

VAGINAL MICROBIOME AND HIV SUSCEPTIBILITY

Tachedjian G^{1,2,3,4}

¹Burnet Institute, Disease Elimination Program, Life Sciences Discipline, Melbourne, Victoria

²Monash University, Department of Microbiology, Clayton, Victoria.

³RMIT University, School of Science, Melbourne, Victoria.

⁴The University of Melbourne, Department of Microbiology and Immunology at the Doherty Institute for Infection and Immunity, Melbourne, Victoria.

There is increasing evidence that HIV transmission and the effectiveness of topical HIV prevention strategies can be influenced by the vaginal microbiome. In women of reproductive age, optimal vaginal microbiota associated with protection against HIV are typically dominated by *Lactobacillus* spp but not *L. iners*. In contrast “suboptimal” microbiota or vaginal dysbiosis is characterised by a dramatic depletion of vaginal lactobacilli and an increase in load and diversity of obligate and facultative anaerobic bacteria. These highly diverse vaginal microbiota are prevalent in adolescent girls and young women in sub-Saharan Africa who are up to eight times more likely to be infected with HIV compared to their male counterparts. Vaginal dysbiosis is associated with an increase in vaginal pH, breakdown of the protective mucosal barrier and subclinical genital inflammation, the latter resulting in the activation and recruitment of HIV target cells. In addition there is a dramatic depletion of a major microbiota organic acid metabolite that has in vitro activity against viral and bacterial sexually transmitted infections (STIs) and commensal anaerobic bacteria associated with vaginal dysbiosis, as well as the capacity to dampen cervicovaginal epithelial pro-inflammatory responses that could potentially protect against HIV. The penile microbiome of uncircumcised men, which can be shared with their female partners, is also associated with a proinflammatory response that recruits HIV target cells. Recent studies have reported that anaerobic bacteria associated with vaginal dysbiosis, but not lactobacilli, metabolise tenofovir that may decrease the efficacy of tenofovir-based topical pre-exposure prophylaxis (PrEP) although oral PrEP efficacy appears not to be affected. This presentation will review current knowledge of the role of the genital microbiota in modulating HIV acquisition and strategies to promote a protective and non-inflammatory mucosal environment in the genital tract.

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