Inherited BRCA2 mutations linked to increased risk of childhood lymphoma

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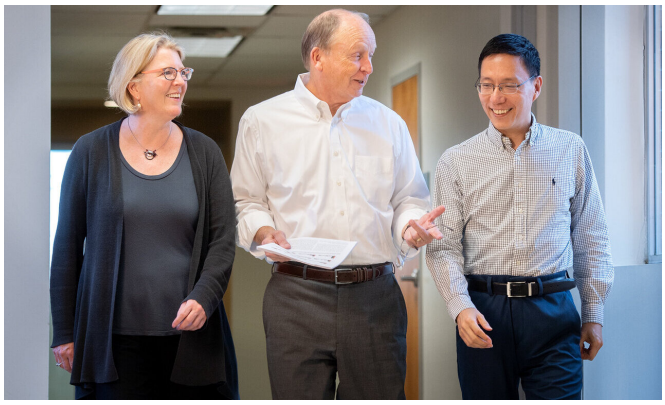

Investigators at St. Jude Children's Research Hospital have linked inherited BRCA2 gene mutations with an increased risk of non-Hodgkin lymphoma in children and adolescents. Left to right: Kim Nichols, M.D., Leslie Robison, Ph.D., Zhaoming Wang, Ph.D. Credit: St. Jude Children's Research Hospital

A report from St. Jude Children's Research Hospital links inherited mutations in the BRCA2 gene with an increased risk of developing non-Hodgkin lymphoma in children and adolescents. The work appears as an advance online publication today in *JAMA Oncology*.

"The BRCA family of genes are known to be linked to risk for breast and ovarian cancer as well as several other types of adult onset cancers, but our study shows a relationship between BRCA2 and non-Hodgkin lymphoma diagnosed in childhood," said corresponding author Zhaoming Wang, Ph.D., associate member of the St. Jude Departments of Epidemiology and Cancer Control and Computational Biology. "This is the second time an inherited BRCA2 mutation has been associated with an increased risk of any primary pediatric or adolescent cancer. BRCA2 recently emerged as an important predisposition gene for childhood-onset medulloblastoma."

This investigation draws on whole genome sequencing data gathered through the St. Jude Lifetime Cohort (SJLIFE) study and the Childhood Cancer Survivors Study. The purpose of these efforts is to learn about the health of adult survivors of childhood cancer and to reduce the late effects of childhood cancer treatments. Wang and his colleagues investigated 1,380 lymphoma survivors, which included individuals with both Hodgkin and non-Hodgkin lymphoma subtypes. The link between inherited BRCA2 mutations was found predominantly with the non-Hodgkin lymphoma subtype.

Survivorship studies have indicated that childhood cancer survivors have a greater risk of secondary cancers later in life than the general public. Additionally, research has shown that when mutations to genes in the BRCA family are inherited this can put those individuals carrying the mutations at a greater risk of certain cancers. By linking inherited BRCA2 mutations and childhood cancer, this study expands what is known about inherited cancer risk for a new patient population.

"The more we know about the biology that drives a particular cancer, the more a patient's care can be precisely tailored," said co-senior author Leslie Robison, Ph.D., chair of the St. Jude Department of Epidemiology and Cancer Control. "This includes cancer prevention and cancer screening, where an understanding of inherited mutations can help us put in place strategies to care for that patient and family long-term."

The researchers also observed that members of the cohort who had inherited BRCA2 mutations and were survivors of childhood non-Hodgkin lymphoma were all men. Further research is needed to understand the finding.

"Understanding inherited risk helps childhood cancer survivors and it enables conversations among relatives who can then make decisions

about their own health management strategies," said co-senior author Kim Nichols, M.D., director of the St. Jude Cancer Predisposition Division.

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