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Aspirin use does not improve outcomes for cancer patients, but may lower breast density

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Whether aspirin may help prevent or reduce the risk of breast cancer remains a hotly debated research question. While past studies have indicated a potential benefit, most recently in hormone receptor-positive breast cancers, one new study from Penn Medicine suggests otherwise. Aspirin does not appear to be protective or associated with improved clinical outcomes or survival among breast cancer patients with aggressive disease, the researchers of one study report. However, another study suggests aspirin may in fact help reduce breast tissue density, which could lead to earlier detection of some breast cancers. Results of both studies will be presented at the 2015 San Antonio Breast Cancer Symposium (Abstracts PD1-04 and PD1-05, respectively) on Wednesday, December 9.

In the first study to report on the association of aspirin use with breast cancer outcomes in a large patient population, researchers examined the pattern of aspirin use, cancer pathology and overall survival in 1,000 patients treated at the Abramson Cancer Center of the University of Pennsylvania and diagnosed with breast cancers, including receptor positive, HER2- positive and triple negative cancers. A history of aspirin use for at least 30 days prior to diagnosis was reported in 14 percent of the participants.

The team, led Julia C. Tchou, MD, PhD, an associate professor of Surgery in the Perelman School of Medicine at the University of Pennsylvania, found that a history of taking aspirin was not associated with improved survival, regardless of receptor status. In fact, after a five-

year follow up, researchers found that low-dose aspirin was significantly associated with worse overall survival compared to patients who didn't take it before their cancer diagnosis.

The study's first author Yun R. Li, a fourth-year MD/PhD candidate in the Perelman School of Medicine was chosen to receive an AACR Scholar-in-Training Award to attend SABCS based on her highly rated abstract by the Abstract Selection Committee.

The results come during a time when studies investigating aspirin's anti-cancer effects have found evidence to support its benefit, beyond staving off cardiovascular disease or, in oncology, reducing the risk of colorectal cancer.

"Past studies have found that aspirin may hold anti-cancer benefits. However, many of them were preliminary, preclinical, and didn't support a clear mortality benefit. They also didn't look at prior use of aspirin," Tchou said. "Our data did not support the notion that this century-old pill has protective qualities and down-the-road benefits for breast cancer patients. However, larger patient cohort studies are needed to confirm our results."

In the second study, researchers examined whether aspirin is associated with breast density, which is a widely accepted risk factor for both estrogen receptor minus (ER-) and estrogen receptor positive (ER+) breast cancers, and can be a key factor in detecting tumors during routine mammograms.

Although some studies have suggested aspirin may help detect or prevent both ER- and ER+ breast cancers, clinical trials have yet to substantiate this effect.

In the new study, researchers evaluated the medical records of 26,000

women who had undergone routine screening mammography during 2012 and 2013 and had an outpatient visit to a doctor within the previous year which included a recorded list of medication use. Results of the analysis show an inverse association between aspirin use and mammographic density. Compared to women with extremely dense breasts, women with fatty or less dense breasts were more likely to be aspirin users. The researchers also found a lower likelihood of having extremely dense breasts with increasing aspirin dose. This association was particularly significant among women under age 60 and among African American women.

"Our findings highlight the potential value for a randomized controlled trial of aspirin as an agent in early detection of breast cancer, particularly for women with naturally dense tissues who may be at an increased risk for certain cancers," said Despina Kontos, PhD, assistant professor of Radiology, and co-author on the study. "Further investigation will advance the body of knowledge in caring for potentially millions of at-risk breast cancer patients worldwide."

Kontos adds that a greater role for aspirin would be welcomed by many at-risk patients, as current drugs aimed at reducing risk, such as tamoxifen and raloxifene, have significant side effects and do not prevent ER-negative breast cancer.

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