Statins may protect against the heart harms of breast cancer therapies

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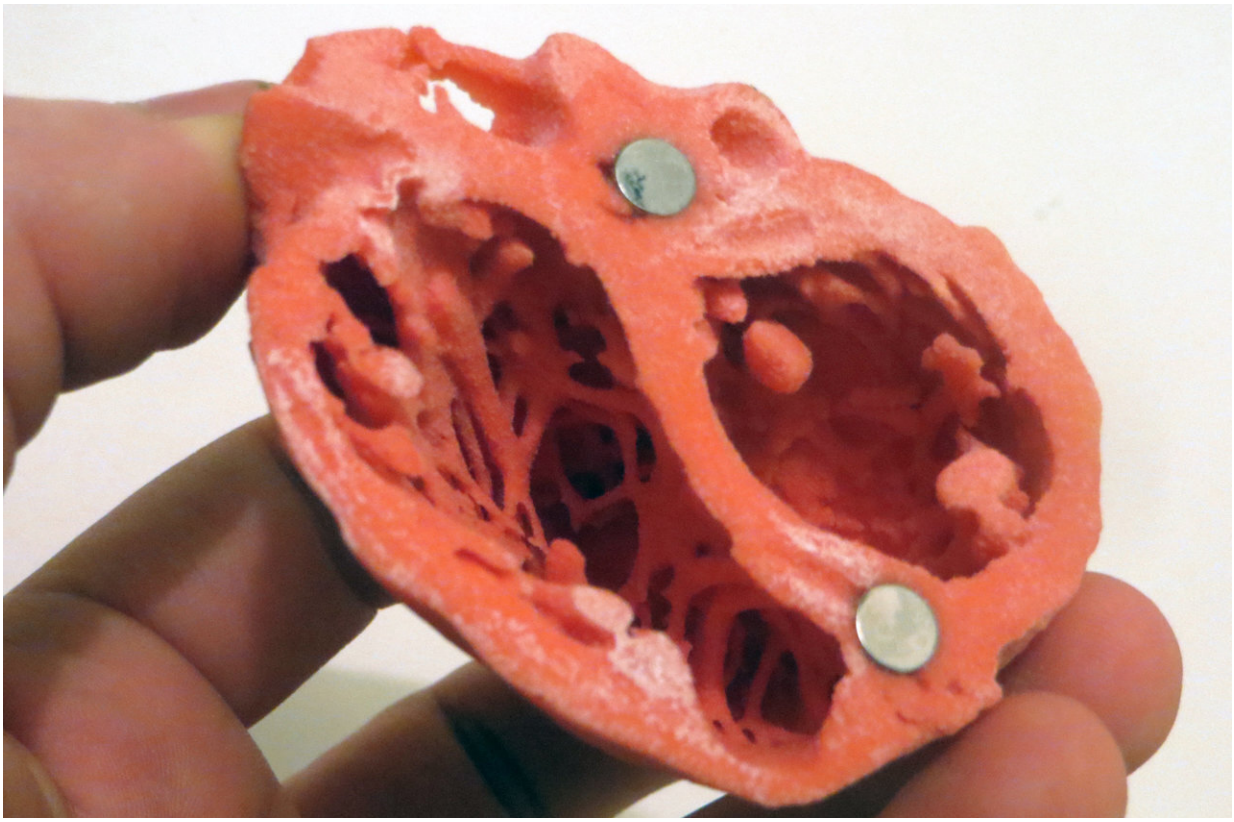

3D Model of the heart by Dr. Matthew Bramlet. Credit: NIH

Statins are widely used to lower cholesterol and prevent heart disease and related deaths, but can they also help guard against heart damage caused by certain breast cancer therapies? New research being presented

at the American College of Cardiology's Annual Scientific Session Together with World Congress of Cardiology (ACC.20/WCC) suggests the answer may be yes.

