



Management and control of *Trichomonas vaginalis* infection

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Provenance: This is an invited Editorial commissioned by the Section Editor Dr. Mi Zhou (Department of Pharmacy, Children's Hospital of Soochow University, Soochow, China).

Comment on: Kissinger P, Muzny CA, Mena LA, *et al.* Single-dose versus 7-day-dose metronidazole for the treatment of trichomoniasis in women: an open-label, randomised controlled trial. *Lancet Infect Dis* 2018;18:1251-9.

Received: 30 January 2019; Accepted: 17 February 2019; Published: 28 February 2019.

doi: 10.21037/aoi.2019.02.01

View this article at: <http://dx.doi.org/10.21037/aoi.2019.02.01>

The standard treatment regimen recommended by both World Health Organization (WHO) and Centre for Disease Control (CDC) for *Trichomonas vaginalis* (TV) infection, is metronidazole or tinidazole, 2 g orally single dose. Alternatively, metronidazole can be administered 500 mg orally twice a day for seven days. Multidose metronidazole has been found to be superior to single-dose metronidazole for the treatment of trichomoniasis in a randomized controlled trial done in women with HIV infection (1), and in a recently published randomised controlled trial in women without HIV infection (2). Bacterial vaginosis (BV) status had no significant effect on relative risk. The authors recommended that the 7-day-dose metronidazole should be the first line of treatment for trichomoniasis in women. The findings are certainly a step forward in standardizing treatment of TV infection.

The authors did not notice influence of associated BV on the dosage schedule. TV infection is invariably associated with both other sexually transmitted infections (STIs) as well as several non-STIs. Influence of other vaginal coinfections on the management of TV with metronidazole therapy is not clearly known. TV infection is commonly associated with BV and with *Mycoplasma hominis* (*M. hominis*) (3). Association of TV with BV has led to early failure of the single-dose metronidazole treatment in HIV positive women (4). In one of our recent studies, we have observed preferential association of TV infection with intermediate Nugent score with a high vaginal pH (5). The precise effect of higher vaginal pH, and association with intermediate Nugent score on the metronidazole efficacy in non-HIV women is not known. *M. hominis*-infected TV strains showed higher minimum inhibitory concentration

(MIC) to metronidazole than the respective non-infected strains (6). Considering the inhibitory influence of coinfections in the metronidazole therapy for TV infection, a seven-day therapy appears appropriate.

In addition to the controversies in the treatment protocol, prevention of the recurrence poses a greater challenge. Treatment of the sex partner has been suggested as a crucial factor for prevention of the disease recurrence. However, there are several missing links such as predominantly asymptomatic nature of the infection, non-specific nature of the clinical presentation, non-availability of a sensitive and specific point of care test (POCT), sexual behaviour of the community, which are likely to influence prevention of recurrence.

The fraction of TV infection that remain asymptomatic is not clearly known. Most studies of TV come from health care facilities and do not reflect the true proportion of patients with asymptomatic infection. A recent study from South Africa showed as high as 77.8% of females and 100% of males with laboratory-diagnosed genital tract infections were asymptomatic (7). In general, more than half of the TV infections are presumed to be asymptomatic. Currently, we have no mechanism to identify and treat asymptomatic infections. Presence of a large proportion of asymptomatic TV infections in the community may serve as the reservoir of infection.

The diagnosis of TV infection continues to remain laboratory dependent. The gold standards of diagnosis, nucleotide amplification tests (NATs) and culture is both time consuming and dependent on availability of laboratory support. Since syndromic approach for detection of STIs is not efficient, WHO is increasingly focusing on point of

care (POC) diagnostic tools for multiple STIs (8). However, currently available POC tests did not meet all of the targets of the ideal product profile (9). Wet mount microscopy, the commonly used test for diagnosis of TV infection has high specificity but very low sensitivity (10,11). A recent report on Xpert[®] TV test has shown high analytical sensitivity and specificity and has been used in South African women with encouraging results (12,13). However, the test still requires fair amount of time, equipment, and expertise.

To overcome the difficulties in aetiological diagnosis of STIs, specifically in resource poor countries, a syndrome-based approach to the management of STI patients was developed and promoted. Syndromic management promoted by WHO is based on the identification of consistent groups of symptoms and easily recognized signs. Syndromic management is expected to deal with the majority or most serious organisms responsible for producing a syndrome. Syndromic management for urethral discharge in men and genital ulcers in men and women was found to be satisfactory. However, the algorithm for syndromic case management of women with symptoms of vaginal discharge has several limitations. Symptoms referable to infection with TV may also be caused by candidiasis or BV, making the estimation of the proportion with symptomatic disease problematic. A systematic review and meta-analysis showed the diagnostic performance to identify cervical infections was low and resulted in a high proportion of over and missed treatment. It could be used as an intermediate approach for cervical infections for sex workers until a POCT is available in resource poor settings (14).

Fortunately, metronidazole resistance is rare though the drug is extensively used since last sixty years to treat several types of infections. It was used first time in 1959 to treat TV infection. Subsequently, the drug is used to treat infections caused by Bacteroides, Fusobacteria and Clostridia, rosacea, oral and dental infections, bone and joint infections, gynecologic infections, endocarditis, septicemia, and respiratory tract infections. The drug is well tolerated with minimal adverse reactions. The side effects include nausea, abdominal pain, diarrhea, and very rarely serious neurotoxicity, optic neuropathy, peripheral neuropathy, and encephalopathy (15). In spite of reasonable susceptibility of metronidazole against TV, the high rate of test of cure positives in the recent RCT (2), even among those receiving multidose metronidazole, requires search for more efficacious low-cost treatments for trichomoniasis.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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doi: 10.21037/aoi.2019.02.01

Cite this article as: Das P. Management and control of *Trichomonas vaginalis* infection. *Ann Infect* 2019;3:1.