

Lactobacillus Tied to HIV Load in Vaginal Fluid

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BOSTON — The presence of naturally occurring *Lactobacillus* in the vaginal flora of HIV-positive women is associated with a reduced amount of HIV in the vagina, while the absence of the “good bacteria” is associated with an increased vaginal viral load, researchers found in a prospective observational cohort study of 57 HIV-positive women.

As a key regulator of the vaginal ecosystem, hydrogen peroxide (H_2O_2)-producing *Lactobacillus* may decrease HIV-1 replication through direct effects as well as through the suppression of pathogenic bacteria, explained Dr. Jane Hitti of the University of Washington, Seattle.

To evaluate the effects of the bacteria on cervicovaginal lavage (CVL) HIV-1 RNA concentrations over time, she and her colleagues followed 57 HIV-positive women from Seattle and Rochester, N.Y., for up to

5 years, looking at changes in their vaginal bacteria as well as changes in the vaginal viral load and their plasma viral load.

For each woman in the study, plasma and CVL samples were collected for HIV quantitation every 3-4 months, as were vaginal cultures to identify H_2O_2 *Lactobacillus*. The investigators conducted longitudinal analyses using linear regression to examine the change in log-transformed CVL HIV RNA between two consecutive visits for the same woman as a function of *Lactobacillus* colo-

nization, adjusting for plasma HIV RNA and antiretroviral therapy.

At the start of the study, 31 women were on antiretroviral therapy and 22 had an undetectable viral load. *Lactobacillus* was present in 32 of the 57 women. During the study, plasma viral load was detectable at 64% of visits and vaginal viral load was detectable at 17% of visits. While viral load was highly correlated with plasma viral load, it was not significantly correlated with antiretroviral therapy, Dr. Hitti reported at the 15th Conference on Retroviruses and Opportunistic Infections.

“What we found, first of all, was that only about half of the women at any given time were carrying the [H_2O_2 *Lactobacillus*], and that some women switched back and forth between carrying the good

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bacteria and not having it,” Dr. Hitti said. “When these women had the healthy *Lactobacillus* in the vagina, they tended to have a lower viral load in the vagina.” The finding remained statistically significant after adjusting for plasma HIV

and antiretroviral therapy, she noted.

In looking at visit pairs—two consecutive visits for the same woman—“we found that women who acquired the healthy bacteria had a 0.7 \log_{10} decrease in their vaginal viral load, compared with women who were stable the whole time,” Dr. Hitti said. “Conversely, women who lost the healthy bacteria had a 0.5 \log_{10} increase in their viral load.”

In addition to stressing the importance of maintaining a healthy *Lactobacillus* vaginal flora for HIV-infected women, the findings may have relevance for secondary prevention strategies, according to Dr. Hitti. “One of the logical next steps is to think about whether it might be possible to develop strategies for increasing the likelihood that women would carry these healthy vaginal bacteria as a way to decrease the amount of HIV in the vagina, which could be helpful in terms of preventing the spread of HIV in the future.”

One possible preventive strategy might be *Lactobacillus* supplementation, but not with the type of *Lactobacillus* that is found in yogurt, “which is kind of a cousin, but doesn’t really feel at home in the vagina,” Dr. Hitti said. “The ideal approach would be to use the kind of *Lactobacillus* that specifically likes to live in the vagina. The optimal strategy would be to take a well characterized preparation of that type of *Lactobacillus* and conduct trials to look at whether it’s possible to achieve colonization in the vagina.”

A few such studies have been conducted among HIV-negative women to look at colonization, but “I don’t think any similar trials have as yet been done in HIV-positive women, and that’s a direction I hope we can go in,” she said. ■

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