

The Prevalence and Antimicrobial Susceptibilities of *Ureaplasma Urealyticum* Isolates in Urogenital Infections

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SUMMARY: Eighty four men patients with the complaints of urethritis were included. In this research, *Mycoplasma* IST (BioMérieux sa, France) kit was used for investigation of *Ureaplasma urealyticum* in the urine samples obtained from patients. By using *mycoplasma* IST information about the presence or absence of *Ureaplasma urealyticum* provided. Besides *Mycoplasma hominis* and their antimicrobial susceptibilities to antimicrobial agents (pristinamycine, doxycycline, josamycin, erythromycin, tetracycline, ofloxacin) were determined. *U. urealyticum* strains were isolated from 60 (71.43%) patients and *M. hominis* strain was not isolated from any patient. *U. urealyticum* isolates were found to be sensitive 100% to tetracycline, 100% to ofloxacin, 95% to doxycycline, 95% to josamycin, 90% to pristinamycin, 88.3% to erythromycin.

Key words: *Ureaplasma urealyticum*, antimicrobial susceptibility, urethritis.

ÖZET: Üretritis şikayeti ile başvuran 84 erkek hasta, çalışmaya dahil edildi. Bu çalışmada, hastalardan alınan idrar örneklerinde *Ureaplasma urealyticum* araştırılması için Mycoplasma IST (BioMérieux sa, France) kiti kullanıldı. Mycoplasma IST kiti ile *Ureaplasma urealyticum* ve *Mycoplasma hominis* bulunup bulunmadığının yanı sıra saptanan organizmaların antimikrobiyal ajanlara (doksisisiklin, josamisin, ofloksasin, eritromisin, tetrasiklin, pristinamisin) duyarlılıkları belirlendi. Üretritis'li hastaların 60'ından (%71.43) *U.urealyticum* izole edilirken, hiçbir hastada *M. hominis* izole edilmedi. *U.urealyticum* izolatlarının %100'ü tetrasikline, %100'ü ofloksasine, %95'i doksisisikline, %95'i josamisine, %90'ı pristinamisin ve %88.3'ü eritromisine duyarlı bulundu.

Anahtar kelimeler: *Ureaplasma urealyticum*, antimicrobial duyarlılık, üretritis.

INTRODUCTION

Ureaplasma urealyticum has been implicated in many infections, including non-gonococcal urethritis, urethroprostatitis, epididymitis in men. Infection with genital *U. urealyticum* occurs primarily as a result of sexual contact. The organism colonizes on the mucosa of the genital tracts of human, growing extracellularly. By an unknown mechanism, infection with *ureaplasma* causes injury to mucosal cells and the tissue damage. Genital *ureaplasma* colonization in women is related to socioeconomic status. The carriers all over the world are significant reservoir to spread (Taylor D. 1996; Baron EJ et al.1994; Yu P.2000).

The biological diagnosis of ureaplasma infections is essentially based on the detection of organisms in biological fluids or swabs. Detection of *Ureaplasma urealyticum* in the genital tract depends on culturing specimens on appropriate media and identifying the isolates. The organisms may show different sensitivity to various antimicrobial agents (Taylor D. 1996).

The aim of this study was to investigate the occurrence of *Ureaplasma urealyticum* in non-gonococcal urethritis and to determine the bacterial resistance to six kinds of antibiotics.

MATERIALS AND METHODS

In this study, totally 84 urethral swab samples (conventional culture-negative) obtained from males aged 23-48 years with urethritis were

