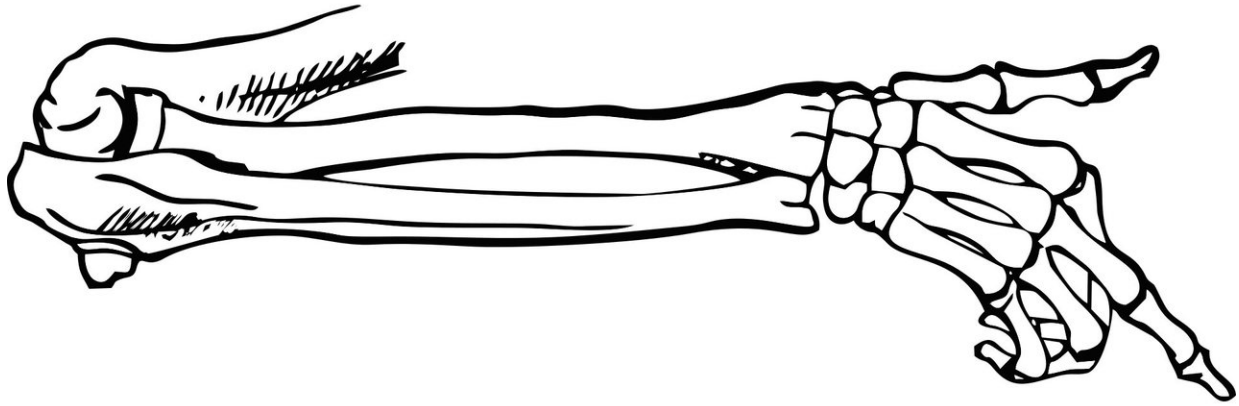
Osteoporosis risk rises sharply even for younger breast cancer survivors

November 29 2018



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Women diagnosed with breast cancer who are 50 or younger face a much higher risk of the bone-loss condition osteoporosis compared to women of the same age who do not have cancer. The findings, which complement prior research showing higher bone-loss risk in older breast cancer survivors, come from a study led by researchers at Johns Hopkins Bloomberg School of Public Health.

The study, published Nov. 13 in the journal *Breast Cancer Research*, compared the rates of osteoporosis and a less severe bone-loss condition, osteopenia, among 211 women who had been diagnosed with breast cancer within the past 2.7 years and 567 cancer-free peers with no history of cancer.

Women diagnosed at age 50 or younger had twice the risk of developing either osteoporosis or osteopenia compared to cancer-free peers during the roughly six-year study window. For breast cancer survivors who had undergone treatments that block estrogen production, the risk of osteopenia or osteoporosis was even higher—up to four times higher than in the cancer-free group.

"These findings show that even younger women have a relatively high risk of bone loss with standard breast cancer treatments, and in many cases we saw this bone loss occurring in just a few years," says study senior author Kala Visvanathan, MD, a professor in the Bloomberg School's Department of Epidemiology. "These results suggest that we should monitor even young breast cancer patients for bone loss during and after therapy."

Breast cancer treatments often induce premature menopause by damaging the ovaries or otherwise interrupting estrogen production. That leaves bones relatively vulnerable to bone loss and ultimately osteoporosis. Prior research linking breast cancer treatment to bone loss has mostly been conducted among older, postmenopausal women, with no comparison to a cancer-free control group. "This study is the first to show that linkage among relatively young and recently diagnosed breast cancer patients, with a direct comparison to cancer-free peers," Visvanathan says.

She and her colleagues made use of data from the ongoing Breast and Ovarian Surveillance Service study, which follows more than 1,400

people with a family background of breast and/or ovarian cancer. In all, the analysis covered 778 women who had information on bone-loss tests and either had a breast cancer diagnosis within the five years prior to enrollment or were age-matched and cancer-free.

The results showed that during follow-up periods averaging 5.8 years after enrollment the breast cancer survivors were generally much more likely to have osteopenia or osteoporosis. Overall, including women diagnosed before and after age 50—the mean age in the group was 47—had 1.68 times the risk of osteopenia and osteoporosis compared to their cancer-free peers. Women 50 and younger at diagnosis had 1.98 times the risk.

The risk of bone loss was particularly high for certain types of treatment. Women receiving the standard combination of chemotherapy plus hormonal therapy had 2.7 times the risk of osteopenia and osteoporosis compared to the cancer-free group. Chemotherapy plus tamoxifen—one common hormonal therapy—was associated with a 2.48 times higher risk but not tamoxifen alone. Aromatase inhibitors, which are known powerful reducers of estrogen production, brought an even higher risk: 2.72 times higher for aromatase inhibitors alone, and 3.83 times higher when combined with chemotherapy.

Remarkably, the increase in bone-loss conditions was seen even when the researchers excluded women with premature menopause from their analysis. "There seems to be an effect of cancer treatment on bone health that works independently of menopause—perhaps by directly inhibiting bone formation," Visvanathan says.

Further, osteopenia and osteoporosis were diagnosed in many of the patients within a few years of their starting breast cancer therapy. To Visvanathan and her colleagues, that suggests monitoring bone health as a standard practice even in younger, pre-menopausal breast cancer

patients.

"Looking forward, we're hoping to validate these findings in larger studies and to quantify the degree of bone loss that occurs with different treatments," Visvanathan says.

More information: Cody Ramin et al. Evaluation of osteopenia and osteoporosis in younger breast cancer survivors compared with cancer-free women: a prospective cohort study, *Breast Cancer Research* (2018). DOI: 10.1186/s13058-018-1061-4

Provided by Johns Hopkins University Bloomberg School of Public Health

Citation: Osteoporosis risk rises sharply even for younger breast cancer survivors (2018, November 29) retrieved 24 April 2024 from https://medicalxpress.com/news/2018-11-osteoporosis-sharply-younger-breast-cancer.html

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