ASSessment of ATOPobium Vaginae and Gardnerella Vaginae concentrations in a cohort of pregnant south african women

Introduction: Atopobium vaginae and Gardnerella vaginalis are bacterial species that are present in the vagina in increased concentrations during bacterial vaginosis (BV). Numerous studies have proposed a molecular diagnosis of BV by targeting several BV-related bacteria in a polymerase chain reaction (PCR); however, these studies evaluated separately the threshold concentrations of these bacteria. The purpose of this cross-sectional study was to assess A. vaginae and G. vaginalis concentrations in pregnant women of different age groups, gestational age groups, vaginal flora categories and HIV status and also to determine which combination of DNA threshold concentrations, rather than individually, best discriminated between bacterial vaginosis (BV) and non-BV categories.

Methods: Pregnant women attending an antenatal clinic of a tertiary academic hospital in Pretoria, Gauteng, South Africa were enrolled in a cross-sectional study from July 2012 to December 2012. Self-collected vaginal swabs were obtained to detect BV with the Nugent scoring system and quantify A. vaginae and G. vaginalis DNA with a duplex quantitative real-time polymerase chain reaction (PCR) assay.

Results: In 220 pregnant women, median concentrations of A. vaginae and G. vaginalis were not significantly different among various age groups (A. vaginae p=0.98 and G. vaginalis p=0.18) or different trimesters (A. vaginae p=0.31 and G. vaginalis p=0.19) but differed significantly among the vaginal flora categories (A. vaginae p<0.001 and G. vaginalis p<0.001) and HIV status (A. vaginae p<0.001 and G. vaginalis p=0.04). An A. vaginae DNA concentration of ≥10⁷ copies/mL together with a positive G. vaginalis result (≥10⁷ copies/mL) (i.e. AV-GV≥) best discriminated between BV (39/220) and non-BV categories (181/220) with a sensitivity of 85% (95% CI 0.70 to 0.94) and a specificity of 82% (95% CI 0.76 to 0.88).

Conclusion: Threshold concentrations for BV detection should be established for specific populations to ensure the development of tailored, sensitive molecular assays.