tested by Mycoplasma IST (BioMérieux sa, France) for isolation of urogenital mycoplasmas and their susceptibilities to Doxycycline (4-8 mg/l), Josamycin (2-8 mg/l), Ofloxacin (1-4 mg/l), Erythromycin (1-4 mg/l), Tetracycline (4-8 mg/l) and Pristinamycin (2 mg/l). Mycoplasma IST combines a selective culture broth with a strip of 16 cupules. Mycoplasma IST (BioMérieux sa, France) was used for the isolation of *U. urealyticum*. The samples taken from patients were placed in R1 medium, which inhibits the growing of Gram-positive and negative bacteria and includes nutrients. Then, 3ml from this mixture were added to R2 medium including yeast extract, horse serum, urea, arginin, polyVitex, and antibiotics. This solution was vortexed until lyophilized pellet was definitely melted. A Mycoplasma IST strip, consisting of 16 wells, was then inoculated with the rehydrated R2 growth medium (50µl per well, overlaid with mineral oil).The remainder of broth and inoculated strip were incubated at at 35-37 °C and observed for colour changes, and the results were interpreted after 24-48 h of incubation. The strips provided information regarding the presence or absence of *U.urealyticum*, an estimate of the density of each organism (>10⁴ CFU) and its antimicrobial susceptibilities to tetracycline, ofloxacin, doxycycline, josamycin, pristinamycin and erythromycin (Kılıç D.at al.2004, Gökahmetoğlu S. at al..2004, Clegg A. at al. 1997).

RESULTS

Average ages for study population was 31,3 + 6.7 years. *U. urealyticum* microorganisms were isolated from urethral samples of 60 individuals (71.43 %) with urethritis. But, *M. hominis* wasn't

isolated from them. Colony count was >10.000 Colour Changing Unit at 51 of 60 (85%) positive samples. 14 of 60 isolates were susceptible to all tested antibiotics. Details of antibiotics sensitivity test results are presented in Table 1.

Table 1. The antibiotic susceptibility rates of *U. urealyticum* strains isolated by using Mycoplasma IST.

Antibiotics	Susceptible (n)	Intermediate(n)	Resistant (n)	Susceptibility (%)
Tetracycline	60	-	-	100
Doxycycline	57	-	3	95
Ofloxacin	45	15	-	100
Pristinamycin	54	-	6	90
Josamycin	50	7	3	95
Erythromycin	32	21	7	88.3

DISCUSSION

U. urealyticum is one of the most frequent isolated agents in non-gonococcal and non-specific urethritis (Kılıç D., et al. 2004). As the cultivation of *U. urealyticum* requires the use of complex media and their isolation is difficult. For these reasons, routine culture for *U. urealyticum* is performed by relatively few laboratories, and antibiotic sensitivity testing of genital mycoplasmas is not carried out in routine laboratories. Therefore, various commercial media (Mycoplasma IST) kits which are more practical and faster for the isolation and evaluation of antibiotic susceptibility testing of these agents, were developed (Clegg A. et al.1997;Vazquez F. et al.1995).

The prevalence of *U. urealyticum* in men ranges from varies 10 to 59 percent with urogenital infections (Yu P.2000; Chandeyng V., et al. 2000; Keane FE., et al. 2000; Rein MF., et al. 1996; McKee KT., et al. 2000). *U. urealyticum* is usually susceptible to agents that interfere with protein synthesis, such as tetracyclines and

macrolides and is resistant to cell wall active drugs, like beta-lactam-containing agents. But, the organisms have shown variation to antimicrobial susceptibility patterns. For example, about 10 percent of ureaplasmas may be resistant to tetracyclines. Susceptibilities to aminoglycosides and chloramphenicol in vitro are variable (Taylor D., 1996; Matlow A., et al.,1998).

In our study, the isolates of *U. urealyticum* were found sensitive 100 % to tetracycline, 100 % to ofloxacin, 95 % to doxycycline, 95 % to josamycin, 90 % to pristinamycin, 88.3 % to erythromycin. It was determined that tetracycline was the most susceptible antibiotic. This data may be useful when designing prophylactic or therapeutic trials of antibiotics for non-gonococcal and nonspecific urethritis.

Additionally, we evaluated the usefulness of a culture system Mycoplasma IST, which used in our laboratory, for the detection of *Ureaplasma urealyticum* in the urethral swabs of males with non-gonococcal and non-specific urethritis.

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