Chronic stress may impact treatment completion and survival outcomes in patients with breast cancer

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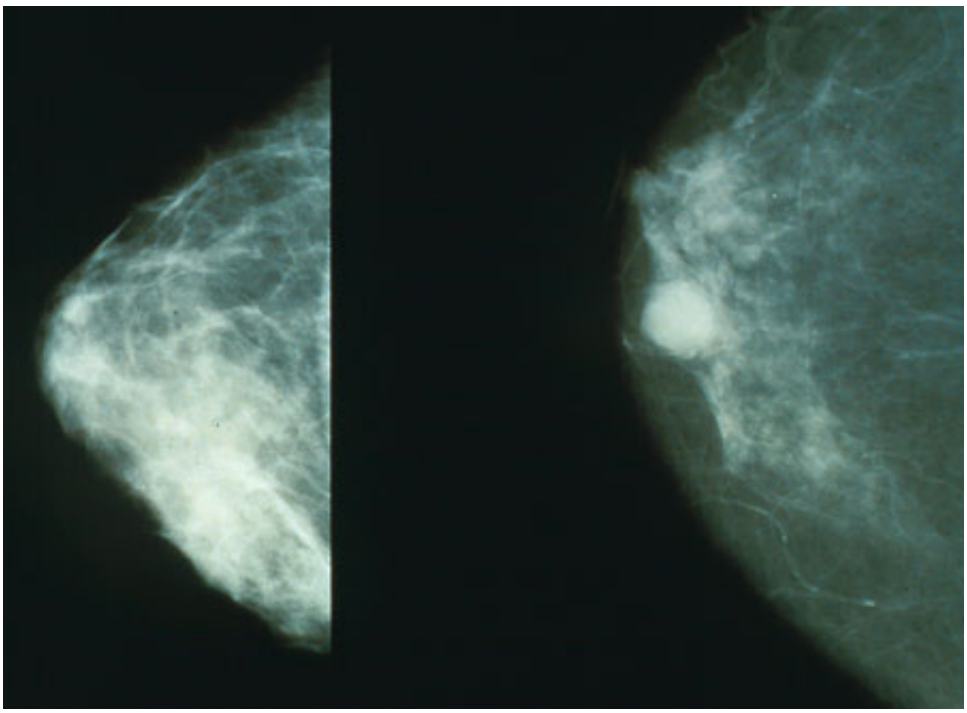

Mammograms showing a normal breast (left) and a breast with cancer (right). Credit: Public Domain

Elevated allostatic load was associated with a lower likelihood of completing chemotherapy and a lower overall survival rate in patients with lymph node-positive or high-risk lymph node-negative HER2-negative breast cancer, according to results presented at the 14th

AACR Conference on the Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved, held online October 6-8, 2021.

Allostatic load is the "wear and tear" on the body caused by lifelong exposure to stressors—such as social isolation, poverty, and racism—many of which are common among racial/ethnic minorities. Elevated allostatic load has been associated with various health problems, such as high blood pressure, increased body mass index, kidney disease, inflammation, arthritis, and other conditions.

"Patient behavior and clinical outcomes cannot be isolated from the effects of their social environment," said presenter Samilia Obeng-Gyasi, MD, MPH, a surgical oncologist at The Ohio State University Comprehensive Cancer Center. "Allostatic load provides us with a way to evaluate the effects of social and environmental stressors on a patient's physiology."

In this study, Obeng-Gyasi and colleagues in the ECOG-ACRIN Cancer Research Group sought to understand whether allostatic load or genetic ancestry (identified by DNA) impacted patients' survival and their likelihood of completing chemotherapy. Prior studies suggested that allostatic load and genetic ancestry each plays a role in poor breast cancer outcomes; however, no studies have looked at both factors at the same time in a study population.

"We observed that people with a high allostatic load at the beginning of the study had a greater likelihood of stopping chemotherapy early and a higher risk of death," said Obeng-Gyasi. "In contrast, we did not observe an association between genetic ancestry and survival or chemotherapy completion. This suggests that allostatic load may be better than genetic ancestry at predicting chemotherapy completion and overall survival."

The researchers analyzed data from the ECOG-ACRIN E5103 phase III clinical trial, one of the first large breast cancer treatment trials to assemble a biorepository and database of patient information, including demographics and DNA, for future research. The trial examined the effect of adding bevacizumab into sequential anthracycline and paclitaxel chemotherapeutic regimens in patients with lymph node-positive or high-risk lymph node-negative HER2-negative breast cancer.

Using genomic analyses and other patient information from the E5103 repository, Obeng-Gyasi and colleagues examined chronic stress, measured by allostatic load, across three broad categories of genetic ancestry—African, European, and other. Among the 348 patients included in the analysis, approximately 80 percent had European ancestry, 10 percent had African ancestry, and 10 percent had other ancestry.

Allostatic load was measured in patients in E5103 using biomarkers of the cardiovascular, immune, and metabolic systems collected prior to starting treatment. Examples of the biomarkers included body-mass index, blood pressure, creatinine, and several cytokines.

After adjusting for genetic ancestry, the researchers found that each 1 unit increase in allostatic load score was associated with a 15 percent reduction in the likelihood of completing chemotherapy and a 14 percent increase in the risk of death.

"These results suggest that long-term exposure to chronic social and environmental stress may contribute to poor outcomes in patients with breast cancer," said Obeng-Gyasi.

She explained that with further research, measuring allostatic load may be a useful tool to predict which patients with breast cancer may be at increased risk for stopping chemotherapy early and/or having poor

survival. "Future prospective clinical trials with repeated measures of allostatic load may provide greater insight into its relationship to treatment and survival, especially if allostatic load is collected multiple times during the active treatment and survivorship phases of care," she added.

A limitation of the study is that the analyses included only a subpopulation of patients with breast cancer; therefore, the results may not apply to all patients. An additional limitation is the small sample size.

More information: Conference: www.aacr.org/meeting/aacr-virt … dically-underserved/

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