Ultrasound a Viable Screening Option for Breast Cancer

Fran Lowry

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CHICAGO — In areas where screening mammography for breast cancer is scarce or nonexistent, ultrasound should be considered as a screening tool, researchers reported here at the Radiological Society of North America (RSNA) 98th Scientific Assembly and Annual Meeting.

Dr. Wendie Berg

Mammography is not widely available in all countries, and breast cancer incidence and mortality are increasing, said Wendie Berg, MD, PhD, professor of radiology at the University of Pittsburgh School of Medicine, Magee-Womens Hospital of UPMC, Pennsylvania.

At the 2009 RSNA annual meeting, Dr. Berg presented results from the American College of Radiology Imaging Network (ACRIN) 6666 trial, which showed that annual screening for 3 years with mammography plus physician-performed ultrasound detected 29% more breast cancers and 34% more invasive cancers than mammography alone.

At that time, Dr. Berg told *Medscape Medical News* that doing both could increase the detection of breast cancer "significantly with each annual screening, so it does help to do ultrasound each year in addition to the mammogram."

The ACRIN 6666 analysis presented this year — the utility of ultrasound alone in detecting breast cancer — was prompted by Dr. Berg's participation in the Avon Foundation Global Forum, which involved representatives from 40 countries.

"I was asked, 'What if we could only do ultrasound?' It reminded me that most countries do not have mammography or screening. While we do know from randomized controlled trials that mammography reduces deaths due to breast cancer, not every country has the resources to implement it," she explained.

Ultrasound is more portable and less demanding on infrastructure, and needle biopsies are easy to perform for abnormalities seen on ultrasound, she said.

In this analysis, Dr. Berg and colleagues looked at the outcomes of screening if ultrasound is the primary screening modality.

They analyzed data from 2662 participants in the ACRIN 6666 trial who had completed 3 yearly rounds of screening (a total of 7473 examinations) with mammography plus independent physician-performed and interpreted whole-breast ultrasound. Participants had either a biopsy or 12-month clinical follow-up in the fourth year.

The analysis showed that 110 women were diagnosed with 111 breast cancers. Of these cancers, 89 (80%) were invasive; the median size was 12 mm (range, 1 - 55 mm).

The 2 methods detected a comparable number of cancers; ultrasound detected 58 (53%) of the cancers and mammography detected 59 (53%) of the cancers.

Importantly, 53 of the 58 (91%) cancers that were detected by ultrasound were invasive (median size, 12 mm; range, 2 - 40 mm), compared with 41 of the 59 (69%) detected by mammography (median size, 13 mm; range, 1 - 55 mm). This difference was significant ($P < .001$).

In addition, of 57 node-negative invasive cancers, 34 were detected by ultrasound and 18 by mammography ($P = .011$).

Ultrasound had a higher recall rate than mammography. For 4814 incidence screens, the recall rate for ultrasound was 10.7% (515 recalls) and for mammography was 9.4% (453 recalls; $P = .034$).

Ultrasound had a higher short-term follow-up rate than mammography (3.9% vs 1.6%; $P < .001$), a higher biopsy rate (5.5% vs 2.0%; $P < .001$), and a lower positive-predictive value of biopsy rate (12.0% vs 38.0%; $P < .001$).

For ultrasound, the number of screens that were needed to detect 1 cancer was 129 (95% confidence interval [CI], 100 - 170); for mammography, the number was 127 (95% CI, 99 - 167).

"We were surprised to realize that more of the node-negative invasive cancers were seen on ultrasound than mammography," Dr. Berg said. "These are the cancers we most want to find and are unlikely to represent overdiagnosis."

She also pointed out that ultrasound had more false-positive results than mammography in the analysis.

"We are not suggesting that ultrasound replace mammography where mammography is available. The 2 tests are complementary in cancer detection. But in countries where no screening is available, ultrasound should be considered," Dr. Berg said.

Dr. Stamatia

Destounis

Stamatia Destounis, MD, from the Elizabeth Wende Breast Care Center and the University of Rochester School of Medicine and Dentistry in New York, shared her thoughts on this study with *Medscape Medical News*.

She agrees that "for regions or countries that have no availability for routine mammography screening, ultrasound certainly is a method that could detect additional cancers that may be invasive and need to be found."

She cautioned that "ultrasound has operator variability and several studies report a large false-positive rate with many benign biopsies. But it is an accessible tool with no radiation and can be very powerful in identifying tumors that may be occult with standard screening methods."

"Education and training and standardizing the ultrasound examination will be required if this exam is to be used because there is great variability," Dr. Destounis explained.

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