RECTAL *TRICHOMONAS VAGINALIS* INFECTION IN SOUTH AFRICAN MEN WHO HAVE SEX WITH MEN

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Abstract

This study from South Africa highlights the importance of rectal *Trichomonas vaginalis* infection as a sexually transmitted infection among men who have sex with men (MSM). We report seven MSM presenting with rectal *T. vaginalis* infection. Two men presented with symptoms of proctitis; 5/7 had urethral coinfection with *T. vaginalis*. Rectal *T. vaginalis* infection should be considered in MSM in areas where genital infection is endemic.

Keywords Africa, homosexual, location, other, protozoal disease, trichomoniasis (*Trichomonas vaginalis*)

Sexually transmitted infections (STIs), in particular *Chlamydia trachomatis* and *Neisseria gonorrhoeae,* are common in men who have sex with men (MSM) in Africa. A study from Cape Town reported an overall prevalence of 24% among 200 MSM; the majority of men were asymptomatic.[1] Rectal infection was common in this study (20%) with similar prevalence for *C. trachomatis* and *N. gonorrhoeae* infection (12%). Another study reported an overall prevalence of 11.6% for these rectal infections among Kenyan MSM.[2]

Trichomonas vaginalis is the most common non-viral STI in Africa.[3] Women are more often affected, with prevalence reported up to 24% in South Africa, but urethral infection in men is not uncommon.[4,5] For example, a study from Johannesburg, South Africa, showed that *T. vaginalis* is the etiological cause in 6.1% of cases of male urethritis syndrome.[6] Despite the significance of *T. vaginalis* as cause of urethral infection in men with urethral discharge, the occurrence of rectal *T. vaginalis* infection in African MSM remains undocumented.

To our knowledge, only a few studies have reported before on rectal *T. vaginalis* infection in MSM: 2/225 men (0.9%) tested positive in the study by Cosentino et al. whereas 3/500 (0.6%) had a positive PCR test for *T. vaginalis* in another study.[7,8] Both studies were conducted in the

United States where the prevalence of *T. vaginalis* infection in the general population is much lower than in Africa.[9] In a study conducted in Côte d'Ivoire, where *T. vaginalis* infection is more common in the population, 2/94 (2.1%) male sex workers tested positive for rectal *T. vaginalis*.[10]

To determine the prevalence of urethral and rectal STIs among South African MSM, we analyzed specimens collected in a prospective study of STIs among MSM attending a public healthcare facility in Johannesburg, South Africa.[11,12] Briefly, MSM (≥18 years) with urethral discharge and/or signs of proctitis (i.e. rectal discharge and/or blood loss) were recruited in this study. After obtaining informed consent, they were tested for urethral and rectal *C. trachomatis, N. gonorrhoeae, T. vaginalis and M. genitalium* infection by collecting respectively urine samples and clinician-collected rectal swabs; treatment was provided as per local guidelines. A follow-up visit was conducted after 6 weeks and repeat STI testing was performed. Besides diagnostic testing for other STIs, detection of *T. vaginalis* was done following DNA extracting using the High Pure PCR Template Preparation Kit [Roche Diagnostics, Basel, Switzerland] with a specifically targeted real-time PCR assay.[13] Positive reactions were confirmed with the Presto^{Plus} CT/NG/TV assay [Microbiome Ltd., Houten, The Netherlands].[14]

At recruitment a total of 7/78 individual MSM (9.0%; 95% CI 5.7-12%) tested positive for rectal *T. vaginalis* infection. Rectal swabs of 3/78 (3.8%; 95% CI 3.4-4.3%) men tested positive for *T. vaginalis* infection upon recruitment; two of these men had concurrent urethral *T. vaginalis* infection. At follow-up, 4/61 (6.6%; 95% CI 5.8-7.4%) different MSM were positive for rectal *T. vaginalis* infection; three had concurrent urethral infection. All men were treated with metronidazole (oral, 400 mg TDS for seven days) and none of them had clinically persistent infection (i.e. urethral discharge, dysuria or symptoms of proctitis).

The demographic, behavioral and clinical characteristics of the seven individual MSM with rectal *T. vaginalis* infection are summarized in Table 1. The age range was 24-40 years and

Table 1. Summary of the case series, Johannesburg, South Africa, 2016.

