Exploring Why People With HIV Have a Higher Risk of Lung Cancer

One hundred twenty volunteers to enroll in Seattle-area study of cancer-related gene mutations

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Although antiviral drugs can spare most HIV-positive Americans from the specter of AIDS, a generation of survivors finds itself at a heightened risk of cancer.

Lung cancer is emerging as a leading cause of cancer death for people with HIV, particularly among those who smoke.

Studies show that one in five HIV-positive people who smoke will develop cancer in their lifetime. People with HIV are at higher risk of developing lung cancer, and those diagnosed with lung cancer tend to be significantly younger than HIV-negative cancer patients.

On Dec. 1, the 30th annual World AIDS Day, researchers at Fred Hutchinson Cancer Research Center in Seattle announced the start of a new study with a goal to understand why those who are HIV-positive are at higher risk of lung cancer and develop lung cancer at a younger age.

Called the SAGE study (for Smoking and AGE), it plans to enroll 120 men and women at risk for lung cancer due to a history of smoking — 60 who are HIV-positive and 60 HIV-negative — in the Seattle area over the next year. Blood samples taken at the Fred Hutch Prevention Center from volunteers will be evaluated for immune function and screened for mutations in 75 genes that have been associated with lung cancer.

In January, the researchers will begin a second arm of the study, examining stored blood samples gathered from previous clinical trials. They will compare samples from 40 HIV-positive patients who eventually developed lung cancer with that of 40 others, matched by age and smoking history, who did not develop cancer. Once again, they will screen for 75 lung cancer related mutations, and they will also look for changes in the immune system, such as swings in the population of T cells up to three years before diagnosis among those who developed lung cancer.

“Lung cancer is already a leading cause of cancer-related deaths in people living with HIV and is projected to become one of the most common cancer of any type in people with HIV by 2030 if current trends continue,” said Thomas Uldrick, MD, deputy head of Global Oncology at Fred Hutch and principal investigator of the newly launched study. “Improved prevention and early detection

are clearly needed."

In the hope it will guide future efforts to help decrease lung cancer in people with HIV, the SAGE study is evaluating the biology of lung cancer and smoking-associated lung damage. Researchers will focus on whether an HIV infection impairs the ability of a patient's immune system to clear out cells damaged by tobacco smoke, despite effective antiretroviral treatment that knocks down the level of virus.

While there is a yet no commercially available blood test to diagnose lung cancer, this study will sift through blood samples of patients at high risk for it, searching for biomarkers that laboratory researchers have linked to the disease. These findings may inform efforts to develop an effective blood test for early diagnosis of lung cancer in people with HIV — an advance that could help cancer patients around the globe. The current standard for lung cancer screening in smokers in western countries is a low-dose CT chest scan, a kind of computer-assisted X-ray that searches for abnormal masses in the lungs. The optimal use of low-dose CT scans for screening for lung cancer in people with HIV is unknown.

"A blood test for lung cancer in HIV-positive people who smoke has the potential to help make decisions about lung cancer screening, and in places where there are no CT scans, such a test could be particularly useful," Uldrick said.

Forty percent of people living with HIV in the U.S. smoke, compared to just 15 percent of the entire population. Uldrick stressed that smoking cessation is proven to prevent lung cancer. Additional efforts are needed to improve prevention, screening and treatment of lung cancer in people with HIV, he said.

Recruitment of volunteers for the study has begun. Eligible participants can be either HIV-positive or negative, must be 45–75 years of age, willing to have their blood drawn, and available for a one-time visit to Fred Hutch. For details, contact the SAGE study at 206-667-4949 or theSAGEstudy@fredhutch.org.

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