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Macrolide Resistance in Mycoplasma genitalium is strongly associated with STI co-infection

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Background

Co-infections can compromise empirical therapy when treating genital discharge syndrome (GDS). In the UK, lack of testing for *Mycoplasma genitalium* (MG), a common cause of GDS, is particularly challenging because of increasing rates of macrolide antimicrobial resistance (AMR). We calculated prevalence of MG co-infections, macrolide resistance and associated risk factors in a diverse symptomatic sexual health clinic (SHC) population.

Methods

SHC attendees in England aged ≥16 years, symptomatic of an STI provided: vulvovaginal swabs (females), first void urine (men-who-have-sex-with-women (MSW) and men-who-have-sex-with-men (MSM)), pharyngeal and rectal swabs (MSM). Routine clinic *Chlamydia trachomatis* (CT)/*Neisseria gonorrhoeae* (NG) results were obtained and PCR used for MG detection. Macrolide resistance was determined using Sanger sequencing. Unadjusted and risk factor adjusted odds ratios (ORs) for being MG resistant were derived using logistic regression models.

Results

Prevalence of MG was 9.5% across all groups and 6.5%(95%CI:4.6-8.9), 12.8%(9.1-17.3) and 12.3%(8.5-17.1) in females, MSW and MSM, respectively (p<0.005). Among patients infected with CT and/or NG, co-infection with MG was 18.7%(8.9-32.6), 9.5%(3.6-19.6) and 4.9%(1.4-12.2), respectively (p<0.05). Among MG positives, macrolide resistance was 62.1%(42.3-79.3), 77.4%(58.9-90.4), and 90.9%(70.8-98.9), respectively. In univariate analysis, being MSM (OR:3.0[95%CI:1.60-5.88]), being of black (3.02[1.66-5.47]) compared to white ethnicity, reported more than one regular partner (3.19[1.25-8.13]), having an STI co-infection (10.13[4.62-22.25];p<0.001) and a recent STI diagnosis (2.09[1.18-3.68];p<0.005) were associated with having macrolide resistant MG. In multivariable analysis, being MSM (aOR:3.31[1.44-7.61]), being of black ethnicity (3.31[95%CI:1.58-6.94];p<0.005), more than one regular partner (3.32[1.21-9.08];p<0.005) and having a co-infection (10.35[4. 32-25.30];p<0.001) remained significant.

Conclusion

Having an STI co-infection with MG was the strongest indicator of likelihood of having macrolide resistance which was also associated with being in particular risk groups. These findings are suggestive that macrolide resistance may be maintained in discreet sexual networks that are themselves exposed to antibiotic selection pressures.

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