals of the Surgical Oncology*, the authors report on 571 patients who underwent surgical treatment for breast cancer in 2006 and 2007 in a single health care system, which included 6 different hospitals. The rates of surgical procedures were: 48% breast-conserving surgery (BCS), 23% unilateral mastectomy (UM), and 29% CPM.

This study confirms the dramatic increase in CPM. What are the causes for this aggressive surgery? A likely explanation is a recent meta-analysis suggesting that contralateral breast cancer (CBC) can be an isolated event in long-term follow-up after BCS or UM for breast cancer that leads to death in 1 of 4 of these patients. However, only a few women develop CBC. How can we identify these high-risk patients for personalized CPM?

The factors reported by the authors including young age, large tumor size, and family history are unlikely to predict accurately an individual patient's risk. The authors propose prospective studies to examine factors affecting patient decision making. However, such decisions are subjective without evidence-based recommendations and thus may harm rather than benefit these women. Recently, *BRCA1* or *BRCA2* testing began identifying some of the high-risk

patients. However, for the majority of patients only new molecular markers could eventually predict a woman's risk for CBC and who can benefit from tailored CPM.

To develop such personal markers, an understanding of the genetic bases of breast cancer and the mechanisms underlying CBC development is essential. Rapid advances in cancer genome and comprehensive view of how the cancer genome operates as a whole biology system raise hope for the development of novel prognostic and predictive markers.^{3,4} Indeed, the advent of next-generation DNA sequencing technology with a rapid decrease in the costs for complete cancer genome sequencing and functional analyses of the role of cancer genes and proteins in a very complex cancer network such as transcriptomes and interactomes have opened innovative rational scientific avenues.⁵ However, there are major challenges, and when personalized medicine will be incorporated into clinical practice cannot be predicted.

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