

## THE RESULTS OF THREE-YEAR MONITORING OF MYCOPLASMA HOMINIS AND UREAPLASMA UREALYTICUM IN THE CANTONS OF HERZEGOVINA-NERETVA AND WEST HERZEGOVINA

Josipa Tomić & Maja Ostojić

*Department of Microbiology and Molecular Diagnosis of the University Clinical Hospital of Mostar, Mostar, Bosnia and Herzegovina*

\* \* \* \* \*

### Dear Editor,

Mycoplasma is a group of bacteria which includes more than 70 different species. The best-known of which include *Mycoplasma hominis*, *Mycoplasma genitalium*, *Mycoplasma pneumoniae* and *Ureaplasma urealyticum*. They can be found in the cervix and the vagina in over 80% of asymptomatic women and can cause inflammation of the pelvis minor, as well as postabortal and postpartal febrile conditions when, in rare cases, a dissemination to the brain and joints may occur (Marekić 2012). Furthermore, *Mycoplasma genitalium* is a proven cause of nongonococcal urethritis and prostaticitis in men which may become chronic (Marekić 2012).

Mycoplasmas belong to the class Mollicutes which is a family comprised of over 200 species. Their shape varies, from the spherical (Coccus) shape with 0.2 to 0.3 µm diameter, as with *Ureaplasma* spp. and *M. hominis*, to rod-shaped with 1 to 2 µm in length and 0.1 to 0.2 µm in width (Brooks & Carroll 2010). There are 17 species found in humans, 8 of which primarily colonise the urogenital system (Waites et al. 2005). *Ureaplasma urealyticum* and *Mycoplasma hominis* can cause cervicitis, Pelvic Inflammatory Disease (PID), postpartum fever, recurrent miscarriages, stillbirths, low birth weight and infections in newborns (pneumonia, sepsis, meningitis and chronic pulmonary disease) (Matijević 2010).

Treatment is only necessary if *Mycoplasma* is the only cause of infection, in which case medicinal treatment is administered. The medication of choice is tetracycline for 10-14 days which is effective against all species of *Mycoplasma* (Kenny 2005, Kalenić 2013). The results of a study conducted in Croatia in 2004 show that resistance to tetracycline was found in about 10% of *Mycoplasma hominis* isolates and in less than 1% *Ureaplasma urealyticum* isolates. *Ureaplasma urealyticum* showed sensitivity to doxycycline in 97.5% of isolates and *Mycoplasma hominis* in 96.8% of isolates (Peltier & Brown 2005).

At the Department of Microbiology of the University Clinical Hospital of Mostar, a retrospective three-year analysis of the medical documentation of the Institute for Microbiology and Molecular Diagnosis was conducted from 01/01/2015 until 31/12/2017 on suspected

samples of *Mycoplasma hominis* and *Ureaplasma urealyticum* from the two cantons- the Herzegovina-Neretva Canton and West Herzegovina Canton, with the aim of proving an increased number of positive samples and sexually transmitted diseases caused by urogenital mycoplasmas among other things.

In the period from 2015 to 2017, the Department of Microbiology and Molecular Diagnosis of the University Clinical Hospital of Mostar received 2,167 samples, 1,421 (65.6%) of which were taken from the Herzegovina-Neretva Canton and 746 (34.4%) from the West Herzegovina Canton. Analysis by gender shows that 224 (10.3%) samples were taken from men and 1,943 (89.7%) from women. The distribution by year shows that the number of analysis samples is increasing (384 samples in 2015, 816 in 2016, and 967 in 2017). The share of positive samples also shows a growth trend (51 (13.3%) positive in 2015; 72 (21.1%) positive in 2016; 225 (23.3%) positive in 2017).

