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NEWS

RSNA Press Release

Detection of Breast Cancer in Screening Mammography Has Improved Over Time

Released: May 26, 2010

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At A Glance

- An analysis of data from more than 2.5 million screening mammograms revealed that breast cancer detection rates improved from 1996 to 2004.
- While recall rates increased, the increase in cancer detection rates outweighed the increase in false-positive findings, according to the researchers.
- This is the first study to provide long-term radiologist performance measures in a large sample of U.S. women undergoing screening mammography.

OAK BROOK, Ill. (May 26, 2010) — Researchers analyzing 2.5 million screening mammograms performed on nearly one million women found discrimination of cancerous from non-cancerous lesions improved over a nine-year period. Results of the study are published in the online edition of the journal *Radiology*.

"To our knowledge, this is the first study of time trends for performance measures in a large representative sample of women undergoing screening mammography in the United States," said lead author Laura E. Ichikawa, M.S., biostatistician at the Group Health Research Institute in Seattle, Washington.

The research team examined data from six mammography registries in the Breast Cancer Surveillance Consortium. The data included 2,542,049 screening mammograms of 971,364 women (age 40 to 79) performed at healthcare facilities throughout the country between 1996 and 2004.

Each of the women included in the study had at least one prior mammogram and at least nine months in between mammography exams. Cancer registries and pathology databases were used to identify breast cancers that occurred within one year of any mammogram included in the study.

"We found universal trends that breast imagers are increasing their ability to detect and intercept breast cancer before a lump is felt by a woman," said study co-author R. James Brenner, M.D., professor of clinical radiology at the University of California, San Francisco.

Analysis of the radiologists' performance in interpreting the mammograms over the

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nine-year time period revealed an increase in the recall rate, or mammograms resulting in patients being called back for further evaluation, from 6.7 percent (10,779 of 160,329 mammograms) in 1996 to 8.6 percent (24,630 of 285,286) in 2004.

The sensitivity rate, or the ability of radiologists to identify cancer when present, increased from 71.4 percent in 1996 to 83.8 percent in 2004. The specificity rate, or the degree to which radiologists correctly identified non-cancerous lesions, decreased from 93.6 percent in 1996 to 91.7 percent in 2004.

According to Ichikawa, the increase in the cancer detection rate outweighed the increase in false-positive test results over the nine-year time period, for a positive net effect.

"This is good news for women and for radiology that we have seen a net improvement in how radiologists interpret mammograms," she said. "Radiologists are doing a better job of discriminating cancer from non-cancer."

A total of 12,498 invasive cancers and non-invasive cancers were diagnosed. An invasive cancer is a cancer that has spread beyond the layer of tissue where it developed and is growing into surrounding, healthy tissues. Overall, 78.7 percent of cancers included in the study were invasive.

The majority of mammograms included in the study were film studies. Ichikawa said future studies could focus on time trends of radiologists' interpretive performance when reading digital mammograms. Digital mammography, which was just beginning to be adopted in healthcare institutions towards the end of this study, is now available in approximately half of all mammography facilities in the country.

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"Time Trends in Radiologists' Interpretive Performance at Screening Mammography from the Community-based Breast Cancer Surveillance Consortium, 1996-2004." Collaborating with Ichikawa and Dr. Brenner were William E. Barlow, Ph.D., Melissa L. Anderson, M.S., Stephen Taplin, M.D., M.P.H., and Berta M. Geller, Ed.D.

Radiology is edited by Herbert Y. Kressel, M.D., Harvard Medical School, Boston, Mass., and owned and published by the Radiological Society of North America, Inc. (*http://radiology.rsna.org/*)

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