



***Mycoplasma genitalium* Macrolide Resistance**

Mycoplasma genitalium, commonly referred to as MGen, is a Gram-positive bacterium emerging as a significant causative agent of sexually transmitted infections in both males and females¹. *M. genitalium* was initially isolated from the urethral swabs of males with non-gonococcal urethritis in 1981 and was identified as a new species of *Mycoplasma* in 1983². Infection is closely associated with urethritis in men, and cervicitis in women, with links also been made to pelvic inflammatory disease. Through use of polymerase chain reaction (PCR), *Mycoplasma genitalium* has been established as a key source of non-chlamydial, non-gonococcal urethritis in men and mucopurulent cervicitis in women³. The bacterium is one of the smallest known self-replicating organisms that proliferates on the skin cells of the human genital and urinary tracts. Bacterial infections such as those caused by *M. genitalium* are treated with antibiotics, however recent studies have found alarming rates of resistance to macrolide treatments. Recent changes to the British Association for Sexual Health and HIV (BASHH) guidelines have stated that all patient samples containing *M. genitalium* DNA should, where feasible, additionally be tested for macrolide resistance mediating mutations.

Signs and Symptoms

Mycoplasma genitalium infection yields a vast range of clinical symptoms, though asymptomatic colonisation may occur. Infection can cause urethral inflammation, referred to as urethritis, in both men and women, which can result in pain when urinating (dysuria), the frequent need to urinate and pain during sex.

Diagnosis and Treatment

Micropathology Ltd. accept both genital swabs and urine (males only) as validated sample types to test for *Mycoplasma genitalium* DNA. Initial treatment against *Mycoplasma genitalium* infection is a singular 1g dose of azithromycin, a macrolide

antibiotic which has been shown to be considerably more effective at treating infection than the standard doxycycline. However, individuals whose infections are not cleared following this primary stage of treatment are often found to host macrolide resistant strains of *M. genitalium*⁴. These infections can be followed up with additional, more intensive, azithromycin treatments. Macrolides are bacteriostatic antibiotics that by binding to the 50S subunit of the ribosome, inhibit bacterial protein synthesis of a range of bacteria including Gram-positives. Mutations associated with macrolide resistance have been identified at points 2058 and 2059 (Escherichia coli numbering) on region V of the 23S rRNA gene of *M. genitalium*. At Micropathology Ltd., our in-house developed assay is single round and sequence based. Where macrolide resistance testing is requested, all samples will be routinely tested for *M. genitalium* DNA in the first instance.

References

- ¹ Sethi, S., Singh, G., Samanta, P. and Sharma, M. 2012. *Mycoplasma genitalium*: An emerging sexually transmitted pathogen. *Indian Journal of Medical Research*, vol. 136, no. 6, pp. 942-955.
- ² Daley, G., Russell, D., Tabrizi, S. and McBride, J. 2014. *Mycoplasma genitalium*: a review. *International Journal of STD and AIDS*, vol. 25, no. 7.
- ³ Falk, L., Fredlund, H. and Jensen, JS. 2005. Signs and symptoms of urethritis and cervicitis among women with or without *Mycoplasma genitalium* or *Chlamydia trachomatis* infection. *Sexually Transmitted Infections*, vol. 81, no. 1, pp. 73-78.
- ⁴ Workowski, K. et al. 2015. Sexually transmitted diseases treatment guidelines, 2015. *Recommendations and reports: Morbidity and mortality weekly report*, vol. 64, pp. 1-137.