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Session: **BS3**: Saturday May 2 – 15:00:17:00 – Cure, Vaccines and immunology

Track: Basic Sciences

Subject: Immunology of HIV and Vaccines

Presentation Type: Oral

Title of Abstract: **Frequencies and correlates of endocervical regulatory T cells (Treg) amongst HIV seronegative female sex workers (FSWs) in Nairobi**

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Abstract

Background: CD4+ regulatory T cells (Tregs) play important roles in tissue homeostasis, but few studies have investigated these in the female reproductive tract (FRT). Here, we sought to characterize cervical and blood Tregs and correlated these to demographic variables, sexual behavior, and inflammation profiles, as surrogates of HIV/STI susceptibility.

Methods: Endocervical and blood samples were collected from 68 HIV seronegative FSW from the SWOP City clinic in Nairobi. Tregs were defined by flow cytometry as CD4+ T cells expressing CD25 but not CD127; these cells were then gated separately on FoxP3+ and CTLA-4.

Results. Most cervical and peripheral Tregs expressed FoxP3 (45.3%, IQR 25.9-58.8). Cervical Tregs constitutively expressed higher levels of CTLA-4 compared to blood (50.8%, IQR 32.1-71.3 vs 6.04%, IQR 2.2-10.7; $P < 0.0001$). The proportion of Tregs in the cervix correlated with those in blood ($r = 0.31$, $P = 0.01$), but Treg frequency was higher in the cervix (median 3.8%, IQR 2.2-7.1 vs 2.0%, IQR 1.3-2; $P < 0.0001$). Tregs in the cervix correlated inversely with endocervical CD4+ T cells ($r = -0.43$, $P = 0.00003$), which have been associated with genital inflammation. The frequency of sex with repeat but not casual clients correlated inversely with cervical Treg frequencies ($r = -0.35$, $P = 0.005$ for repeat; $r = 0.038$, $P = 0.766$ for casual). History of stillbirth, miscarriage or spontaneous abortion was associated with lower frequencies of cervical Tregs ($P = 0.043$). A trend toward lower Tregs was observed amongst women who used depot medroxyprogesterone acetate for contraception, compared to other methods ($P = 0.107$), while the use of oral pills as contraception trended toward more endocervical Tregs.

Conclusion. These data add to our basic understanding of the role of Tregs in the FRT. Efforts are underway to elucidate how Tregs regulate inflammation and microbiome diversity, which might provide critical insights in reducing HIV susceptibility through better HIV prevention interventions for key populations such as FSWs.