Ancestry-specific risk of triple-negative breast cancer (TNBC) associated with germline pathogenic variants (PV) in hereditary cancer (CA) predisposition genes, Michael J. Hall, Fox Chase Cancer Center, Poster Discussion Session, Abstract #10517, Poster #396.

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Fox Chase Researchers Explore Ancestry-Specific Genetic Risk for Triple-Negative Breast Cancer

PHILADELPHIA (June 1, 2022)—Although women of African descent experience higher incidence and mortality from triple-negative breast cancer (TNBC) than women of other races or ethnicities, a recent study shows that the magnitudes of gene-specific risks of TNBC were similar across different racial/ethnic groups. Results from the study will be presented at the 2022 American Society of Clinical Oncology (ASCO) Annual Meeting.

"The standard belief has always been that the *BRCA1* gene is the major gene associated with TNBC, but work from our own and other groups suggested there is an expanded array of genes that were also associated with this cancer subtype," said Michael J. Hall, MD, MS, lead author on the study and chair of the Department of Clinical Genetics at Fox Chase Cancer Center. "In our earlier research we showed that other genes in addition to *BRCA1* are also associated with increased risk of TNBC."

TNBC accounts for about 10% to 15% of all breast cancers. The term triple-negative breast cancer means the cancer cells don't have estrogen or progesterone receptors or the protein HER2, potential points of attack that physicians can use to fight cancer, so there are fewer treatment options.

In the current study, Hall and collaborators expanded on their earlier findings to examine how the magnitude of gene-specific risk of TNBC varies by race/ethnicity. To do this, they examined clinical and genetic records from women referred for multigene cancer panel testing and then used risk modeling to determine whether there was a gene-ancestral interaction.

"The reason to ask this is we know triple-negative breast cancer is a lot more common in African-American women. While in general we think these high-risk genetic mutations are evenly distributed in the population by race/ethnicity, we wanted to see if variations in race/ethnicity-specific risks existed and could be explained by gene-specific variability in risk," said Hall.

Through this study, researchers confirmed that increased risk of triple-negative breast cancer was highest in patients with the gene *BRCA1*. Additionally, increased risk was also associated with the genes *BARD1*, *PALB2*, *RAD51C*, *RAD51D*, and *BRCA2*.

"When we broke down those overall associations of risk by each racial group, we didn't see any strong evidence of variability by race," said Hall. "In other words, the gene-specific risk of triple-negative breast cancer was similar across the different racial groups we examined."

Hall's study, "Ancestry-Specific Risk of Triple-Negative Breast Cancer Associated With Germline Pathogenic Variants in Hereditary Cancer Predisposition Genes," will be presented in a poster session during the ASCO Annual Meeting, which is being held June 3-7 in Chicago.

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Fox Chase Cancer Center (Fox Chase), which includes the Institute for Cancer Research and the American Oncologic Hospital and is a part of Temple Health, is one of the leading comprehensive cancer centers in the United States. Founded in 1904 in Philadelphia as one of the nation's first cancer hospitals, Fox Chase was also among the first institutions to be designated a National Cancer Institute Comprehensive Cancer Center in 1974. Fox Chase is also one of just 10 members of the Alliance of Dedicated Cancer Centers. Fox Chase researchers have won the highest awards in their fields, including two Nobel Prizes. Fox Chase physicians are also routinely recognized in national rankings, and the Center's nursing program has received the Magnet recognition for excellence five consecutive times. Today, Fox Chase conducts a broad array of nationally competitive basic, translational, and clinical research, with special programs in cancer prevention, detection, survivorship, and community outreach. It is the policy of Fox Chase Cancer Center that there shall be no exclusion from, or participation in, and no one denied the benefits of, the delivery of quality medical care on the basis of race, ethnicity, religion, sexual orientation, gender, gender identity/expression, disability, age, ancestry, color, national origin, physical ability, level of education, or source of payment.

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