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Average size of breast tumors decreased following introduction of screening but is now increasing

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The average size of breast cancers at diagnosis decreased dramatically in the 1980s and 1990s following the introduction of screening, according to research presented at the 11th European Breast Cancer Conference.

However, the new research also reveals a slight increase in the average size of breast tumours since 2001, perhaps as a result of a decrease in the number of women going for screening in the same period.

The researchers say it is not yet clear whether the recent increase in average tumour size will lead to more deaths from breast cancer in the coming years. But they point out that, in general, women with smaller tumours at diagnosis have a better chance of surviving the disease.

The research was carried out by Dr Manon Jenkins, junior doctor, Miss Louise Merker, surgical registrar, Mr Nicholas Gallegos, consultant surgeon, and colleagues at Weston General Hospital in Bristol, UK.

Dr Jenkins said: "In general terms, small breast cancers have a better prognosis than larger ones. Screening aims to detect breast cancers before they are large enough for a woman to feel them. If that's the case then the number of large cancers among women who are offered screening should fall and mortality should also decline."

The study involved 386,454 women in the US who were diagnosed with

breast cancer between 1983 and 2014. Researchers categorised the women according to when they were diagnosed and their age at diagnosis. For each group, they calculated the average tumour size allowing them to see how this has changed in different age groups over the decades since screening was introduced.

The results show that average tumour size has decreased by 23% over the 32-year period, from 26mm to 20mm, but the trend was not consistent over the years and varied according the women's ages.

When breast screening was introduced in the early 1980s the average size of breast cancers fell sharply. In women aged between 70 and 74, there was a decline in the average size of tumours of 27% but in women aged 85 and older, the decline was only ten per cent. Average tumour size in these older women, who are less likely to be screened, remains the highest.

From 2001 to 2014, researchers discovered an unexpected rise in average tumour size of between three per cent (in the 75 to 79 age group) and 13% (in women aged 50 to 54 years).

Dr Jenkins said: "Rates of breast cancer survival have been improving steadily thanks both to the introduction of screening and to improvements in treatments. What we don't know is which has played the biggest role in improving survival.

"This study suggests that by reducing tumour size, screening provides a platform from which breast cancer treatments might work more effectively.

"The recent increase in the average size of tumours may reflect a decline in rates of screening. If this is followed by a deterioration in breast cancer mortality rates it would strengthen the argument for screening

programmes to continue. On the other hand, if declining screening rates are not followed by a rise in breast cancer death rates, it probably signals that advances in treatment are the main reason for the improvement in breast cancer mortality."

The researchers hope to continue to study this group, comparing the stage of the women's tumours as well as looking in more detail at the elderly population.

Professor Robert Mansel is chair of the 11th European Breast Cancer Conference and Emeritus Professor of Surgery at Cardiff University School of Medicine, UK, and was not involved with the research. He said: "This study suggests there has been an overall decline in the average size of breast tumours since screening was introduced and we know that smaller tumours do lead to better prognosis.

"The research also shows that the decline has been less pronounced in older women and that, more recently, there has been a slight increase in average tumour size overall. Both of these are of concern, and we will need to continue to monitor breast screening programmes and their impact on survival in women of all ages."

Provided by ECCO-the European CanCer Organisation

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