Tropism Testing May Help Predict Disease Progression

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Tropism testing, which detects the presence of HIV that uses the CXCR4 (X4) coreceptor, is currently used to determines whether a patient may be able to use Pfizer's entry inhibitor Selzentry (maraviroc). Now, a new study indicates that the test may also pinpoint a greater risk of AIDS-related health problems, even in people with high CD4 cell counts who are not yet on treatment—and may even help guide when to start or switch antiretroviral (ARV) therapy. The results are summarized in a research article and editorial published in the October 15 issue of *The Journal of Infectious Diseases*.

Tropism is the term to describe which coreceptor HIV uses in order to infect a CD4 cell. CCR5, or R5, is the coreceptor on CD4 cells that the virus uses during initial infection and for many years afterward. In roughly half of all HIV-positive people, the virus eventually shifts to the X4 receptor. In many people, the emergence of X4 virus often coincides with a rapid loss of CD4 cells and disease progression.

To further determine the impact of the emergence of X4 virus, James Shepherd, MD, PhD, from Johns Hopkins University in Baltimore, and his colleagues from the Multicenter AIDS Cohort Study (MACS) performed tropism testing on blood samples collected from 67 HIV-positive men enrolled in the study. Two of the men had X4 virus present at the beginning of the study. Another 33 (51 percent) developed X4 virus over time, on an average of six years after becoming infected with HIV.

Previous studies suggested that the X4-using virus is almost always found in people with low CD4 counts. Not so in the MACS analysis—CD4 counts averaged a relatively healthy 475 cells at the time X4 virus was found in the patients, none of whom were on treatment. Moreover, several of the men who developed X4 virus subsequently had an AIDS-defining illness, even though their CD4 counts and viral loads had not changed substantially.

For this reason, Harold Burger, MD, from the Albany Medical College in New York, states in an accompanying editorial that, "Evidence strongly suggests that detection and…quantification of X4 strains should be considered as potential new biomarkers to guide clinical management throughout HIV-1 infection," and not just when deciding whether to use Selzentry, which is only effective against R5-using virus. "It is now time to design studies to define the role of tropism testing and X4 [virus] in determining when to start and when to switch antiretroviral therapy," Dr.

Burger concludes.

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