Mammograms: Are We Overdiagnosing Small Tumours?

According to a Yale study, because many small breast cancers are inherently slow growing, often these cancers will not grow large enough to become significant within a patient's lifetime and subsequently early detection could lead to overdiagnosis. In contrast, large tumours that cause most breast cancer deaths often grow so quickly that they become intrusive before they can be detected by screening mammography.

The study questions some of the fundamental beliefs about the value of breast cancer early detection, says lead author Donald R. Lannin, MD, professor of surgery at Yale School of Medicine. "Our analysis explains both how mammography causes overdiagnosis and also why it is not more effective in improving outcomes for our patients," the doctor points out. The findings are published in the New England Journal of Medicine.

Researchers analysed invasive breast cancers diagnosed between 2001 and 2013 in the Surveillance, Epidemiology, and End Results (SEER) database and divided them into three prognostic groups based on biologic factors: grade, estrogen receptor (ER) status, and progesterone-receptor (PR) status. The three biologic categories were defined as favourable, intermediate, and unfavourable.

The research team then used the expected rate of overdiagnosis of 22% to model the types of breast cancers and patient age ranges that likely account for the majority of overdiagnosis. The results showed that most overdiagnosis occurred in older patients with biologically favourable, slow growing, tumours.

As Dr. Lannin explained, "Until now, we thought that the lead time, or time until a cancer becomes problematic for a patient, for most breast cancers was about 3 or 4 years. This paper shows that lead times vary widely depending on the tumour type. A large portion of aggressive cancers have a lead time of two years or less, whereas another large portion of breast cancers grow so slowly that the lead time is 15 to 20 years."

The doctor highlights the importance of educating physicians, patients, and the public on the indolent, slow growing nature of some breast cancers. "This knowledge will allow us to individualise treatment options, provide 'personalised medicine,' and avoid the major harms of overdiagnosis, which can result in overtreatment and the anxiety and fear that a cancer diagnosis causes," said Dr. Lannin.

Source: Yale Cancer Center
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