Targeting Treatment for High-risk Breast Cancers

Description: Researchers sought to determine the mechanism of increased sensitivity of polyploid cells to a previously identified chemical. They also hypothesized that polyploidy is more common in aggressive cancer subtypes and prognosticates poor risk.

Relevance: Breast cancer affects nearly 200,000 women in the United States each year, including more than 4,000 in Wisconsin. Many treatments are limited in their ability to help treat cancer and some, like chemotherapies, confer significant toxicity.

Results: In this project, researchers identified a unique subtype of breast cancer in which there are extra DNA-containing chromosomes, called polyploid. Polyploid tumors constitute 10 percent to 14 percent of all breast cancers and confer a higher risk of recurrence and death, they learned.

The researchers also identified a drug that destroys these abnormal cells without affecting normal cells. It specifically elicits “DNA damage signals” using a unique mechanism that is specific for polyploid cells. This work provides the basis for a potential low-toxicity treatment for a high-risk breast cancer type.

Grantee: Mark Burkard, MD, PhD, UW School of Medicine and Public Health, Department of Medicine

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