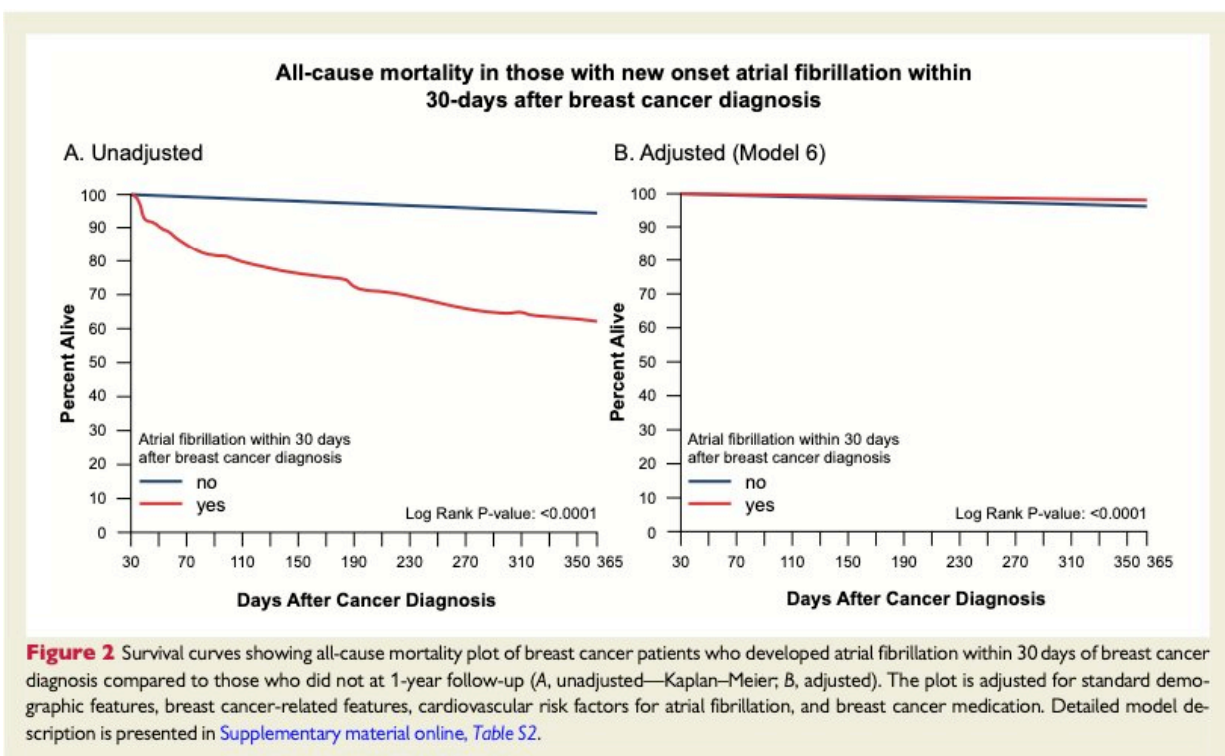


Atrial fibrillation and death are more common during the first year after breast cancer diagnosis

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Survival curves showing deaths from any cause for breast cancer patients who developed atrial fibrillation within 30 days of breast cancer diagnosis compared to those who did not at one-year follow-up. Credit: *European Heart Journal*

Women are significantly more likely to develop an abnormal and often

rapid heart rhythm in the first year after being diagnosed with breast cancer than women without cancer, according to research published in the *European Heart Journal*.

The study also found that patients who developed the condition, known as atrial fibrillation, after a [breast cancer diagnosis](#) had a three-fold increased risk of dying from heart or blood vessel problems within one year.

The study is the first to evaluate health problems and deaths associated with atrial fibrillation following a diagnosis of breast [cancer](#). It analyzed 85,423 women aged 66 years or older who were diagnosed with breast cancer between 2007 and 2014. In the one-year period after their diagnosis 4% of patients developed atrial fibrillation. The women were matched with the same number of healthy women without breast cancer, and only 2% of these women developed atrial fibrillation over the same period.

