November 26, 2007

Ultrasound could overcome flaws and play supplemental role in breast screening

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The massive American College of Radiology Imaging Network 6666 trial shows that adding ultrasound to the initial screening protocol for high-risk women could help detect 30% more cancers. The cost, however, could be many more needless biopsies of benign lesions.

Despite the downside, the results suggest that ultrasound could still play a role in screening women at higher risk for breast cancer who are not eligible for MRI, according to principal investigator Dr. Wendie Berg.

"Ultrasound is attractive for supplemental screening. It is widely available, well tolerated by patients, and r elatively inexpensive, and it involves no radiation," Berg said.

This year, the American Cancer Society recommended breast MRI in addition to mammography for screening women at very high risk of breast cancer, such as those with the BRCA1 or BRCA2 mutation, those with a lifetime risk of breast cancer 20% or higher, and those who were exposed to chest radiation between the ages of 10 to 30.

The guidelines do not apply to the large number of women considered to be at intermediate risk, including those whose only risk factor is breast density or prior history of cancer.

Research suggests that if MRI and mammography are performed there is no need to perform ultrasound, Berg said. But she cited compelling evidence in favor of offering ultrasound to women at intermediate risk, where there is uncertainty about the use of MRI.

The ACRIN 6666 trial established that high-quality ultrasound can be performed across many sites. The study involved 2637 women at higher risk of breast cancer, most commonly due to a personal history of breast cancer. BRCA1 and BRCA 2 mutations were uncommon.

Of the study group, 40 were diagnosed with cancer on the initial screen. Mammography picked up 12 cancers that were not visible on ultrasound, including five cases of ductal carcinoma in situ. Ultrasound alone detected 12 malignancies, most of which were invasive node-negative cancers.

Use of ultrasound would increase the detection yield by 4.2 per 1000 women screened, and the modality's value applied across the board, regardless of breast density. Researchers did not note a significant difference in sensitivity between digital and screen-film mammography but did report slightly higher specificity on digital units.

The higher sensitivity made possible by the supplemental ultrasound scans came at a questionable price. Based on mammography, 69 women (2.6%) would be referred for biopsy, and 29% of these were positive. By comparison, the addition of ultrasound resulted in biopsies for 202 women (7.7%), and only 15% were positive, Berg said.

"There was a significant increase in the number of biopsies, by and large of benign lesions. At this point, if we offer screening ultrasound, we need to make women aware of the substantial risks of false positives. At this time, the risk exceeds standards for MRI and mammography. For some women, the risks outweigh the potential benefits," she said.

The false-positive rate in the study may have been inflated compared with everyday clinical practice.

"All patients were at high risk, and physicians were aware that the results would be scrutinized. There may have been a lower threshold for intervention at the patient and physician levels," Berg said.

Berg expects that the false-positive rate will decline on subsequent screens and also said that new techniques such as ultrasound elastography could help cut down on unnecessary biopsies of benign lesions.