Variable	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
Demographics							
Age	24	36	40	27	40	31	32
Race	Black	Black	White	Black	Black	Black	Black
Employment status	Employed	Unemployed	Unemployed	Employed	Employed	Employed	Employed
HIV status	Positive	Negative	Declined	Positive	Positive	Negative	Positive
ART	Pre-ART	NA	NA	Yes	Yes	NA	No
Sexual orientation	Gay	Gay	Gay	Gay	Gay	Gay	Gay
Sexual preference	Men	Men	Men	Men	Men	Men	Men
Behavioural factors							
Sexual partners							
No. of male sex partners past 6 months	1	1	4	4	1	7	2
No. of female sex partners past 6 months	0	0	0	0	0	7	0
Sexual orientation of partner	Gay	Gay	Gay	Gay	Gay	Bisexual	Gay
Stable relationship	No	Yes (1 person)	No	Yes (>1 person)	Yes (1 person)	No	No
Sex act							
Anal intercourse	Receptive	Versatile	Versatile	Versatile	Insertive	Insertive	Versatile
Anal use of sex toys	No	No	Dildo, vibrator, anal beads	No	No	Dildo	No
Condom use during RAI	Always	Never	Never	Sometimes	NA	NA	Sometimes
Extra							
Pays goods or money for sex	No	No	Yes	No	No	No	No
Clinical presentation							
Rectal symptoms	-	-	Anal discharge, anal itch, rectal bleeding	-	-	-	Anal discharge
Penile discharge and/or dysuria	+	+	+	+	+	+	-
Infections							
Rectal	TV	TV, NG	TV	TV	TV	TV	TV
Urethral	NG	TV, NG, MG	TV	TV, NG	-	TV, NG	TV, NG, MG

Table footnotes: NA, not applicable; RAI, receptive anal intercourse; NG, *Neisseria gonorrhoeae*; TV, *Trichomonas vaginalis*; MG, *Mycoplasma genitalium*.

four men were HIV-infected. All men were gay-identified and reported male sex partners; only one reported recent concurrent female sex partners. Anal penetration was reported by six men: five men reported receptive anal intercourse (RAI) and two reported the anal use of sex toys. In one case (MSM number five) there was no direct anal sexual contact reported. Most patients reported inconsistent condom use. Anal discharge was present in two patients with one having severe symptoms of proctitis.

This is the largest case series of rectal *T. vaginalis* infection in MSM reported to date. It shows that symptomatic and asymptomatic rectal *T. vaginalis* infection is common among MSM living in our area of high prevalence of genital infection. Although co-infections were detected in one MSM, our data suggest that *T. vaginalis* infection should be considered as etiological agent in case of proctitis in MSM. However, anal discharge in MSM is not included as condition in the syndromic management guidelines in our setting.[15] Also, metronidazole in only added to the empirical treatment regimen in case the man reports a female sex partner with vaginal discharge; this was not the case in our study. *T. vaginalis* should be included in the debate when considering public health aspects of asymptomatic rectal STIs in MSM in Africa, since rectal STIs may increase susceptibility to and infectivity of HIV infection[16] and asymptomatic rectal STIs are likely to remain untreated as diagnostic tests are not routinely available in our resource-constraint setting.

Our observations suggest that *T. vaginalis* may circulate within the MSM network and is not the result of direct bridging of infection from concurrent sexual contact with women. All men were gay and reported gay sex partners; only one also report recent sexual contact with women. In five men a potential urethral *T. vaginalis* infection of the partner could have been transmitted to the rectum during RAI. The anal use of sex toys would be a possible way of transmission in two men, since transmission of *T. vaginalis* without anal penetration and by use of fingers is described.[17] The route of acquisition of the rectal infection in one patient remains unclear as he did not report any direct anal sexual contact.

A limitation of this study is that we cannot rule-out the possibility of misclassification of other non-vaginalis Trichomonad species which are (harmless) inhabitants of the rectum. However, 5/7 men had concurrent urethral *T. vaginalis* infection where these pathogens do not occur, suggesting true rectal *T. vaginalis* infection.

In conclusion, we show that rectal *T. vaginalis* is an important infection in MSM living in an area where genital infection is endemic. More research is required to prove that the infection should be considered in the differential diagnosis of proctitis in MSM in our area and, in the absence of diagnostic tests, probably be covered in the empirical treatment choice. *T. vaginalis* should be considered when addressing the public health impact of rectal STIs among MSM in South Africa.

Ethical approval

This study was approved by the Human Research Ethics Committee of the University of the Witwatersrand, Johannesburg, South Africa (Ref: M150352).

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Declaration of Conflicting Interests

The Authors declare that there is no conflict of interest.

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