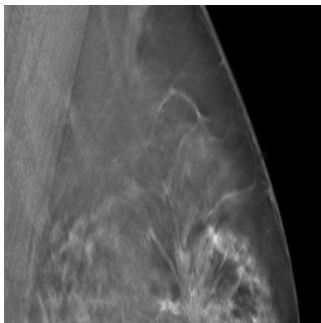

Photon-Counting Technique Increases Detection Rate in Screening Mammography



According to a study published online in the journal Radiology digital mammography screening with new photon-counting technique offers high diagnostic performance.

With digital technology a range of computed radiography (CR) and direct radiography (DR) systems have emerged in mammography screening. The photon-counting technique is a promising DR approach that utilises a unique detector to decrease scattered radiation and noise, enabling dose reduction and making it a promising tool for screening.

Walter Heindel, M.D., from the Department of Clinical Radiology at Germany's University Hospital Muenster in Muenster, said that dose reducing techniques, which do not compromise outcome parameters, were desirable in population-based mammography screening.

Dr. Heindel and his team of colleagues evaluated data from the mammography screening program in Germany's most populous state, North Rhine-Westphalia. The screening performance of a DR photon-counting scan system was compared with those of statewide operating screening units using different digital technologies. During the study period of one year between 2009 and 2010, over 13,300 women were examined using the photon-counting system, whereas almost one million women were screened with either CR or DR systems alone.

While the DR photon-counting scan system had a cancer detection rate of 0.76% for subsequent screening, the other screening units had a rate of 0.59%. The recall rate was 5.4% for the photon-counting method and 3.4% for the other methods.

Dr. Heindel attributed the higher cancer detection from the use of the DR photon-counting scan system to high detection of both small, invasive cancers and ductal carcinoma in situ.

The photon-counting technique had almost twice the detection rate of other methods for ductal carcinoma in situ (DCIS), an early, noninvasive form of disease. It had a higher DCIS detection rate than the statewide units and the conventional DR subgroup.

Additionally, the mean average glandular radiation dose of the DR photon-counting scan system was significantly lower than the conventional DR systems with the individually used parameters of the automatic exposure control.

The large size of this study sets it apart from previous studies that compared the DR photon-counting scan system's performance with other approaches.

Study coauthor Stefanie Weigel, M.D., from the University Hospital Muenster, explained that to the team's knowledge, the study was different from previous ones as it examined the performance of the DR photon-counting scan mammography on a larger database with consideration of multiple parameters of screening.

Due to the photon-counting technique also offering lateral dose modulation during the image acquisition, this may help account for differences in breast density as cancer often is more difficult to detect in women with dense breasts.

In this regard, Dr. Heindel sees further research potential in the innovative photon-counting technique, in particular the application of spectral imaging for quantification of breast glandular tissue.

Source: [RSNA](#)

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