Chemotherapies with anthracycline, as well as the targeted cancer medicine trastuzumab, are commonly used to treat breast cancer. Separate research estimates that nearly 1 out of 4 women with early stage breast cancer will receive anthracycline or trastuzumab, but these same lifesaving treatments are also known to be toxic to the heart and, in some cases, can trigger heart failure—a serious condition that affects the heart's ability to pump enough blood to meet the body's needs. In some women, reduced heart function can occur within months of initiating cancer therapy.

"To date, there has been limited evidence supporting the safety and effectiveness of large-scale use of cardioprotective medications for patients with early stage breast cancer. Angiotensin antagonists and beta blockers have only shown modest cardioprotective effects in clinical trials, and these medicines are sometimes poorly tolerated in this population given their side effects of fatigue and dizziness, which many patients already have from their cancer therapies or the cancer itself," said David Bobrowski, medical student at the University of Toronto, Canada and the study's lead author. "Our results suggest that taking statins is associated with a significantly lower risk of developing heart failure requiring hospital-based care among women with early stage breast cancer who received one of these cancer therapies."

In fact, compared with women who were not on a statin before undergoing cancer treatment, women who were taking statins while receiving anthracyclines or trastuzumab had significantly lower risk of developing heart failure, 58% and 66% respectively over the median five-year follow-up period.

"Our research expands on earlier, smaller studies. If these associations are confirmed in a prospective trial, this will represent an important step forward to optimize cancer outcomes by decreasing the trade-off of long-term cardiac disease or related deaths," Bobrowski said, adding that this study is the largest to examine the role that statins might play in protecting against treatment-related heart failure and the first to show risk lowering in women receiving trastuzumab with or without anthracycline at a population level.

This population-based study analyzed the medical records of 2,545 anthracycline-treated women and 1,345 trastuzumab-treated women aged 66 years or older without a history of heart failure who were diagnosed with early stage breast cancer between 2007 and 2017 in Ontario, Canada. Of these, 953 anthracycline-treated women and 568 trastuzumab-treated women were deemed to be taking statins. Statin use was based on whether women were prescribed a statin within a year of starting their cancer treatment, but researchers were not able to validate whether the women actually took the statin. For the analysis, researchers then matched these women in a 1-1 ratio with similar women who were not using a statin, resulting in 723 pairs of anthracycline-treated women and 399 pairs of trastuzumab-treated women (median age 69 and 71 years, respectively). Unlike most previous studies that focused on declines in left ventricle function (the amount of blood pumped out of the heart) as an indicator of heart failure, Bobrowski and his team looked at clinically overt heart failure, defined as a woman presenting to the emergency department or being admitted to the hospital with heart failure. The risk of heart failure-related hospital visits was significantly lower with statin exposure.

"Declines in left ventricle function can be predictive of heart failure, but overt heart failure gives a more clear-cut outcome that carries more relevance to cancer patients and their physicians," Bobrowski said. "The findings provide impetus for future prospective trials to determine

whether initiating a statin before receiving anthracycline-based chemotherapy or trastuzumab can effectively prevent cardiotoxic events."

Statins have effects that go beyond lowering cholesterol, including reducing oxidative stress and the production of free radicals in heart cells, which Bobrowski said is compatible with clinicians' understanding of how these cancer therapies induce cardiotoxicity. Moreover, because there is often an overlap of risk factors between cancer and cardiovascular disease, including diabetes and obesity, many of these patients may also benefit from statin therapy based on current guidelines for cardiovascular risk reduction.

Breast cancer is the most common cancer in American women, aside from skin cancers. It's estimated that 1 out of 8 women will develop breast cancer at some point during their lifetime.

"While death rates have been declining, largely due to earlier detection and improving treatments, we now know many women will later develop heart disease," Bobrowski said. "It's a bit of a double-edged sword; cardiovascular disease is the leading and competing cause of death among older early stage breast cancer survivors."

Provided by American College of Cardiology