

Changes in Vaginal Microbiota and Immune Mediators in HIV-1-Seronegative Kenyan Women Initiating Depot Medroxyprogesterone Acetate.

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Abstract

BACKGROUND:

Depot medroxyprogesterone acetate (DMPA) is associated with HIV acquisition. We studied changes in vaginal microbiota and inflammatory milieu after DMPA initiation.

METHODS:

In a cohort of HIV-negative Kenyan women, we collected monthly vaginal swabs over 1 year before and after DMPA. Using quantitative polymerase chain reaction, we compared quantities of *Lactobacillus crispatus*, *Lactobacillus jensenii*, *Lactobacillus iners*, *Gardnerella vaginalis*, and total bacterial load (16S ribosomal RNA gene levels). Six vaginal immune mediators were measured with enzyme-linked immunosorbent assay. Trends in the detection and quantity of bacteria were estimated by logistic and linear mixed-effects regression.

RESULTS:

From 2010 to 2012, 15 HIV-seronegative women initiated DMPA, contributing 85 visits (median, 6 visits/woman; range, 3-8 visits/woman). The median time of DMPA-exposed follow-up was 8.4 months (range, 1.5-11.6 months). Seven women (46%) had bacterial vaginosis within 70 days before DMPA start. *L. iners* was detected in 13 women (87%) before DMPA start, but other lactobacilli were rarely detected. *Gardnerella vaginalis* decreased by 0.21 log₁₀ copies per swab per month after DMPA exposure ($P = 0.01$). Total bacterial load decreased by 0.08 log₁₀ copies per swab per month of DMPA ($P = 0.02$). Sustained decreases in interleukin (IL)-6 ($P = 0.03$), IL-8 ($P = 0.04$), and IL-1 receptor antagonist ($P < 0.001$) were also noted. Nine women (60%) had *L. crispatus* detected post-DMPA, which significantly correlated with reduced IL-6 ($P < 0.01$) and IL-8 ($P = 0.02$).

CONCLUSIONS:

Initiation of DMPA led to sustained shifts in vaginal bacterial concentrations and levels of inflammatory mediators. Further studies are warranted to outline components of the vaginal microbiota influenced by DMPA use and impact on HIV susceptibility.