

Investigating Antimicrobial Resistance Patterns in *Gardnerella Vaginalis* Isolates

Thasmika Durga^{2*} and Nathlee S Abbai¹

¹School of Laboratory Medicine & Medical Sciences, Department of Medical Microbiology, College of Health Sciences, University of KwaZulu-Natal, Durban, KwaZulu-Natal, South Africa

²School of Clinical Medicine Research Laboratory, College of Health Sciences, University of KwaZulu-Natal, Durban, KwaZulu-Natal, South Africa.

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ABSTRACT

Background and Aim: Antimicrobial resistance has increased in *G. vaginalis*. The aim was to determine the susceptibility patterns of isolates of *G. vaginalis* to antibiotics and investigated the genetic diversity of the isolates as well as linked the genetic data to patterns of antimicrobial resistance.

Methods: A cross sectional study where a total of n=150 pregnant women were enrolled. Vaginal swabs were used for cultivation of *G. vaginalis* and diagnosis of BV via Nugent scoring. Genetic diversity assessments were based on the genetic differences in the *tuf* gene using clade specific primers on a qPCR platform. The antimicrobial susceptibility profiles were generated using the Sensititre™ Anaerobe MIC Plate (Thermo Fischer Scientific, United States).

Results: 17 isolates of *G. vaginalis* was isolated out of the 150 vaginal swabs. 5 were BV positive, 2 were BV negative and 9 were BV intermediate. All isolates were oxidase and catalase negative. The *16S rRNA* gene was amplified in all isolates. 0% belonged to clade 3. The frequencies for clades were as follows; 100% for clade 1, 37.5% for clade 2 and 43.75% for clade 4. Multiple clades were found in 56.25% of the isolates. 15 isolates were successfully cultured and tested. 60% were susceptible to metronidazole and 40% were resistant to metronidazole. BV positive women (5), 20% showed metronidazole resistance. BV negative women (2), 50% showed metronidazole resistance. BV intermediate women (8), 50% showed metronidazole resistance. Highest prevalence of metronidazole resistance was in women with BV intermediate status. All women that were resistant to metronidazole experienced abnormal discharge. 100% of isolates with metronidazole resistance fell into clade 1. 16.66% of metronidazole resistant isolates fell into clades 1 and 4.

Conclusion: This study has shown a link between clade 1, BV intermediate women and metronidazole resistance. More research needs to focus on genotyping to understand the resistance patterns.

Keywords: Antimicrobial resistance, *G. vaginalis*, Sensititre™ Anaerobe MIC Plate, Metronidazole resistance

Abbreviations: BV: Bacterial vaginosis; *G. vaginalis*: *Gardnerella Vaginalis*; MIC: Minimum Inhibitory Concentration; qPCR: Quantitative Polymerase Chain Reaction; RNA: Ribonucleic Acid

Corresponding author: Thasmika Durga, School of Clinical Medicine Research Laboratory, College of Health Sciences, University of KwaZulu-Natal, 719 Umbilo Road, Durban, 4001, South Africa, E-mail: thasmikadurga2@gmail.com

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