

Trichomonas Vaginalis in Human Immunodeficiency Virus-Infected Pregnant Women: Prevalence, Detection, and Application of PCR Cycle-Threshold Values

Team Klausner
Saving Lives

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Overview

- *Trichomonas vaginalis* (TV) is associated with increased transmission of HIV and significant adverse birth outcomes
- Goal to compare rates of TV diagnosed via PCR to the rates of TV diagnosed via culture
- 359 HIV-infected pregnant women screened for TV with PCR; PCR+ women provided an additional sample for culture
- 62% of PCR+ women were culture positive
- Ct value < 30 predicted positivity with a sensitivity of 97% and specificity of 96%

Introduction

Trichomonas vaginalis:

- Most common non-viral sexually transmitted infection in the world
- Associated with increased transmission of human immunodeficiency virus (HIV), pre-term delivery, low-birth weight, and premature rupture of fetal membranes
- Most pregnant women are not screened for TV
- Up to 50% of TV cases may be asymptomatic
- Diagnosed through microscopy and PCR-based testing
- Sensitivity of PCR may allow for detection of remnants of TV (such as DNA) after treatment

Methods

Participants

- HIV-infected pregnant women from two clinics in the Soshongu township of South Africa

Diagnostic Tools

- Rapid, point-of-care PCR diagnostic device (GeneXpert TV, Cepheid, Sunnyvale, CA)
- InPouch TV culture device (Biomed, San Jose, CA)

Test of Cure

- Women testing positive for TV by PCR at baseline were given treatment (400mg of Metronidazole, twice a day, for seven days) and scheduled for a test-of-cure visit at 3 weeks

Statistics

- Datasets were tested for normality using the Shapiro-Wilk test.
- Non-parametric comparisons of sample distributions were performed using the Mann-Whitney U test.
- All statistics were calculated using IBM SPSS Statistics for Windows (Version 24.0, IBM Corp. in Armonk, NY)

Results

Enrollment and Infections

Women Screened	359	
TV PCR Positive	76	20%
TV Culture Positive	38	62%
Symptomatic Infections	34	56%

Figure 1. Numbers of HIV-infected pregnant women screened for STIs using the GeneXpert PCR, found to be infected with TV by PCR (out of 359), found to be infected with TV by culture (out of 61), and presenting with symptoms and/or signs of STI infection.

Trichomonas vaginalis Polymerase Chain Reaction Cycle Threshold Values by Culture Result at Baseline (n=61)

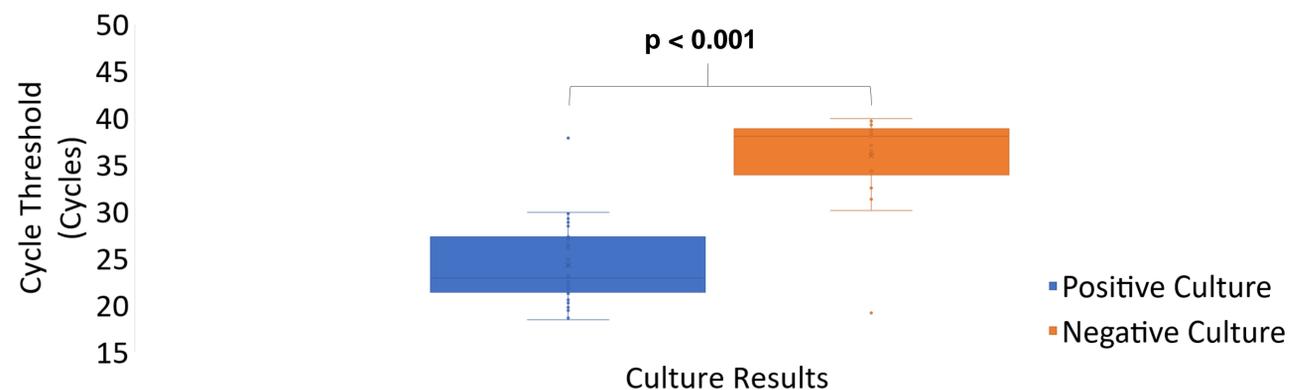


Figure 2. Cycle threshold values for TV polymerase chain reaction tests at baseline, by culture result. The nonparametric Mann-Whitney U test was used to compare sample distributions.

	Women Tested	<i>T. vaginalis</i> PCR Positive	Culture Samples Collected	<i>T. vaginalis</i> Culture Positive
Baseline	359	76	61	38
Test of Cure	59	13	10	5

Table 1. Number of women screened for TV, polymerase chain reaction test results, and InPouch culture test results, at baseline and test-of-cure visits.

Conclusions

- We found high rates of *T. vaginalis* infection among HIV-infected pregnant women in Soshongu Township, South Africa
- Culture detects *T. vaginalis* organisms in only a portion of PCR-positive cases
- **A cycle threshold value less than 30 yields a sensitivity of 97% and a specificity of 96%** when culture is the gold-standard for diagnosis
- Future work should focus on determining the clinical significance of *T. vaginalis* DNA detection among culture negative cases

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