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NEWS

RSNA Press Release

Combined Mammography and Breast MRI Useful for Some High-Risk Women

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At A Glance

- Annual screening with a combined approach of mammography and MRI may improve life expectancy in women at high risk of breast cancer.
- Screening with mammography alone detects fewer than half of breast cancers in high-risk women.
- Screening with MRI increases false-positive findings.

OAK BROOK, Ill. — Annual breast cancer screening with both mammography and magnetic resonance imaging (MRI) is likely to be a cost-effective way to improve life expectancy in women with an increased risk of breast cancer, according to a new study published in the March issue of Radiology. The findings support current American Cancer Society screening recommendations.

"For women at the highest risk of breast cancer, using both breast MRI and mammography together for screening will likely reduce their chances of dying from breast cancer and help them live longer, healthier lives," said the study's lead author, Janie M. Lee, M.D., radiologist from Massachusetts General Hospital in Boston.

Women with certain mutations in the BRCA1 gene have a significantly increased lifetime risk of developing breast cancer. Mammography, the current standard for breast cancer screening in the general population, detects fewer than half of breast cancers in these high-risk women, in part because their younger age at screening and associated increased breast density make visualizing tumors challenging.

While breast MRI is a useful adjunct to mammography for screening women at increased genetic risk of breast cancer, it is more time consuming and expensive than mammography and has a higher incidence of false-positive findings.

For the study, Dr. Lee and colleagues compared the costs and benefits of film mammography, of MRI and of combined mammography and MRI in a hypothetical group of 25-year-old women with BRCA1 mutations.

The researchers used statistical modeling to estimate the number of quality adjusted life years (QALYs) gained by screening, along with lifetime costs. QALYs are a measure of both the quantity and quality of life.

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Women undergoing annual combined screening with both mammography and MRI gained 49.62 QALYs at a cost of $110,973. Annual MRI screening alone provided 49.50 QALYs at a cost of $108,641, while annual mammography alone provided 44.46 QALYs at a cost of $100,336.

Adding annual MRI to annual mammography screening cost $69,125 for each additional QALY gained. Although there is no consensus in the U.S. on what constitutes a cost-effective intervention, commonly cited threshold values range from $50,000 to $100,000 per QALY, according to Dr. Lee.

Annual combined screening was best at detecting early stage cancers and provided the greatest relative mortality reduction. Combined screening became more cost-effective as breast cancer risk increased, and less cost-effective as risk decreased.

MRI screening was associated with an increase in false-positive results. Annual mammography resulted in 37 false-positive screening examinations for every breast cancer death averted. The addition of annual MRI increased the number of false-positive results to 137 for each breast cancer death averted.

"The benefits provided by MRI are balanced by an increased chance of needing additional tests to evaluate a possible abnormality, and perhaps even a biopsy that might in the end show no cancer," Dr. Lee said.

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"Cost-Effectiveness of Breast MR Imaging and Film Mammography for Screening BRCA1 Gene Mutation Carriers." Collaborating on this paper with Dr. Lee were Pamela M. McMahon, Ph.D., Chung Y. Kong, Ph.D., Daniel B. Kopans, M.D., Paula D. Ryan, M.D., Ph.D., Elissa M. Ozanne, Ph.D., Elkan F. Halpern, Ph.D., and G. Scott Gazelle, M.D., M.P.H., Ph.D.

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For patient-friendly information on breast cancer screening with mammography and MRI, visit *RadiologyInfo.org*.

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