Adding ultrasound to breast screening results in higher rate of detection for women in Japan

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Adding ultrasound to standard mammography tests in breast screening could result in improved rates of detection for breast cancer in women in Japan, according to a new study, published in *The Lancet*.

Researchers led by Professor Noriaki Ohuchi, from Tohoku University Graduate School of Medicine, in Miyagi, Japan, recruited more than 70000 women in Japan aged between 40 and 49 to participate in the J-START trial. Half were offered the usual mammography screening, and half were offered ultrasound testing in addition to mammography, with two screening sessions taking place over two years.

The results show that ultrasound combined with mammography resulted in correct identifications of cancer in more than 9 out of 10 cases (91% sensitivity), whereas for women given mammography alone, just over three quarters of tests correctly identified breast cancer (77% sensitivity).

Breast cancer already affects large numbers of women in Europe and the US, but rates are increasing rapidly in Japan and other Asian countries. Early detection and treatment is critically important for reducing deaths from the disease, and many developed countries have implemented mammography screening programmes for the women who are most at risk.

In Asia, breast cancer tends to present at an earlier age than in Europe or the US, and Asian women have denser breast tissue, both of which are known to reduce the accuracy of mammography. As such, detection using standard mammography screening based on European and US practice might miss cases of breast cancer in Asian countries.

In addition to accurately detecting more cases of breast cancer, adding ultrasound to mammography detected more cancers at an early stage (144 cancers at stage 0 or 1, compared to 79 cancers at stage 0 or 1 detected by mammography alone). The addition of ultrasound also resulted in fewer interval cancers (which appear after a negative test result between scheduled rounds of screening), leading researchers to conclude that adding ultrasound to mammography screening detected additional cancers, compared to mammography alone.

While previous studies have suggested that the addition of ultrasound might lead to an excessively high rate of 'false positive' results (where screening results falsely indicate that a cancer is present), these results suggest that the difference in false positive rates between the two testing protocols was small, and could be further reduced by ensuring that mammography and ultrasound test results are analysed together.

"Our results suggest that adding ultrasound to mammography results in more accurate screening results for women in Japan, which could ultimately lead to improved treatment and reduced deaths from the disease," says Professor Ohuchi. "Further work will now be needed to see if these results can be extended to other countries in Asia. In addition, long-term follow-up of these results will determine whether including ultrasound tests in breast cancer screening ultimately affects the likelihood of successful treatment and survival, as we would expect."

In a linked Comment, Martin Yaffe and Roberta Jong from the University of Toronto, Canada, write, "We believe that J-START7 is an

important trial for several reasons. It is the first randomised trial of population screening with ultrasonography, and was done in asymptomatic women at average risk, who were not preselected on the basis of other imaging findings. Earlier studies, most of which were done in the USA, involved women at moderate or high risk of breast cancer...Furthermore, the J-START trial was done in relatively young women. Despite evidence of mammography screening effectively reducing mortality in women in their 40s, this method is seldom recommended or provided for women younger than 50 years. Definitive evidence of whether ultrasonography screening of women from age 40 years can further reduce breast cancer mortality could be an important step."

More information: *The Lancet*, www.thelancet.com/journals/lan … 0140-6736(15)00774-6

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