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MRI Detects Breast Cancer at Earlier Stage

- Fewer advanced cancers detected with MRI plus mammography.
- Early detection meant smaller breast cancer size, less lymph node spread.
- Overall, high-risk women with gene mutations benefited from MRI screening.

SAN ANTONIO – Magnetic resonance imaging (MRI) coupled with mammography detects almost all cancers at an early stage, thereby reducing the incidence of advanced stage breast cancer in high-risk women.

“Earlier stage breast cancers are more likely to be curable,” said lead researcher Ellen Warner, M.D., M.Sc., medical oncologist in the Department of Medicine, Division of Medical Oncology at Sunnybrook Health Sciences Center, in Toronto, Canada.

“We can be fairly confident that if screening with MRI finds cancers at a much earlier stage, it probably also saves lives,” added Warner, who presented details of these results at the CTRC-AACR San Antonio Breast Cancer Symposium, held Dec. 9-13.

The researchers separated 1,275 women at high risk for breast cancer into two groups: One group was screened with MRI plus mammography, and the second, a control group, received conventional screening by mammography. Participants had the defective *BRCA1* or *BRCA2* gene mutation, which suggests a very high lifetime risk of developing breast cancer.

Warner and colleagues followed the women over several years to determine which screening method detected cancer at a significantly earlier stage.

Forty-one cases of breast cancer were diagnosed in the MRI group compared with 76 diagnoses in the control group. There were proportionately fewer advanced breast cancers, and more early cancers among women who screened with MRI compared with those not screened with MRI.

Furthermore, cancer size was smaller in the MRI group. The average size of invasive cancers in the MRI group was 0.9 cm compared to 1.8 cm in the control group. Three percent of cancers in the MRI group were larger than 2 cm in diameter compared with 29 percent of those in the control group.

“These results will hopefully convince high-risk women and their health care providers that breast screening with yearly MRI and mammography is a reasonable alternative to surgical removal of their breasts, which is commonly done to prevent breast cancer,” Warner said.

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The mission of the CTRC-AACR San Antonio Breast Cancer Symposium is to produce a unique and comprehensive scientific meeting that encompasses the full spectrum of breast cancer research, facilitating the rapid translation of new knowledge into better care for breast cancer patients. The Cancer Therapy & Research Center (CTRC) at The University of Texas Health Science Center at San Antonio, the American Association for Cancer Research (AACR), and Baylor College of Medicine are joint sponsors of the San Antonio Breast Cancer Symposium. This collaboration utilizes the clinical strengths of the CTRC and Baylor, and the AACR’s scientific prestige in basic, translational and clinical cancer research to expedite the delivery of the latest scientific advances to the clinic. The 32nd annual symposium is expected to draw more than 8,500 participants from more than 90 countries.

Presenter Name: Ellen Warner, M.D., M.Sc.

Institution: Sunnybrook Health Sciences Centre

Abstract number: 26

Abstract Title: A Prospective Study of Breast Cancer Incidence and Stage Distribution in Women with a BRCA1 or BRCA2 Mutation under Surveillance with and without Magnetic Resonance Imaging

Abstract Body:

Introduction: The sensitivity of MRI for the detection of pre-clinical breast cancer exceeds that of mammography and of other screening tests. If MRI screening leads to reduced mortality in women with a BRCA1 or BRCA2 mutation, then it is expected that the incidence of advanced stage breast cancers should be reduced in a cohort of women undergoing regular MRI screening, compared to conventional screening.

Methods: We followed 1275 women with a BRCA1 or BRCA2 mutation for a mean of 3.2 years for incident breast cancers. 445 women were enrolled in an MRI screening trial in Toronto and 830 controls, from elsewhere in Canada and the United States, underwent conventional screening. The cumulative incidences of DCIS, of early-stage and of late-stage breast cancer were estimated at six years in the two cohorts.

Results: There were 41 cases of breast cancer diagnosed in the MRI-screened cohort and 76 cases of breast cancer diagnosed in the control cohort. The cumulative incidence of DCIS or stage I breast cancer at six years was 12.7% in the MRI-screened cohort and was 9.5% in the control group ($p = 0.02$; log rank test). The cumulative incidence of stage II – IV breast cancers at six years was 2.0% in the MRI-screened cohort and was 7.1% in the control group ($p = 0.02$; log rank test). The adjusted hazard ratio for the development of stage II – IV breast cancer associated with membership in the MRI-screened cohort was 0.30 (95% CI: 0.12 to 0.72; $p = 0.008$).

Conclusion: Annual surveillance with MRI is associated with a significant reduction in the incidence of advanced stage breast cancer in BRCA1 and BRCA2 carriers.

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