Ureaplasma spp. isolated from genital samples in Switzerland: susceptibility patterns, resistance genes, and sequence type distribution

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INTRODUCTION

Ureaplasma urealyticum, U. parvum, and Mycoplasma hominis are causative agents of ungeronal tract infections such as non-chlamydial and non-gonococcal urethritis, prostatitis, cervicitis, and pelvic inflammatory disease.

Antibiotic resistance in U. urealyticum, U. parvum and M. hominis (MH) poses an increasing issue. However, data regarding antibiotic susceptibility is limited to several countries, whereas information about clonality is available only from China (Zhang et al., Eur J Clin Microbiol Infect Dis, 2014).

To our knowledge, data on the antimicrobial susceptibility of genital mycoplasmas isolated in Switzerland are completely lacking. More importantly, information concerning the spread of specific clones at the international level is urgently needed. Therefore, the aim of this study was to fill these gaps by analyzing the Ureaplasma isolates detected among Swiss people.

RESULTS: Clonal distribution, subtypes, antibiotic phenotypes and molecular characterization of 25 Ureaplasma isolates

Table 1. Clonal distribution, subtypes, antibiotic phenotypes, and molecular characterization of 25 Ureaplasma isolates

| Sample | MLST profiles | Antimicrobial susceptibility by using the broth microdilution method | Beta-lactams | Genes
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<td>CIP</td>
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RESULTS: ID and AST of 103 UUA/UPA isolates

Figure 1. Overall prevalence of non-susceptible U. urealyticum/parvum strains (UUA/UPA; n=103). ID and AST results were achieved implementing the Mycoplasma IST 2 kit (bioMérieux). The interpretative criteria provided by the manufacturer were applied.

RESULTS: Phylogenetic analysis of the 17 different STs

The phylogenetic analysis performed on 6 UUA and 11 UPA isolates indicated that most of the novel STs found are strongly related to the ancestors (ST1 for UUA and ST47 for UPA) and to the very prevalent Chinese variants (ST1, ST2, ST4, ST22, and ST9).

CONCLUSIONS:

- This is the first study analyzing susceptibility of Ureaplasma spp. isolates detected in Switzerland and the clonal distribution outside China.
- Resistance rates are low compared to other surrounding countries, but the empirical use of quinolones is compromised.
- Conflicting results from the IST 2 kit and standard broth microdilution were observed for CIP and AZI (i.e., most of the isolates routinely reported as nonsusceptible to these antibiotics were actually fully susceptible).
- We hypothesize that some hyperepidemic STs (e.g., ST4) spread worldwide via sexual intercourse.
- Unfortunately, our study does not provide adequate clinical data to establish the extent of infection or colonization and the potential link with specific STs of U. urealyticum and U. parvum among our patients. Large combined microbiological and clinical studies should address these important aspects in the near future.