High Rate of HIV Superinfection Found in Kenyan Sex Workers

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HIV superinfection—when a person is reinfected with a second strain of HIV—has been found in a cluster of female Kenyan sex workers, according to a newly published study in the online journal *PLoS ONE*. The new report debunks previous theories that reinfection can only occur within the first few months following an initial infection and also raises questions about the potential efficacy of preventive HIV vaccines.

There have been 20 other confirmed cases of HIV superinfection recorded to date, most involving people infected with different viruses within months of each other. These repeated findings led to the hypothesis that superinfection might be a risk only to people whose immune systems have not yet adapted to the original infection.

Research concluding that superinfection can happen at any point underscores two concerns. First, virtually all people infected with HIV are at risk of being infected with a second strain of HIV, including virus resistant to antiretroviral drugs. Second, if superinfection with a genetically similar form of HIV can occur—for example, two subtype A viruses—it's possible that not even tailored, subtype-specific preventive vaccines will be highly effective.

In this study, Julie Overbaugh, MD, at the Fred Hutchinson Cancer Research Center in Seattle, and her colleagues examined the genetic make up of HIV in 36 HIV-positive female sex workers in Kenya. The team had a sample of the strain of HIV with which the women were initially infected—all of which were subtype A—and then took samples again approximately four months, and then five years, after infection. They compared changes to the *env* and *gag* portions of the HIV genome at all three time points to help determine when and if a second strain of HIV emerged.

By the fifth year, they found that seven women had evidence of superinfection with a second strain of HIV. While two of the women had evidence of having a second virus in the first year of infection, the second virus in the other five wasn't detectable until much later—after a time when the immune response to the initial infection would have developed and broadened. Five of the women were reinfected with different HIV subtypes, but three had evidence of superinfection with virus of the same subtype, indicating lack of protection against closely related viruses.

Dr. Overbaugh's team cautions that some women may have been infected with two viruses at the same time, but that only one of the viruses could be detected initially. However, the authors also

state that because they only tested at two time points, they have actually missed some cases of superinfection and so the rate could actually be higher. In either case, they note that this study confirms suspicions that people with HIV may be susceptible to reinfection with new strains of HIV at any time point during the course of disease, and that this has important ramifications for vaccine research.

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http://beta.docker.poz.com/article/hiv-superinfection-disease-13497-1975