

Infection control 2018-Trichomonas vaginalis and Chlamydia trachomatis co-infections- Anil Kaul- Oklahoma State University

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Trichomonas vaginalis (TV) is a common sexually transmitted protozoal infection associated with adverse health outcomes such as preterm birth and symptomatic vaginitis. TV has infected 3.7 million individuals in the United States with new infections expected to increase globally. While wet mount is the least sensitive test for TV, it is still the most common testing method used, despite other methods, including molecular assays being more effective. *Chlamydia trachomatis* (CT) is a sexually transmitted disease (STI) with a prevalence of more than 645 cases per 100,000 females in 2015. CT can cause infertility, pelvic inflammatory disease (PID), pregnancy complications, and increased risk of other STIs. Unlike TV, CT is tested through nucleic acid amplification test (NAAT), DNA probe tests, enzyme linked immunosorbent assay (ELISA), and direct fluorescent antibody test (DFA). By understanding the co-infection rate between TV and CT, better diagnostic protocols can be used for TV diagnosis based on other diagnosis of other common STIs. Therefore, in this study, we investigated the co-infection rates of CT and TV and collected CT positive patient samples from our clinics. We also collected their de-identified demographic information and performed NAAT based molecular test (Aptima TV assay) using Panther Platform (Hologic Inc. Marlborough, MA) on these patient samples. We determined incidence rate for the overall population and in various demographic sub-groups. Our results indicate an overall CT/TV co-infection rate of around 22%. The highest co-infection rate was amongst black

women in the 18 to 24-year age group. Overall, the co-infection rate in the white population was one-third of the rate in the black population. Because of the high co-infection rates in black women, specifically in the 18-24 age group, interventions are necessary in this demographic group. Sexual education is critical in preventing future high STI rates. Educating schoolchildren would be ideal, but due to stigma surrounding STIs and sex education, this may not be very effective. Therefore, other methods such as online videos, informational websites, interactive games, social media, and smart phone application must be explored.

The results of our study point to local factors when looking for predictors of HGAIN besides high-risk HPV," comment the authors. "Coinfections with *Chlamydia trachomatis* may potentiate the oncogenic capability of HPV16 so that when both pathogens coexist, the risk of HGAIN increases substantially compared with either infection alone in HIV-positive men who have sex with men. Accordingly, individuals coinfecting with both pathogens would be at increased risk for the development of anal cancer. The results of our study point to local factors when looking for predictors of HGAIN besides high-risk HPV," comment the authors. "Coinfection with *Chlamydia trachomatis* may potentiate the oncogenic capability of HPV16 so that when both pathogens coexist, the risk of HGAIN increases substantially compared with either infection alone in HIV-positive men who have sex with men. Accordingly, individuals coinfecting with both pathogens would be at increased risk for the development of anal cancer. Co-infection with high risk HPV types and *Chlamydia trachomatis* is associated with the development of cervical cancer. To see if a similar relationship existed for HGAIN, a team of investigators led by Dr Mar Marsía

designed a prospective study involving 145 HIV-positive gay and bisexual men. All underwent high resolution anoscopy to check for the presence of pre-cancerous lesions. Anal biopsies were also performed, with the tissue sample checked for 19 high-risk and nine low-risk HPV types for the development of pre-cancerous lesions. The tissue samples were also examined for the presence of seven bacteria that cause sexually transmitted infections, including *Chlamydia trachomatis* and *Ureaplasma urealyticum*. The latter is most often associated with non-gonococcal urethritis, but may also be found in rectal samples. *Chlamydia trachomatis* is the most common cause of curable bacterial sexually transmitted infection (STI) worldwide.

It manifests primarily as urethritis in males and endocervicitis in females. Untreated chlamydial infection in man can cause epididymitis and proctitis. Though most women with *Chlamydia* infection are asymptomatic or have minimal symptoms, some develop salpingitis, endometritis, pelvic inflammatory disease (PID), ectopic pregnancy and tubal factor infertility. It is associated with an increased risk for the transmission or acquisition of HIV and is also attributed to be a risk factor for the development of cervical carcinoma. Early diagnosis and treatment of infected individuals is required to prevent the spread of the disease and severe sequelae. Traditionally, tissue culture was considered the gold standard for the diagnosis. However, with the availability of newer diagnostic techniques particularly molecular methods which are not only highly sensitive and specific but are cost-effective also, the diagnosis has become fast and easy. The purpose of this review is to study the various aspects of genital *C. trachomatis* infection. Also the advances related to the clinical picture, various diagnostic modalities, prevention, treatment, drug resistance and control measures will be dealt with. *Chlamydia trachomatis* is the most common

bacterial sexually transmitted infections worldwide¹, and women carry the major burden of the disease. These women are also a potential source of infection to their partners. It causes urethritis in men and mucopurulent cervicitis, urethritis, and endometritis in women. Mucopurulent cervicitis can lead to at least three types of complications² - ascending intraluminal spread of organism from cervix producing pelvic inflammatory disease (PID); ascending infection during pregnancy resulting in premature rupture of the membrane, chorioamnionitis, premature delivery and puerperal and neonatal infections (conjunctivitis and possibly interstitial pneumonia); and also an increased risk of the development of cervical carcinoma². A 3- to 4-fold increased risk of transmission of HIV is an added cause of concern³. The incidence of chlamydial infections in women has increased dramatically from 79 to 467 per 100,000 between 1987 and 2003⁴. According to the World Health Organization (WHO)¹, 101 million chlamydial infections are detected annually worldwide. The clinical presentation, course, complications and late sequelae of *C. trachomatis* closely resemble *Neisseria gonorrhoeae* infection.

Biography

Anil Kaul was graduated from Madras Medical College in Medicine, King Georges' Medical College in Dentistry and in Public Health from University of Minnesota. He currently serves as the Director of High-Complexity Clinical Laboratories and a Faculty at Oklahoma State University-Center for Health Sciences. He has been awarded 6 patents and has published more than 50 scientific papers. He has served as Senior Health Advisor to the US Department of State and received "Expeditionary Service Award". In 2014, he also received "Lifetime Achievement Award" at Global Health Summit and in 2008 he was named as Sony's "Scientist of the Year Award".

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