Trichomonas vaginalis: an irritating protozoan or an important viral co-factor.

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For many years, *Trichomonas vaginalis* has been regarded simply as an irritating but easily treatable protozoan; however, recent research implicates it in a range of problems from pre-term delivery to human immunodeficiency virus infection and cervical cancer. Here, Sangiv Rughooputh and Pamela Greenwell review the evidence.

**Trichomonas vaginalis**: an irritating protozoan or an important viral co-factor?

*Trichomonas vaginalis* (TV) is one of the most successful protozoan pathogens and the most common non-viral sexually transmitted disease, responsible for around 180 million new infections worldwide every year. Presentation in females is usually profuse, purulent, malodorous vaginal discharge and vaginal irritation, although infection can be subclinical or asymptomatic. TV may also be associated with inflammation of the cervix (strawberry cervix) that may mimic the cervical tenderness associated with pelvic inflammatory disease (PID). Changes in the cervical cells in women with TV have been likened to the changes seen in early cervical intraepithelial neoplasia (CIN), while in men the infection often presents as urethritis and prostatitis.

For many years, TV infection has been seen simply as an irritating protozoan that was relatively easy to treat. Recently, however, there has been evidence to implicate TV in pre-term delivery, low birthweight, infant mortality and predisposition to human immunodeficiency virus (HIV) infection and cervical cancer. Although all these areas are interesting, this article will only review the links between TV and HIV.

‘Studies from Africa have shown that the rate of HIV transmission is increased two-fold in women with TV’

**Classical study**

*T. vaginalis* is a classical parasite that harvests almost all its nutrients and needs from its host. To accomplish such a task, TV produces hydrolases to break down host proteins, oligosaccharides, DNA and lipids to obtain the building blocks with which to reconstruct its own macromolecules. In its quest for these building blocks, TV produces a range of highly active enzymes that also destroy the protective mucin of the host’s urogenital tract, allowing the TV to attach to the underlying cells and cause lesions. These then provide a portal of entry for HIV, which, under normal circumstances, does not easily infect females. Indeed, heterosexual intercourse with a man infected with HIV only carries a 1% risk of HIV transmission.

Draper *et al.* studied the effect of TV on secretory leucocyte protease inhibitor (SLPI), which protects against viral infection, and found that the inhibitor was non-functional in vaginal secretions due to the action of cysteine proteinases secreted by the trichomonads.

Studies from Africa have shown that the rate of HIV transmission is increased two-fold in women with TV. In a study in four cities in sub-Saharan Africa, Buve *et al.* found a correlation between the prevalence of TV and HIV. The prevalence of trichomoniasis was higher in cities where there were a higher number of HIV-positive individuals (31.8%) compared to cities where HIV incidence was lower (TV prevalence 10.4%). Sorvillo *et al.* calculated that, if TV infection amplifies transmission of HIV by a factor of

Characteristic forms of *Trichomonas vaginalis* (arrowed) in a liquid-based cytology preparation from the cervix.

REFERENCES


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