

## Presence of *Chlamydia Trachomatis* in the Women's Urethra During a Concomitant Generic Infection of Cervix Uteri

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### Abstract

#### Key words:

Genital infection; *Chlamydia trachomatis*; urethra; screening method.

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The objective of our research was to determine the presence of *Chlamydia trachomatis* in the women's urethra in patients with an infection of cervix but without symptoms for a urinary infection. The study included 74 patients, 46 (62%) of which had subjective symptoms and 28 patients (38%) that didn't have subjective symptoms for a genital infection. Urethral and cervical swabs were taken from all the patients included in the study. *Chlamydia trachomatis* was isolated from 18 patients (24.3%). Of these 18 patients, 10 patients had symptoms for a genital infection and 8 patients didn't have symptoms for a genital infection. *Chlamydia trachomatis* was detected both in cervix uteri and the urethra in 16 patients, only in cervix uteri in one patient and only in the urethra in one patient. The obtained data shows that there is no significant difference in the presence of *Chlamydia trachomatis* in the groups of patients with and without symptoms for a genital infection, as well as a high degree of correlation between the presence of *Chlamydia trachomatis* in the urethra and cervix uteri, which in turn allows the introduction of the method of taking a urethral swab to detect *Chlamydia trachomatis* as a screening method.

### Introduction

Sexually transmitted infections are a major global cause of acute illness, infertility, long-term disability and death, with serious medical and psychological consequences for millions of men, women and children. *Chlamydia trachomatis* is one of the leading causes for sexually transmitted diseases, carrying with it the subsequent risk of pelvic inflammatory disease, infertility, ectopic pregnancies etc. The high prevalence of *Chlamydia trachomatis* recorded among the female adolescents (24%-27%) (1,2), as well as its association with young age (3) stresses the importance of screening for chlamydial infections in the sexually active women. Taking specimens from the

cervix in order to diagnose an existing *Chlamydia trachomatis* infection requires certain conditions to be met (it should be done in a gynecology clinic etc.), which in turn means greater expenses. Often, *Chlamydia trachomatis* colonizes the woman's urethra, without causing any symptoms of a urinary tract infection (4). Taking specimens from the female urethra in order to diagnose a *Chlamydia trachomatis* infection does not require any special conditions, and doing so would greatly reduce the costs for screening the female population for chlamydial infection (5-7).

The aim of the study was to determine the presence of *Chlamydia trachomatis* in the female urethra in patients with an infection of cervix uteri that

do not show symptoms of a urinary tract infection.

### Materials and methods

The prospective study included 74 patients. Forty six (62%) of these patients had subjective symptoms for an existing genital infection (dispareunia, intensified vaginal secretion, genital itching, irregular genital bleeding), and 28 patients (38%) had no apparent subjective symptoms, but had objective indications for an existing genital infection (erythema, oedema and intensified vaginal secretion). None of the examined patients had subjective symptoms that would point to an existing urinary tract infection. Only the patients that had not taken any antibiotics (orally or vaginally) for at least 4 weeks prior to the examination were taken into account. The average age of the patients was 25.5 years (17-42). Both the cervix and the urethra were swabbed; the specimen was then treated with acetone and was delivered to the laboratory no later than 2 hours after it was taken.

Direct immunofluorescence (IMAGEN™ *Chlamydia trachomatis*, DAKO) was used to detect *Chlamydia trachomatis*. All tests were performed in the laboratory of the Institute of Microbiology and Parasitology of the Medical Faculty in Skopje, Republic of Macedonia. The statistical analysis of the acquired data was performed using the standard statistical methods. The correlation between the presence of *Chlamydia trachomatis* in the cervical and urethral swabs was calculated using the F(fi) coefficient of correlation, and the significance of the results was calculated using the formula for determining the statistical significance of the difference between two proportions:

$$Z = \frac{|P_1 - P_2|}{\sqrt{\frac{P_1 \times Q_1}{N_1} + \frac{P_2 \times Q_2}{N_2}}}$$

Where,  $P_1$  = women from the symptomatic group in which *Chlamydia trachomatis* was detected;  $P_2$  = women from the asymptomatic group in which *Chlamydia trachomatis* was detected;  $Q_1$  = women from the symptomatic group in which *Chlamydia trachomatis* was not detected;  $Q_2$  = women from the asymptomatic group in which *Chlamydia trachomatis* was not detected;  $N_1$  = number of women in the symptomatic group; and  $N_2$  = number of women in the asymptomatic group.

### Results

The data from a total of 74 patients was processed. A positive result for *Chlamydia trachomatis* (according to the nomenclature of the referent laboratory) was found in 18 patients (24.3%) (Fig. 1).

