

Early Genetic Counseling and Testing for Breast Cancer Patients and Impact on Surgical Decision

Schwartz MD, Lerman C, Brogan B, et al. *Impact of BRCA1/BRCA2 counseling and testing on newly diagnosed breast cancer patients.* *J Clin Oncol* 2004;22:1823–9.

Study Overview

Objective. To evaluate the impact of pretreatment genetic counseling and BRCA1/BRCA2 testing on surgical decision making among breast cancer patients at high risk for carrying a mutation.

Design. Prospective cohort study.

Setting and participants. Participants were 194 women newly diagnosed with ductal carcinoma-in-situ to stage IIIA breast cancer who had not undergone definitive surgery and who had at least a 10% probability of carrying a BRCA1/2 mutation based on personal/family history (according to standard criteria used by the Lombardi Comprehensive Cancer Center at Georgetown University). Participants were offered free genetic counseling and rapid BRCA1/2 testing. Possible test results included identification of (1) a deleterious mutation, (2) no known deleterious mutation, (3) a variant mutation of uncertain clinical significance, or (4) absence of a founder mutation in Ashkenazi Jewish patients. Participants with test results in groups 2 through 4 were classified as “uninformative.” Participants who declined genetic testing but completed a baseline survey were classified as “decliners.”

Main outcome measure. The impact of BRCA1/2 test results on subsequent breast cancer surgery.

Main results. Participants were predominantly white (85%), college-educated (84%), married (69%), and employed (59%), and the mean age was 43 years. Twenty-five percent of the sample had at least 2 first-degree relatives with breast or ovarian cancer. The majority of participants were diagnosed with ductal carcinoma-in-situ or stage I breast cancer (63%), chose conservative therapy (53%), and ultimately received adjuvant chemotherapy (59%). Of the 194 participants, 167 (86%) chose to receive BRCA1/2 test results. 48% of patients who were found to carry a BRCA1/2 mutation chose bilateral mastectomy as their definitive breast cancer surgery. In contrast, 24% of patients in whom no mutation was detected

and 4% of test decliners opted for bilateral mastectomy. Additional predictors of bilateral mastectomy included patients’ self-reports of physician recommendations for bilateral mastectomy.

Conclusion. This study highlights patient interest in and the technical feasibility of offering presurgery BRCA1/2 testing to high-risk patients. BRCA1/2 test results significantly affect patients’ surgical decision making.

Commentary

BRCA genes likely function as tumor suppressor genes that serve important roles in DNA repair. Five percent of breast cancers are associated with mutations in these genes. BRCA mutations are associated with 65%–85% and 40%–60% lifetime risks of breast and ovarian cancer, respectively [1]. Women who possess these mutations may choose to undergo prophylactic surgeries (bilateral mastectomy and/or bilateral oophorectomy) to reduce their lifetime risks for developing breast and ovarian cancer [2,3]. As well, women newly diagnosed with breast cancer who harbor a mutation may elect to undergo mastectomy rather than lumpectomy, possibly avoiding radiation while reducing risk of subsequent primary breast cancer. Currently, women newly diagnosed with breast cancer often undergo surgical treatment before genetic counseling is discussed or testing is offered. An important issue is whether women would be better served if genetic counseling is introduced closer to the time of diagnosis.

In this study, Schwartz and colleagues identified women deemed to be high risk (> 10%) for harboring a BRCA1/2 mutation and offered upfront genetic counseling and rapid testing. Most women were young, had early stage disease, and opted to undergo genetic counseling and testing. Approximately one half of women who tested positive for a mutation elected to have bilateral mastectomies. One quarter of women who tested negative for a mutation chose bilateral mastectomies as well. The test result impact remained after controlling for additional factors (ie, surgeon’s recommendation). It is worth noting that 23% of patients who were

tested proceeded with surgery (bilateral mastectomy or lumpectomy) before receiving their test results.

This study is limited by the fact that patients were referred and counseling and testing were free, which raises questions about how applicable these results are to routine clinical practice. As well, this was not a randomized study, and it is difficult to know the true impact of early counseling/testing for these women. Nonetheless, this study is one of the first to examine the role of early genetic counseling and rapid testing for women at high risk for having a BRCA 1/2 mutation. In addition to demonstrating the significant impact counseling/testing has on surgical decision, the study shows that it is feasible to do all of this near the time of diagnosis.

Applications for Clinical Practice

Genetic counseling and testing could be introduced earlier in

the care of women newly diagnosed with breast cancer considered to be at high risk for harboring a BRCA1/2 mutation.

—Review by David R. Spiegel, MD

References

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