Aspirin merits testing for prevention of cervical cancer in HIV-infected women

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Research conducted by NewYork-Presbyterian Hospital/Weill Cornell Medical Center global health investigators and cancer specialists in New York, Qatar and Haiti suggests that aspirin should be evaluated for its ability to prevent development of cervical cancer in HIV-infected women.

The report, published in the current issue of journal Cancer Prevention Research, says this simple and inexpensive solution has the potential to provide enormous benefit for women in the Caribbean, Latin America and Africa, who suffer from a disproportionately high rate of cervical cancer death.

Preventive aspirin use could be especially useful in Haiti, where invasive cervical cancer is a common cause of death in HIV-infected women. The country also has the highest reported incidence of cervical cancer in the world and one of the highest HIV infection rates in the Western Hemisphere.

"These young patients -- many of whom were mothers and the sole support for their families -- had worked hard to have their HIV controlled with antiretroviral therapy, only to develop and die from cervical cancer," says the study's lead researcher, Dr. Daniel Fitzgerald, an associate professor of medicine at Weill Cornell Medical College who lived in Haiti for seven years and continues to treat HIV patients there.

Dr. Fitzgerald is a key member of the Weill Cornell Medical College

Center for Global Health and directs the College's collaboration with GHESKIO, a Haitian non-governmental organization dedicated to providing clinical service, research and training in HIV/AIDS since 1980.

"The results of this collaborative effort will make a real difference for women living in one of the poorest nations in the world," he says. "It is wonderful that clinicians and scientists from different parts of the world were able to come together to address such a critical issue of care."

The researchers discovered that HIV induces expression of the COX-2/prostaglandin E2 (PGE2) inflammatory pathway in cervical tissue samples from Haitian women who were infected with HIV. The findings tie two known facts together: that HIV causes chronic inflammation; and that PGE2, which is elevated during inflammation, is linked to cancer development in a number of tumor types, including cervical cancer.

The fact that HIV ramps up production of PGE2 in cervical tissue was not known before this study, the researchers say.

This may help explain why HIV-positive women are five times more likely to develop invasive cervical cancer than HIV-negative women. It also suggests that inhibitors of the COX-2 molecule (which contributes to the production of PGE2) might break the link between HIV and cervical cancer. Aspirin is one of the cheapest and most effective COX inhibitors.

"The findings in this study provide new insights into the link between viral infection and inflammation, two known drivers of cancer development," says senior author Dr. Andrew Dannenberg, director of the Weill Cornell Cancer Center at NewYork-Presbyterian/Weill Cornell and the Henry R. Erle, M.D.–Roberts Family Professor of Medicine at

Weill Cornell Medical College.

"Future studies will be needed to determine whether aspirin-like agents, known inhibitors of prostaglandin production, can reduce the risk of cervical cancer in this high-risk population," he adds.

The researchers examined levels of COX-2 and PGE-M (a stable metabolite of PGE2) in three groups of women and found increased levels of both molecules in 13 women who were co-infected with HIV and HPV. COX-2 and PGE-M were also elevated in 18 HIV-infected women with a negative HPV test and lowest in 17 HIV-negative women who also were not infected with HPV.

The findings thus demonstrate that HIV infection is associated with increased cervical COX-2 and elevated systemic PGE2 levels, says Dr. Fitzgerald. Co-infection with HPV adds to the cervical cancer risk. Future studies will seek to define the population of women that may benefit from daily use of aspirin or related inhibitors.

Dr. Fitzgerald, along with GHESKIO physician and study co-author Dr. Cynthia Riviere, initiated the clinical research program to care for and prevent cervical cancer in HIV-positive women in Haiti after they began noticing an increasing report of cases.

"The goal is to give patients in Haiti the same standard of treatment found in any cancer center," says Dr. Jeremie Arash Rafii Tabrizi, assistant professor of genetic medicine at Weill Cornell Medical College in Qatar who has treated women at the GHESKIO clinic. "We are focusing on procedures that will allow for a reduction of morbidity -- as this is a major concern in this population -- as well as a reduction of risk of recurrence."