

Characteristics that may increase breast cancer survivor's risk of developing leukemia following treatment

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A new analysis indicates that certain characteristics may increase a breast cancer survivor's risk of developing leukemia after undergoing chemotherapy and/or radiation. Published early online in *Cancer*, a peer-reviewed journal of the American Cancer Society, the findings are a first step toward finding ways to prevent this serious and potentially life-threatening treatment-related complication.

Certain cancer treatments that target tumor cells can also affect normal, healthy cells and may increase a patient's risk of later developing leukemia. Breast cancer survivors now account for the majority of therapy-related leukemia cases. As [cancer survivors](#) are living longer after treatment, efforts to understand and prevent this complication are essential. To investigate, a team led by Jane Churpek, MD, of The University of Chicago, examined the characteristics of 88 [breast cancer survivors](#) with therapy-related leukemia.

The researchers found that [breast cancer survivors](#) who develop therapy-related leukemia often have personal and family histories suggestive of inherited cancer susceptibility. Also, one in five of the women in the study carried an inherited mutation in a gene associated with an increased risk of breast cancer.

"The findings justify a long-term follow-up study of women with and without inherited [breast cancer gene](#) mutations who are treated with

similar therapy for breast cancer. This would enable us to understand how these genes impact therapy-related leukemia risk and whether specific treatments come with higher risks based on a woman's inherited genetics," said Dr. Churpek. She noted that this knowledge would help doctors have more individualized conversations about the potential risks versus benefits of initial treatments for breast cancer.

In an accompanying editorial, Judith Karp, MD, and Antonio Wolff, MD, of the Johns Hopkins University School of Medicine, noted that it can be difficult to determine what constitutes therapy-related leukemia and what may be a second malignancy that is unrelated to a patient's treatment. "Existing familial cancer registries that are prospectively following [breast cancer patients](#) and their families are uniquely positioned to ascertain the true frequency of subsequent leukemias and their associations with the therapies received and the known germline genetic alterations," they wrote.

More information: "Inherited mutations in cancer susceptibility genes are common among breast cancer survivors who develop therapy-related leukemia." Jane Churpek, Rafael Marquez, Barbara Neistadt, Kimberly Claussen, Ming Lee, Matthew Churpek, Dezheng Huo, Howard Weiner, Mekhala Bannerjee, Lucy Godley, Michelle Le Beau, Colin Pritchard, Tom Walsh, Mary-Claire King, Olufunmilayo Olopade, and Richard Larson. *Cancer*; Published Online: December 7, 2015 [DOI: 10.1002/cncr.29615](#)

Editorial: "Cancer susceptibility genes and potential implications about systemic therapy for early breast cancer." Judith E. Karp and Antonio C. Wolff. *Cancer*; Published Online: December 7, 2015 [DOI: 10.1002/cncr.29613](#)

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