Co-occurrence of Urogenital Mycoplasmas and Group B Streptococci with Chlamydial Cervicitis

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Abstract

The aim of our study was to evaluate whether in women with chlamydial cervicitis urogenital mycoplasmas and group B streptococci (GBS) colonization is found more often than among women with non-chlamydial cervicitis. This study included 351 (mean age 31.7 ± 6.82) not pregnant, menstruating, sexually active women. We confirmed a high frequency (49.3%) of C. trachomatis infection among women with cervicitis. Cervical ectopia was confirmed in 26.5% of examined women, in half of them ectopia was associated with chlamydial infection. We did not notice differences in frequency of colonization by urogenital mycoplasmas and GBS among women with chlamydial and non-chlamydial cervicitis.

Key words: Chlamydia trachomatis, GBS, urogenital mycoplasmas, cervicitis, ectopia

Urogenital mycoplasmas and group B streptococci (GBS) are microorganisms colonizing female urogenital tract and playing an important role in the pathology of fetus and newborn. Urogenital mycoplasmas are often isolated, even in 54% of tested sexually active women of childbearing age (Schlicht et al., 2004). Sexual transmission of GBS is questioned (Honig et al., 2002), while it is recognized in urogenital mycoplasmal infection (Keane et al., 2000, Nunez-Troconis, 1999).

Today Chlamydia trachomatis is on the first place among sexually-transmitted bacteria (Millman et al., 2004). Cervicitis, often with co-occurring ectopia, is the dominating clinical finding during C. trachomatis infection (Critchlow et al., 1995, Giedrys-Kalemba et al., 1994). Thus, the aim of our work was to evaluate, whether in women with chlamydial cervicitis urogenital mycoplasmas and GBS colonization is found more often than among women with non-chlamydial cervicitis.

This study included 351 (mean age 31.7 ± 6.82) not pregnant, menstruating, sexually active women who attended the Department and Clinic of Gynecology and Endocrinology, Medical University of Silesia in Katowice between 2001 and 2004. Cytological examination of cervix was performed in each case. All studied women had symptoms of cervicitis: mucopurulent endocervical discharge and/or greater or equal to 30 neutrophils per ×1000 field on the cervical Gram stain, and/or bleeding contact.

Patients with gonococcal infection and those receiving antibiotic therapy within the month before consultation were excluded from the study.

Sterile swabs were used to obtain material for testing/culturing of expected microorganisms (Friedek et al., 2004). First swab (no 1) from vaginal fornix for GBS culturing was inoculated on Columbia sheep blood agar plate and incubated aerobically for 24–48 hours at 37°C. Identification of GBS was based on latex Slidex Streptokit (bioMeireux, France). Susceptibility of isolated GBS to antibiotics (ampicillin,
erythromycin and clindamycin) was examined by disk-diffusion method. Second swab (no 2) from endocervical canal for isolation of genital mycoplasmas was inoculated in urea-arginine-broth transport medium (bioMérieux, France). Culturing of genital mycoplasmas was performed by using Mycoplasma IST (bioMérieux, France), according to manufacturer’s instruction. Mycoplasma IST shows good sensitivity and specificity for *U. urealyticum* (100% and 90%, respectively), and for *M. hominis* (100% and 85% respectively) (Rastawicki et al., 2004). Third swab (no 3) from endocervical canal for detection of *C. trachomatis* was fixed by acetone on a slide. Chlamydia Direct IF – DIF (bioMérieux, France) was used for *C. trachomatis* antigen detection, according to manufacturers instruction. Slides were examined in Nikon Model HB – 10101AF fluorescent microscope (x40 objective).

In studied group chlamydial etiology of cervicitis was confirmed in 49.3% (173/351). Genital mycoplasmas were isolated in 25.9% of women with cervicitis. There were statistically insignificant differences between occurrence of urogenital mycoplasmas in women with and without chlamydial cervical infection. *U. urealyticum* was a more frequently isolated species than *M. hominis* (Table I).

