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Annual Screening Ultrasound Added to Mammography Significantly Increases Invasive Breast Cancer Detection in Woman at Elevated Risk

A Single MRI Following 3 Years of Annual Ultrasound and Mammography Detected Additional Invasive Cancers

Philadelphia, April 4, 2012 – Results of an American College of Radiology Imaging Network (ACRIN) trial reported April 4 in the Journal of the American Medical Association confirm a significant breast cancer detection benefit of supplementing annual mammography screening with ultrasound in women at elevated risk due to dense breast tissue and at least one additional risk factor such as a personal and/or family history of the disease. The study also found that that a single screening MRI following three years of annual mammography and ultrasound screenings identified additional cancers. The vast majority of additional cancers detected by the supplemental ultrasound and MRI screenings were early-stage invasive cancers that had not spread to the lymph nodes.

Study results were reported for 2662 women at increased breast cancer risk who had 3 annual mammography plus ultrasound screenings and for a subset of 612 study participants who agreed to undergo an MRI after completing all 3 mammography and supplemental ultrasound screenings. A total of 111 breast cancer diagnoses were made in 110 study participants with 33 (30%) cancers seen only by mammography and 32 (29 %) cancers seen only by the supplemental ultrasound, for an added annual cancer detection rate due to ultrasound of 4.3 cancers per 1000 screens. The single MRI screening revealed additional cancers not seen by mammography or ultrasound at a rate of 14.7 per 1000 screens. Nine (8%) cancers (“interval” cancers) were detected clinically in between the annual imaging exams (1.2 per 1000 screens). Of the 32 cancers seen only on ultrasound, 30 (94%) were invasive, accounting for a 34% absolute increase in invasive cancer detection, and of the 9 cancers seen only on MRI, 8 (89%) were invasive.

“For women with dense breasts who are at increased risk for breast cancer, adding ultrasound to mammography will increase the chance of finding invasive cancer before it spreads to lymph nodes,” says the trial’s principal investigator Wendie Berg, MD, PhD and Professor of Radiology at the University of Pittsburgh School of Medicine, Magee-Womens Hospital of UPMC. “MRI detected additional invasive cancers not seen on mammography or ultrasound; however, we found that MRI was significantly less tolerable than mammography or ultrasound for many study participants. Of participants offered an MRI, only 58% accepted the invitation,” comments Berg.

“This and other studies confirm that mammography fails to see about half of the cancers present in women with dense breasts. These women tend to be diagnosed with more advanced cancers often detected clinically in the interval between annual mammography screenings. For this study, the interval cancer rate for mammography plus ultrasound was 8%, which compares favorably with the 10% interval cancer rate observed from screening women with mammographically fatty (not dense) breasts. This suggests that adding ultrasound will improve effectiveness of screening for women at intermediate breast cancer risk with dense breasts and for high-risk women who are unable to undergo MRI” explains Berg.

“While supplemental ultrasound and MRI screening detect more cancers, it is important to emphasize that an annual mammogram is still recommended and neither ultrasound nor MRI is meant to replace mammography,” clarifies Ellen Mendelson, MD, coinvestigator and Lee F. Rogers Professor of Radiology at the Feinberg School
of Medicine, Northwestern University, Chicago, IL. “Further, women who have a screening MRI do not need screening ultrasound,” Berg adds.

The authors also reported the risk of false positives decreased significantly with annual screening ultrasound [years 2 and 3] in this study compared with the first screen. “However, the rates of biopsy and false-positive exams were still substantial: in years 2 and 3 combined, supplemental ultrasound increased the recall rate by 7% and biopsy rate by 5% with only 7% of additional biopsies showing cancer. The single supplemental MRI screen increased the recall rate by 20% and biopsy rate by 7% with 19% of biopsies prompted only by MRI showing cancer,” notes Zheng Zhang, PhD, protocol statistician with the ACRIN Biostatistics Center and Assistant Professor in the Department of Biostatistics at Brown University in Providence, Rhode Island.

“These study results provide valuable information for guiding physicians and their patients in selecting the best screening option depending upon a woman’s breast cancer risk factors, insurance coverage, and tolerance for additional testing, possibly including biopsy for a finding which is not cancer,” says ACRIN Network Chair Mitchell Schnall, MD, PhD, the Matthew J. Wilson Professor of Research Radiology at the University of Pennsylvania. “Within the ECOG-ACRIN Cancer Research Group we will continue to investigate patient characteristics that can further refine cancer screening strategies,” notes Schnall.

The study was made possible through funding from a novel private-public partnership between the Avon Foundation and the National Cancer Institute (NCI), part of the National Institutes of Health (NIH).

Link to ACRIN Participating Sites

Link to Abstract

Link to Video

To arrange an interview with Dr. Berg, please contact American College Radiology (ACR) Public Relations manager Shawn Farley at 703-648-8936 or sfarley@acr.org.

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ACRIN is a clinical trials research organization and member of the National Cancer Institute’s Cooperative Group Program. With investigators from over 100 academic and community-based facilities in the United States and abroad, ACRIN’s multicenter research encompasses oncologic and cardiac imaging science. ACRIN’s oncology mission is to disseminate information that increases the length and quality of life of cancer patients. ACRIN and the Eastern Cooperative Oncology Group are merging their oncologic research programs to conduct clinical trials as the ECOG-ACRIN Cancer Research Group. The overarching goal of its cardiovascular research is to determine the appropriate use of diagnostic CV imaging tests. ACRIN is administered by the American College of Radiology and is headquartered at the ACR Clinical Research Center in Philadelphia, PA. The ACRIN Biostatistics Center is located at Brown University in Providence, RI.