Scientific Formal (Paper) Presentations
CODE: SSE02-01

PARTICIPANTS

Judy Dean, MD

Presenter

SESSION: **Breast Imaging (Ultrasound: Automated Systems, and Other)**

Automated Ultrasound with Mammography Improves Cancer Detections Compared with Digital Mammography Alone
DATE: Monday, November 28 2011
TIME: 03:00 PM - 03:10 PM
LOCATION: **E450A**

Purpose Ultrasound has been tested as an additional screening for breast cancer in women with dense breasts but has not gained wide acceptance because of the time and skill required for hand-held scanning. We have previously reported initial experience with automated whole breast ultrasound (AWBU) as an adjunctive screening with combined analog and digital mammography, and now present an additional 1204 studies, in women with digital mammography only.

Method and Materials: AWBU was used to examine asymptomatic women having routine mammography (Clinical Trials.gov number, NCT00649337). AWBU studies were interpreted by a single reader without knowledge of mammography findings.

Results: Subjects had elevated breast density and/or breast cancer risk. Size, stage, and types of cancers occurring during the study and subsequent follow-up were recorded.

Diagnostic yield, specificity and positive predictive value (PPV) of biopsy recommendation, with confidence intervals (CI) were calculated for mammography findings, and compared with AWBU findings, and with combined mammography and AWBU findings.

Diagnostic yield for non-palpable cancer was 4.5 per 1000 for mammography alone, and increased to 7.9 for mammography plus AWBU. The increase in cancer detections was 13 of 37, or 35.1% (CI=20.2 to 52.5%).

All 13 cancer detections added by AWBU were invasive, and 12 were T1N0. In contrast, 8 of 13 cancers imaged by digital mammography without AWBU findings were DCIS. Four cancers were imaged by both mammography and AWBU.

Specificity for AWBU was 99.4%, and for mammography 99.5%. Combined specificity was 99.0%.

PPV for biopsy resulting from mammography findings was 50% (CI=32 to 67.5%); for AWBU 43.6% (CI=28 to 60%); and PPV for biopsy resulting from combined mammography and AWBU findings was 44.1% (CI=32.1 to 56.7%).

An additional 7 cancers occurred during one year follow-up which had not been detected either by mammography or AWBU, including five T1N0 cancers, one T1N1, and one T2N0.

Conclusion: The addition of AWBU findings resulted in significant improvement in early cancer detection compared with digital mammography alone. The additional cancers detected by AWBU were all invasive tumors.

CLINICAL RELEVANCE/APPLICATION Early detection of breast cancer with mammography can prevent breast cancer deaths, but mammography does not image all early cancers. AWBU will detect most of the early cancers missed by mammography.