

Studies gauge techniques for measuring breast density -- a predictor of cancer

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Two new studies announced this week have tested three different methods for accurately measuring breast density -- the relative portion of tissue to fat in a woman's breasts and a strong indicator of breast cancer risk.

Both studies were conducted by a group of medical physicists at the University of California, Irvine, led by Sabee Molloi, and they will be presented today and tomorrow at the 52nd Annual Meeting of the American Association of Physicists in Medicine (AAPM) in Philadelphia, PA.

The first study compared two existing techniques for measuring breast density -- cone-beam CT and breast MRI. It found that both techniques gave highly similar estimates of the density of 20 pairs of breasts scanned post-mortem. The second study showed the promise of a third technique called dual-energy mammography for measuring breast density.

"A better measure of breast density should yield a more accurate assessment of risk for developing <u>breast cancer</u>," says medical physicist Justin Ducote, who is presenting the work on dual-energy mammography today in Philadelphia.

Doctors have known since the 1970s that women who have dense breasts are at greater risk for developing breast cancer. Moreover tumors may be hard to detect when imaging dense breast, since they have a greater



portion of glandular tissue relative to the amount of <u>fatty tissue</u>, and the glandular tissue can obscure the tumors.

Measuring breast density is made difficult by the fact there is no currently accepted gold-standard method for doing so, says Ducote.

In Ducote's study, the research applied dual energy mammography to 20 pairs of postmortem breasts. The technique makes use of dual energy X-ray imaging, where overlapping tissue signals can be isolated and quantified by exploiting the change in X-ray attenuation at different energies. According to Ducote, this allowed breast density to be measured from digital mammograms.

Ducote's colleague Huy Le will present related research on Thursday. In Le's study, the group analyzed the ability of cone-beam CT and breast MRI to measure breast density in the same 20 pairs of postmortem breasts. They found that breast density measurements using these two techniques were highly correlated.

"If we can get agreement of <u>breast density</u> measured on multiple imaging modalities, our confidence in the accuracy of the value we obtain will increase," says Le.

The next step, the researchers say, is to quantify the exact density of the breasts in the study through chemical composition analysis -- a destructive technique, which is why the research was done using postmortem tissue.

Provided by American Institute of Physics

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