Study Links Father's Age and Risk of Blood Cancer as an Adult

Association Particularly Strong among Only Children

ATLANTA –May 11, 2015–A new study links a father's age at birth to the risk that his child will develop blood and immune system cancers as an adult, particularly for only children. The study, which appears in the *American Journal of Epidemiology*, found no association between having an older mother and these cancers.

The proportion of parents who delay having children until age 35 or older continues to increase, but the long-term health consequences for these children are still emerging. Studies suggest higher risk of several conditions including several childhood and adult-onset cancers in the offspring of older parents. A recent prospective study of more than 100,000 adult women in the California Teacher's Study showed an association between paternal—but not maternal—age at birth and the risk of hematologic cancer, the 4th most common cancer in the U.S.

To further investigate the association, American Cancer Society researchers led by Lauren Teras, Ph.D., analyzed data from women and men enrolled in the American Cancer Society Cancer Prevention Study-II Nutrition Cohort. Among 138,003 participants, there were 2,532 cases of hematologic cancers identified between 1992 and 2009. The researchers found a strong, positive association with paternal age among participants without siblings. In that group, those whose fathers were aged 35 years or older at the time of their birth were at 63 percent higher risk of hematologic malignancies compared to those whose fathers were younger than 25. There were no differences by subtype of hematologic cancer.

The fact that the association was particularly strong in those with no siblings suggests it may be related to the "hygiene hypothesis"—the idea that exposure to mild infections in childhood, which might be more numerous with more siblings, are important to immune system development and may reduce the risk of immune-related diseases. The authors say it is possible that the combination of having an older father and no siblings may promote cell proliferation in those individuals with an underdeveloped immune system and, as such, favors the development of cancers related to the immune system, like lymphoma. The authors say the study points to the need for further research to better understand the association between paternal age at birth and hematologic malignancies.

"The lifetime risk of these cancers is fairly low –about one in 20 men and women will be diagnosed with lymphoma, leukemia, or myeloma at some point during their lifetime—so people born to older fathers should not be alarmed," said Dr. Teras. "Still, the study does highlight the need for more research to confirm these findings and to clarify the biologic underpinning for this association, given the growing number of children born to older fathers in the United States and worldwide."

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