The controversy on screening mammography continues

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The 25-year results from the Canadian National Breast Screening Study (CNBSS) recently published in the British Medical Journal (BMJ) by Dr. Anthony Miller, et al. have generated much controversy and criticism. Nearly 90,000 women aged 40 to 59 years were followed with either an annual breast exam by a skilled nurse to check for lumps prior to a mammogram, or the nurse's breast exam alone. Researchers found that "after more than two decades, breast cancer death rates were similar in the two groups, suggesting to them little benefit from mammograms."

They reported no reduction when comparing breast cancer incidence and mortality in those who did or did not undergo mammography screening. According to the study, women whose breast cancer was detected by mammography suffered from overtreatment with surgery, chemotherapy and radiation. Their findings of a five-fold increase in unnecessary biopsies, with its associated patient anxiety and cost, have generated much debate among patients and within the medical community regarding the benefits of annual mammograms.

The American College of Radiology and the Society of Breast Imaging immediately responded that this study is "an incredibly misleading analysis based on the deeply flawed and widely discredited CNBSS." The results of this BMJ study, and others resulting from the CNBSS trial, should not be used to create breast cancer screening policies as this would place a great many women at increased risk of dying unnecessarily from breast cancer. The technology used in the study was a "generation behind," says Dr. Otis Brawley, chief medical officer of the American Cancer Society (ACS), who noted that the randomization between the study's control and experimental groups also was flawed.

In the early 1980s, the study was reviewed by breast imaging experts from the United States and Europe who confirmed that the mammography quality was poor, without "state-of-the-art" mammography equipment. In most cases, they did not use grids to remove the scatter radiation; therefore, the images' resolutions were less than optimal, making it harder to identify cancers. Many women were not adequately positioned in the machine, so images did not include the entire breast, resulting in missed cancers in the most posterior aspect of the breast. In addition, the radiologists had no specific training in mammographic interpretation, and even the physicist expressed concerns that the quality of mammography carried out in some of the screening centers was far below the acceptable standard of care.

The fact that only 32 percent of the cancers were detected with mammography compared to greater than 60 percent currently being diagnosed further confirms that this study is invalid. In addition, the mean size of the cancers detected by mammography was 1.9 cm comparable to 2.1 cm by physical exam; a difference of 0.2 cm, which is not statistically significant. This trial did not detect the small 1-1.5 cm tumors as expected with high-quality mammography.

Because the study's findings showed an imbalance in the number of women with advanced breast cancer, questions about randomization have been raised. This study was not a randomized, controlled trial, since every woman first had a clinical breast examination by a trained nurse so that they knew which women had breast lumps (many of which were cancers) and which had large axillary lymph nodes indicating advanced cancer.

Before assigning the women to be in the group offered screening or the control group, investigators knew who had large incurable cancers. This most likely accounted for the statistically significant excess of women with advanced breast cancers assigned to the screening group compared to those assigned to the control group. This guaranteed more deaths among

the screened women than the control women.

Screening mammography identifies the asymptomatic women who may have cancers resulting in a 1 to 2 percent recall rate requiring extra mammographic views, of which less than 40 percent of those need biopsies to exclude breast cancer. The earlier and smaller a cancer is diagnosed, the more likely it is confined to the breast, providing the patient more options and less aggressive treatment.

There are at least nine randomized controlled trials that have shown that screening for breast cancer reduces the mortality rate by 30 to 40 percent. Early detection with screening mammography, in addition to new treatment options, saves lives. In contrast, cancers first detected when palpable are larger and later-stage breast cancers that already have spread to axillary lymph nodes. These advanced cancers usually require invasive treatments such as chemotherapy and more radical surgery. Despite treatment, women with more advanced breast cancer are more likely to die from it than those diagnosed with early stage disease. The size of a breast cancer and how far it has spread are important factors in predicting the prognosis for a woman with this disease. A small (less than 2 cm) invasive cancer which has not yet spread to lymph nodes (stage I disease) has a 5-year survival rate of >98 percent, compared with 86 percent for stage II disease (1-3 positive axillary lymph nodes and/or primary tumor size 2.1 to 5 cm).

A new technology, 3D digital mammography (tomosynthesis), has shown that it can further improve the detection rate and decrease recall rate by removing superimposed fibroglandular tissue.

The results of the CNBSS argue for abandoning mammographic screening as a population-based means of controlling death rates from breast cancer; however, the breast imaging community believes such a conclusion to be unjustified and unsupported by the findings of this trial which should not be used to change the prevailing scientific view of the potential benefits of screening with mammography.

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