<table>
<thead>
<tr>
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<th>C. trachomatis – positive women (n = 173)</th>
<th>C. trachomatis – negative women (n = 178)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>ectopia</td>
<td>42</td>
<td>24.3</td>
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<tr>
<td><em>Ureaplasma urealyticum</em></td>
<td>36</td>
<td>20.8</td>
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<tr>
<td><em>Mycoplasma hominis</em></td>
<td>4</td>
<td>2.3</td>
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<tr>
<td><em>Ureaplasma urealyticum and Mycoplasma hominis</em></td>
<td>7</td>
<td>4.0</td>
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<tr>
<td>GBS</td>
<td>23</td>
<td>13.3</td>
</tr>
</tbody>
</table>

The frequency of GBS isolation was 13.3% in chlamydia-positive and 14.6% in chlamydia-negative women. All isolated GBS strains were sensitive to ampicillin, only 9.6% of strains were resistant to erythromycin and 7.7% – to clindamycin. Cervical ectopia was confirmed in 26.5% (93/351) of examined women. In 42 out of them ectopia was associated with cervical chlamydial infection.

In regions, where early screening program for detection of *C. trachomatis* infection was established, percent of infection is very low: in the USA – 4.7%, in Sweden – 5.4%, in Norway – 2.4% (Bakken et al., 2004, Egger et al., 1998, Miller et al., 2004). In Poland, frequency of *C. trachomatis* infection in studied groups of symptomatic and asymptomatic women is around 20–40% (Choroszy-Król et al., 1994, Giedrys-Kalemba et al., 1994, Zbroch et al., 2004). It is a well-known fact that cervicitis may be a predisposing factor for cervical ectopia (Critchlow et al., 1995, Giedrys-Kalemba et al., 1994). In our study in 45.2% of women with cervical ectopia we showed co-existence of *C. trachomatis* infection. It is in concordance with the data of other authors: 46.9% reported by Giedrys-Kalemba et al. (1994) and 39.7% by Barnes et al. (1990). However, when analyzing cervical ectopia rate in women with and without *C. trachomatis* infection, we obtained similar results (24.3% and 28.7%, respectively).

Urogenital mycoplasmas are frequently isolated from clinical samples. We did not notice differences in frequency of colonization by urogenital mycoplasmas among women with chlamydial and non-chlamydial cervicitis. The ratio was 27.2% and 24.7%, respectively (Table I). Maeda et al. (2004) did not observe statistically significant differences in the frequency of isolation of mycoplasmas among NGU patients with and without chlamydial infection. *U. urealyticum* was isolated much more often than *M. hominis*, which agrees well with the results of other authors (Keane et al., 2000, Schlicht et al., 2004). Schlicht et al. (2004) showed high prevalence of genital mycoplasmas among sexually active young women with cervicitis (54% for ureaplasmas and 26% for *M. hominis*). They also observed a high level (16%) colonization of healthy female volunteers by mycoplasmas. High level of mycoplasmal colonization in asymptomatic women was also reported by Keane et al. (2000): appropriately 29% for *U. urealyticum* and 12% for *M. hominis*.

In our study we demonstrated 14% of GBS-positive swabs obtained from vaginal fornix. We did not observe any significant correlation between occurrence of *C. trachomatis* and GBS or urogenital mycoplas-
mas and GBS. Honig et al. (2002) did not demonstrate any correlation of vaginal colonization with GBS and chlamydial infection or other STIs. Frequency of isolation for these streptococci from the urogenital tract of healthy women was estimated to be 7% to 34% (Bayo et al., 2002, Manning et al., 2001).

In spite of long-time using of penicillins in the treatment of streptococcal infections GBS are still sensitive to this group of antibiotics. The sensitivity of GBS to penicillins and percentage of resistance to erythromycin (9.6%) and clindamycin (7.7%) in our study was similar to that reported by others (Stiller et al., 2003, Weisner et al., 2004).

Our study confirms high frequency of C. trachomatis infection among women with cervicitis in the region of Upper Silesia. However we demonstrated that C. trachomatis infection does not influence urogenital colonization by mycoplasmas and GBS.

**Literature**


