MYCOPLASMA GENITALIUM INFECTIONS IN QUEENSLAND, AUSTRALIA: ALARMING RATES OF RESISTANCE TO MACROLIDE AND QUINOLONE ANTIBIOTICS

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Introduction:

Mycoplasma genitalium is a sexually transmissible bacterium associated with non-gonococcal urethritis in men and in women can cause endometritis and pelvic inflammatory disease. In Queensland, macrolide and quinolone antibiotics are common treatments for *M. genitalium* infections; however, treatment failure with one or both of these antibiotics has become increasingly common and are being reported with increasing frequency in some areas. In this study, we sought to investigate the prevalence of macrolide- and quinolone-resistant *M. genitalium* in two regions of Queensland; Brisbane and Townsville.

Methods:

Macrolide resistance-mediating mutations (MRMMs) of the 23S rRNA gene were detected using a commercially available kit (ResistancePlus™ MG; SpeeDx). Sequencing of the quinolone-resistance determining region (QRDR) of the *parC* and *gyrA* genes was performed. Mutations in the QRDR were compared to mutations previously reported for *M. genitalium, Mycoplasma* spp. and *Ureaplasma* spp.

Results:

A total of 524 *M. genitalium*-positive samples were screened. Overall, 61% of samples contained MRMMs and there was no difference in the incidence of MRMMs between Brisbane (63.6%) and Townsville (59.5%). Analysis of QRDR mutations revealed that 10% of samples harboured mutations consistent with quinolone resistance. *M. genitalium* samples from Brisbane were significantly more likely to harbour QRDR mutations (17.2%), when compared to samples originating from Townsville (3.3%; $P < 0.01$). We also identified a significant association between the presence of QRDRs mutations and MRMMs in Brisbane; 18.2% of MRMM-harbouring *M. genitalium* samples also harboured QRDR mutations, consistent with resistance to both classes of antibiotics; whereas, in Townsville only 4.9% of MRMM-harbouring *M. genitalium* samples also had QRDRs ($P < 0.01$).

Conclusion:

This study demonstrates alarming levels of MRMMs and QRDRs in *M. genitalium* in Queensland and raises further concerns over the use of these antibiotics for treatment of *M. genitalium*.

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