Obesity may increase risk of triple-negative breast cancer

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New findings published in *Cancer Epidemiology, Biomarkers & Prevention*, a journal of the American Association for Cancer Research, confirm the risk of breast cancer among women who are obese and not physically active, and suggests additional mechanisms beyond estrogen.

Scientists from the Women's Health Initiative have found a relationship between obesity, physical activity and triple-negative breast cancer, a subtype of breast cancer characterized by a lack of estrogen, progesterone and HER2 expression. Triple-negative breast cancers account for about 10 to 20 percent of all breast cancers and are associated with an extremely poor prognosis due to a lack of targeted drug therapies.

"Breast cancer is not just one disease. It is a complex combination of many diseases," said Amanda Phipps, Ph.D., a postdoctoral fellow at the Fred Hutchinson Cancer Research Center. "The fact that we found an association with triple-negative breast cancer is unique because, biologically, this subtype is very different from other breast cancers."

Epidemiologists have long noted a link between obesity and increased risk of postmenopausal breast cancer, as well as a decreased risk that comes with greater physical activity. A relationship between adipose tissue and estrogen is thought to contribute to this risk.

Phipps and colleagues analyzed data from the 155,723 women enrolled in the Women's Health Initiative. They assessed levels of baseline body

mass index (BMI) and recreational physical activity among the 307 women who had triple-negative breast cancer and the 2,610 women who had estrogen receptor-positive breast cancer.

Results showed that women with the highest BMI had a 35 percent increased risk of triple-negative breast cancers and a 39 percent increased risk of estrogen receptor-positive breast cancers. Those who reported high rates of physical activity had a 23 percent decreased risk of triple-negative breast cancer and a 15 percent decreased risk of estrogen receptor-positive breast cancer.

Amy Trentham-Dietz, Ph.D., an associate professor of population health sciences at the University of Wisconsin and an editorial board member of *Cancer Epidemiology, Biomarkers & Prevention*, said the study raises important questions.

"The body of literature, primarily meta-analyses, has shown most of the risk between obesity and breast cancer to be among the estrogen receptor-positive subtypes," she said. "This paper raises questions about the possible role of growth factors or inflammation, but these will need to be explored with larger patient groups with known breast cancer subtypes, especially triple-negative breast cancers."

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