MRI Detects More Breast Cancers in High-Risk Women than Mammography

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CHICAGO— Magnetic resonance imaging (MRI) can detect more breast cancers in high-risk women, compared with mammography, a study found.

Mammography was more sensitive but less specific in the detection of breast cancer than was mammography or ultrasound, data from the Australian Screening Trial show. However, the lesser specificity of MRI was partially caused by a higher detection rate for atypical ductal hyperplasias, which are considered to be direct precursors of invasive ductal cancer, said Dr. Christopher Ried of the Medical University of Vienna.

In the second study, screening MRI was associated with a higher biopsy rate, but was the only modality that detected all cancers identified in the study, conducted by the International Breast MRI Consortium and the Cancer Genetics Network. Findings of the prospective multicenter tri- al support single high-risk women who are considered to be direct precursors of invasive ductal cancer, said Dr. Christopher Ried of the Medical University of Vienna.

MRI detected six cancers, while mammography detected two, and ultrasound detected one. The diagnostic yields for each test were: MRI 3.5%, mammography 1.2%, and ultrasound 0.6%, the investigators reported.

All six cancers were infiltrating ductal carcinomas. The one cancer detected by all three modalities was a stage T2/N1/M0 cancer.

MRI resulted in the highest rate of biopsies performed (8.2% of women) compared with mammography (2.3%) and ultrasound (2.3%), she said.

Nine biopsies were performed on women who only positive exam was an MRI. Cancer screening rate for those women, meaning that the risk of a benign biopsy based on an MRI-only posi- tive exam was 2.9% (five of nine biopsies).

Another way to interpret this finding is that, “if we sprayed a thousand high-risk women, adding MRI to mammography would add 29 additional benign biopsies with 30 additional invasive cancers predicted to be identified by both modalities,” Dr. Lehman said.

The Australian Screening Trial evaluated 327 women with a BRCA mutation or strong family history for breast cancer using annual mammography, MRI and ultrasound screening between days 8 and 12 of their menstrual cycle to decrease false-positive rates due to hormonal influences.

The women, aged 22-80 years (mean 41 years), underwent a total of 672 complete imaging rounds.

A total of 28 cancers were found, of which 39% were ductal carcinomas in situ (DCIS) and 61% were invasive cancers, Dr. Ried and colleagues reported.

Of the 28 cancers, MRI detected 24, mammography 14, and ultrasound 12. Sensitivity was significantly higher for MRI (86%) than for mammography (50%) or ultrasound (43%). Almost one-half of the cancers (43%) were detected only by MRI. Of the 11 DCIS cases, MRI detected 10, mammography 1, and ultrasound 0. Five of the DCIS lesions were detected by MRI only.

MRI, mammography, and ultrasound led to 101, 25, and 26 false-positive find- ings, respectively, resulting in a significa- ntly worse specificity for MRI (81%) than for mammography (64%) or ultrasound (68%).

Of the total 108 false-positive findings, 39 were diagnosed as atypical ductal hyperpla- sia. Significantly more cases were detected by MRI (36) than by mammog- raphy (30) and ultrasound (3).

Twenty-five fewer cases were found by MRI only.

A growing body of evidence suggests that atypical ductal hyperplasia is geneti- cally and biologically distinct from ductal carcinoma in situ and that, similar to DCIS, it is a nonobligatory, direct precursor of invasive ductal cancer, Dr. Ried said.