The three-year analysis of received and positive samples shows an increase in the number of individuals tested for urogenital mycoplasmas, as well as an increase in the number of positive samples. There are several reasons for such results. Among other things, the reagents used for the analysis of urogenital mycoplasmas are expensive and doctors were very cautious with the *Mycoplasma* analysis requests, not wanting to spend hospital resources unnecessarily. However, with the increasing number of patients with gynaecological and pregnancy complications in women, as well as urogenital complications in men, and a generally increasing number of patients with sexually transmitted diseases, the number of requests for sample analysis, and therefore positive samples, is also increasing. There is a distinctly larger number of samples taken from women, compared to men, although this practice requires further discussion considering that these bacteria cause sexually transmitted diseases under certain conditions and the largest number of received and positive samples come from sexually active people and people of reproductive age. Therefore, we believe that more men should be included in the analysis, regardless of the fact that symptoms in men are not immediately recognizable, but

can cause serious urogenital complications. It is important to note that *Mycoplasma hominis* in male and female adult patients can cause infections in the form of sepsis, joint infections, central nervous system and respiratory system infections as well as wound infections (Mareković 2012).

We find similar conclusions in the analysis of the *Ureaplasma* presence in the USA which shows that positive samples can be found in 40-80% of women who are asymptomatic and sexually active. The analyses also show that infection can remain in the reproductive tract over several years, even though the patients were specifically tested for infection (Relić et al. 2007).

While working on the three-year analysis and presence of the *Mycoplasma hominis* and *Ureaplasma urealyticum* we were surprised at how little research is dedicated to urogenital mycoplasmas in the country, as well as the entire region. Bearing in mind the complications that can be caused by this group of bacteria and the increased number of infected patients, we believe that this issue deserves more consideration.

All health institutions should be encouraged to create a unified database at both national and regional level, which would help monitor the presence of all kinds of sexually transmitted diseases more effectively, and enable the comparison of these data with more developed health systems in order to create a better platform for educating all age groups and reducing the number of affected people.

### **Contribution of individual authors:**

Both authors contributed equally into this article.

### **Acknowledgements:**

The research J3 8215 "The Role of The Microbiome in Depression" (Bojan Zalar, project leader) has financial grant by Slovenian Research Agency (ARRS) 2017-2020.

**Conflict of interest :** None to declare.

### **References**

1. Brooks GF, Carroll KC: *Mycoplasmas & cell wall-defective bacteria*. U: Brooks GF, Carroll KC, Butel JS, Morsa SA, Mietzner TA, ur. Jawetz, Melnick & Adelberg's *Medical Microbiology*, 25th ed. New York: McGraw-Hill, Inc 2010; 313-7
2. Waites KB, Katz B, Schelonka RL: *Mycoplasmas and Ureaplasmas as neonatal pathogens*. *Clin Microbiol Rev* 2005; 18:757-89
3. Matijević R: *Guide to pregnancy*. Znanje, Zagreb, 2010
4. Kenny GE: *Genital Mycoplasmas: Mycoplasma genitalium, Mycoplasma hominis, and Ureaplasma Species*. In: Mandell, Bennett JE, Dolin R.: *Principles and practice of infectious diseases*. Churchill Livingstone, Philadelphia, 2005
5. Kalenić S: *Medical Microbiology*, Medicinska naklada, Zagreb, 2013
6. Peltier MR, Brown MB: *Experimental genital mycoplasmosis causes increased levels of mRNA for IL-6 and TNF-alpha in the placenta*. *Am J of Reprod Immunol* 2005; 53:189-98
7. Mareković I: *Clinical significance of urogenital mycoplasmas*. *Medicus* 2012; 21:103-108
8. Relić M, Relić G, Dejanović L, Ivanović J: *Sexually transmitted diseases- significance and classification*. *Medicinski Anali (Annals of Medicine)* 2007; 10:155-160

### *Correspondence:*

Josipa Tomić, MD  
Department of Microbiology and Molecular Diagnosis  
of the University Clinical Hospital of Mostar  
Bijeli Brijeg bb, 88 000 Mostar, Bosnia and Herzegovina  
E-mail: jtomic1980@gmail.com