Atrial fibrillation developed more often in women who were not treated with surgery or radiation as their first course of therapy than in women who did receive these treatments: 23.5% versus 10.4%, and 66.5% versus 52.3%, respectively. Although the highest risk of atrial fibrillation was associated with women who did not have surgery, more complicated surgery such as mastectomy (when the whole breast is removed) was associated with a higher risk than simple procedures such as lumpectomy (when only a lump containing the tumor is removed).

Interestingly, women who received brachytherapy, in which radioactive seeds are placed in or near the tumor, had half the risk of developing atrial fibrillation than women who received external beam radiation.

The incidence of atrial fibrillation was higher in women who had advanced disease at the time of diagnosis (15% for stage IV disease)

than in women who had early-stage disease (6%). The rate of atrial fibrillation was highest in the first 60 days after a breast cancer diagnosis, with 0.6% of women developing the condition, while 0.3% developed it every 30 days thereafter during the one-year follow-up.

Information on the women came from the Medicare program, which insures over 95% of people above the age of 65 years in the U.S.. This was linked to the SEER database, which collects data on cancer for about 35% of the U.S. population.

Dr. Avirup Guha, assistant professor of medicine at Case Western Reserve University, Cleveland, Ohio, U.S., who led the study, said: "There has been a significant increase in the number of women who survive breast cancer, but increased heart and blood vessel problems have become limitations of optimal outcomes. While atrial fibrillation in people without cancer is associated with an overall poor prognosis, until now little has been known about outcomes from the condition after a breast cancer diagnosis.

"Our study has provided multiple insights. However, the two most stark findings are that atrial fibrillation after breast cancer diagnosis increases deaths from heart and blood vessel problems, and that cancer severity is a strong risk factor for the development of atrial fibrillation."

When the researchers looked at women who already had atrial fibrillation before being diagnosed with breast cancer, they found no significantly increased risk of dying from any cause within one year of diagnosis. Approximately 85% were still alive after one year, whereas 62% of women who developed atrial fibrillation after a breast cancer diagnosis survived for one year. After adjusting for factors that could affect the results, such as age, other medical conditions and history, obesity and type of breast cancer, women who developed atrial fibrillation within the first 30 days after a breast cancer diagnosis were

twice as likely to die from any cause within one year as women who had atrial fibrillation prior to a breast cancer diagnosis.

The study is unable to show what mechanisms may be involved in the greater risk of developing atrial fibrillation or death, but surgery, chemotherapy, inflammation, and imbalances in the body's normal processes caused by the cancer may be implicated. The researchers speculate that the fact that more advanced breast cancer was associated with an increased risk of atrial fibrillation suggests that the cancer itself may be affecting the heart.

"Future research could involve investigating the following questions: would giving cardiovascular medication to all new breast cancer patients reduce the risk of atrial fibrillation and death? Should these patients be monitored to rule out atrial fibrillation? Could a prospective study show that specific cancer treatments and their duration in the first one or two months after a cancer diagnosis may be associated with an increased likelihood of atrial fibrillation?" said Dr. Guha.

"An important point is that those with existing atrial [fibrillation](#) were not at increased risk of dying after [breast cancer diagnosis](#) compared to those who did not develop [atrial fibrillation](#). This may be because they were already well managed from a cardiovascular standpoint. Therefore, it's possible that involvement of cardio-oncology in the care of [breast](#) cancer patients may mitigate the mortality outcomes noted in this study."

Strengths of the study include its size and ethnic diversity of the population. Limitations include that it only looked at women aged 66 and over, so the findings may not apply to younger [women](#); the study is based on medical claims rather than data gathered in the clinic; the prevalence of obesity may have been under-reported; and the study followed the patients for only one year. This last point is important because chronic heart problems caused by radiation treatment may only become evident

after longer follow-up.

More information: Late effects of cancer in children, teenagers and young adults: population-based study on the burden of 183 conditions, inpatient and critical care admissions and years of life lost, *European Heart Journal* (2021). [DOI: 10.1093/eurheartj/ehab745](https://doi.org/10.1093/eurheartj/ehab745)

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