

Inflammatory profiles of vaginal *Gardnerella vaginalis* isolates from South African women with and without bacterial vaginosis

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Background:

Bacterial vaginosis (BV) is highly prevalent among women residing in sub-Saharan Africa, where HIV is also widespread. BV, characterised by the overgrowth of non-optimal vaginal anaerobic bacteria, most commonly *Gardnerella vaginalis*, is associated with genital inflammation which facilitates HIV acquisition. However, *G. vaginalis* is also found in healthy women with low levels of inflammation, which suggesting strain-level differences that may influence inflammatory responses. Hence, this study aims to characterize vaginal *G. vaginalis* isolates from South African women to better understand their role in inflammation and HIV risk.

Methods:

Cervicovaginal fluid samples from 10 BV-negative and 10 BV-positive South African women (aged 16 – 25) were cultured on Columbia Blood agar to isolate single strains of *G. vaginalis*, followed by species-level identification via 16S rRNA Sanger sequencing. Isolates were then co-cultured with vaginal epithelial VK2/E6E7 cells and the concentrations of inflammatory cytokines previously associated with HIV risk were measured via Luminex assay. *G. vaginalis* isolates are also currently being analysed via liquid chromatography tandem mass spectrometry.

Results:

Isolates were acquired from all women, with 39 in total consisting of n = 15 *G. vaginalis* including other bacterial taxa. Three and four *G. vaginalis* isolates from different BV-negative and BV-positive women, respectively, were selected for inflammatory profile assessment. Significant increases in interleukin (IL)-1 β , IL-6, IL-8 and chemokine ligand (CCL)2, CCL4 and CCL5 were induced by isolates from BV-positive women compared to BV-negative women (p < 0.05).

Conclusion:

G. vaginalis isolates from BV-positive women elicited higher levels of inflammatory cytokines previously associated with increased risk of HIV acquisition compared to those from BV-negative women. This suggests that strain-level differences in *G. vaginalis* may play an important role in genital inflammation and resultant HIV acquisition risk. Additionally, the proteomic profiles of the isolates are being investigated to determine functional differences that may influence inflammation.

Disclosure of Interest Statement:

The authors have no relevant conflicts of interest to declare.