

Genetics Corner

Summary of Presentation Series

Summary of Recent Article Concerning Overdiagnosis of Breast Cancer by Screening Mammogram

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Screening mammograms have clearly played an important role in the detection of breast cancer over the past 30 years. A recent article by Bleyer and Welch argues that about 30% of breast cancers nationwide have been overdiagnosed since the introduction of screening mammograms.⁴ Their article, entitled *Effect of Three Decades of Screening Mammography on Breast-Cancer Incidence*, was published in the *New England Journal of Medicine* in November 2012.⁴ Given that a few recent patients have asked about this article, it seemed to be a potential discussion topic for patients of other health care providers involved with breast cancer reduction.

A summary of the article and an explanation of its potential impact to clinical management are presented below:

Methods:

The authors used Surveillance, Epidemiology, and End Results (SEER) data of women 40 years of age and older who underwent screening mammography. They determined the average breast cancer incidence, by stage, before the introduction of screening mammogram from 1976 to 1978. Using these numbers, they calculated an expected incidence of breast cancer 30 years after the introduction of screening mammogram (2006-2008). They adjusted for the effect of hormone replacement therapy and for their estimated increase in actual breast cancer incidences each year (by comparing to the change in incidences of breast cancer in women younger than 40 during that same period). They then determined the actual average incidence of breast cancer from 2006-2008, by stage, using SEER data. They compared their expected numbers with the actual SEER data. Early-stage cancer was defined as DCIS or localized disease and late stage breast cancer was defined as regional or distant disease.

Results:

During the 30 years after the introduction of screening mammograms, the authors estimated that there was an excess of 114 early-stage breast cancers diagnosed per 100,000 women, equaling more than 1 million women, and accounting for 22% to 31% of women diagnosed with breast cancer. The reduction in regional disease was 8 per 100,000, and there was no change in distant disease.

Discussion:

Bleyer and Welch argue that their data shows mammograms are not an adequate tool for screening. However, during the 30-year period after the introduction of mammograms, there was a 28% decrease in breast cancer mortality.⁵ Screening mammograms have been reported for being responsible for 28-65% of the observed reduction in mortality.³ However, based on Bleyer and Welch's data, the true estimate of mortality reduction is on the lower end of this range. There had been a larger decrease in mortality during this period among women under the age of 40 (who do not receive screening mammograms) versus women 40 and older. The authors argue this implies that the reduction in breast cancer mortality is more likely the cause of improved treatment measures.

It is not yet clear how this will impact health care providers' mammogram screening recommendations.

However, a similar issue involving the possible shortcomings of screening mammograms occurred in 2009. The U.S. Preventive Services Task Force (USPSTF) published a statement recommending against routine screening of women aged 40 to 49 years.⁶ Although the USPSTF recognized that screening mammograms had the potential to extend women's lives, they argue that too few people are helped to legitimize the psychological and financial burden incurred by many others. In response to this statement, several organizations including the NCCN, American Cancer Society (ACS)¹, and the American Congress of Obstetricians and Gynecologists (ACOG)² published recommendations consistent with the idea that the harms were not great enough to outweigh the benefits of prolonging lives, even if only a few. Therefore these organizations continued recommending screening mammograms annually to biannually to women 40 and older.

Similarly, in their article Bleyer and Welch acknowledge that screening mammograms can be of benefit to some. However, they contend that a substantial number of women undergo breast cancer treatment unnecessarily. Based on national organizations' response to the USPSTF, it may seem that there would not be a significant change to the current screening guidelines. However, the potential for substantial harm from unnecessary breast cancer treatment may warrant an easing of the current screening mammogram guidelines.

Impact on Cancer Genetics:

The authors argue that breast cancer is being overdiagnosed. Generally, women seen by cancer genetics have an increased breast cancer risk, and therefore would have personalized screening regimens that differ from the average woman. The effect this research would have on this group of women is even less clear. Also, the current NCCN guidelines have not been updated to reflect the possibility of overdiagnosis. Therefore, at UT Southwestern cancer genetics we have not made any changes in the criteria for hereditary breast cancer assessment or testing. We continue to encourage our patients to speak with their relatives about their family history of cancer, and to bring early stage cancers, including ductal carcinomas in situ, cancers to the attention of their genetic counselor and health care providers.

References

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As always, if you have any questions or would like to refer a patient to UT Southwestern-affiliated Moncrief Cancer Institute cancer genetics team, please call (817) 288-9800.