Macrolide-resistant *Mycoplasma genitalium* strains detected by pyrosequencing in a Spanish hospital

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**Background:** *Mycoplasma genitalium* (MG) is a common cause of non-gonococcal urethritis and cervicitis. Macrolides (ML) are a first-line treatment, but resistant patterns produced by several point mutations in 23S rRNA cause azithromycin failure or lead to resistance induction. The goal of this study is to establish the current prevalence of resistant strains in our region using the pyrosequencing method for detection.

**Materials/methods:** A total of 4302 genitourinary samples coming from the routine screening of sexual transmitted infections (STI), including symptomatic, STI contacts or asymptomatic patients, were received between December 2017 and November 2018 and tested for the presence of MG by Real Time PCR (Allplex® STI-7, Seegene). Additionally, 21 MG positive samples from the studies of asymptomatic individuals “Prevalence study of *Chlamydia trachomatis* infection and determinants of risk behavior in young people <25 years old” and “Prevalence study of *C. trachomatis* infection, *M. genitalium* and other STIs in young adults users of the ASSiR centers, care centers for young people and primary care centers” were analyzed. Specimens with MG detection were prospectively analyzed to identify resistant strains. For this purpose, PCR was carried out followed by pyrosequencing with Pyromark® (Qiagen) in order to detect ML resistance.

**Results:** From the 4302 samples analyzed, 162 (3.77%) positively detected MG. The specimens were 127 cervical swabs, 28 urine samples and 7 rectal swabs. Pyrosequencing was performed on 149 of the samples and 39 ML resistant strains (26.2%) were found, showing three different patterns: A2058G (n=15), A2059G (n=23) and A2059T (n=1). Regarding the two additional studies, from the 21 MG positive samples analyzed, one A2059G strain (4.8%) was found.

**Conclusions:**

1. Molecular methods are fundamental to detecting MG infection, providing a diagnostic approach in cases in which the usual pathogens are not isolated.

2. Mutations associated with MLr are present in a high percentage of the strains tested (26% in the prospective study). This implies that recommended empirical treatment may not be effective in more than a quarter of infections.

3. Resistance tests should be performed following MG detection, in order to adjust antibiotic therapy in
symptomatic infections.