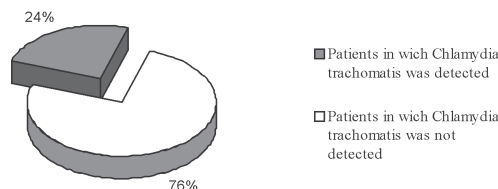


Figure 1: Positive results for *Chlamydia trachomatis*.

*Chlamydia trachomatis* was isolated in 10 patients (21.73%) out of 46 patients that had subjective symptoms and in 8 patients (28.57%) out of the 28 patients that did not have subjective symptoms (Fig. 2).

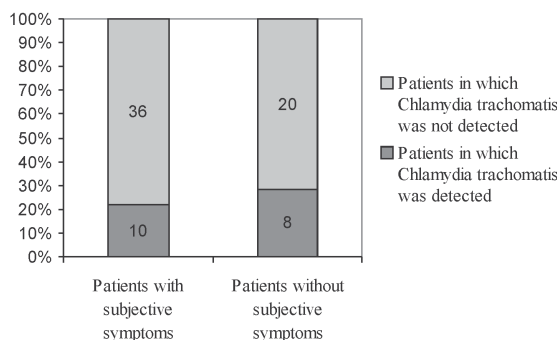


Figure 2: Distribution of *Chlamydia trachomatis* in the groups of patients with and without subjective symptoms for sexually transmitted infections.  $Z = 0.68$ .

Out of the 18 patients positive for *Chlamydia trachomatis*, in 16 patients (88.89%) *Chlamydia trachomatis* was isolated from the cervix and urethra, in one patient it was isolated only from the cervix and in another it was isolated only from the urethra (Fig. 3).

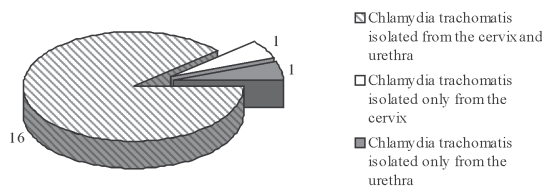


Figure 3: Presence of *Chlamydia trachomatis* in the cervix and urethra.

## Discussion

In the last couple of years, the prevalence of sexually transmitted diseases on a world-wide scale is growing considerably. According to the data provided by the WHO, there are around 500 million new cases registered in the period 2005 alone. A large portion of these infections are *Chlamydia trachomatis* infections (8). The detection of *Chlamydia trachomatis* in the genital tract requires certain conditions and sophisticated equipment which significantly increases the cost of the method and makes it not suitable for undeveloped countries. That imposes the need to simplify the diagnostic method and lowering its cost, thus making it more available. According to the research conducted by Batteiger & Jones, 1987, the prevalence of *Chlamydia trachomatis* in the sexually active female adolescents (a population regarded as the population with the highest risk) is generally higher than 10% and is as high as 40% in certain groups of adolescents and women (9).

*Chlamydia trachomatis* was detected in 24% of the examined group in our study. From the 46 patients with subjective symptoms for genital infection, *Chlamydia trachomatis* was detected in 21.73% of the patients, and from the 28 patients without any subjective symptoms, *Chlamydia trachomatis* was detected in 28.57% of the patients. Taking into account that this is not a selected group, the prevalence of *Chlamydia trachomatis* (20%-30%) is considerably high. At the same time, the fact that most of the chlamydial infections are not accompanied by the presence of subjective symptoms was confirmed i.e. there is no significant difference in the presence of *Chlamydia trachomatis* in the groups of patients with and without subjective symptoms ( $Z=0.68$ ). All this points out to the need to implement a screening program to detect *Chlamydia trachomatis* in the general population.

The cervix and the urethra are most commonly affected by the chlamydial infection. Our study showed a high percent of simultaneous presence of *Chlamydia trachomatis* in the urethra and the cervix (94.4%). Considering the fact that *Chlamydia trachomatis* was detected using the same method (swabbing the cervix and urethra and using direct immunofluorescence), one could conclude that *Chlamydia trachomatis* can be detected reliably using only a urethral swab. Doing so would lower the cost of the method and would increase its availability when conducting screening programs.

Based on the presented findings, one can conclude that the percent of detection of *Chlamydia trachomatis* in the examined group of patients is very

high. The asymptomatic infections with *Chlamydia trachomatis* are as common as the infections with symptoms. The urethral swab is a solid specimen for detecting chlamydial infection in women with symptoms (100% matches).

The high rate of isolated *Chlamydia trachomatis* from the female urethra during concomitant genital infections and without any symptoms of a urinary tract infection allows the use of urethral swabbing as a screening method in identifying *Chlamydia trachomatis* infections.

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