Original Research Article

A Study On Chlamydial Cervicitis Among Women Of Reproductive Age Group Presenting To The Out Patient Department Of A Tertiary Care Centre Of Bihar

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Abstract

Introduction: Worldwide, Chlamydia trachomatis (CT) is the most common bacterial sexually transmitted infection (STI), with approximately 105.7 million new infections occurring annually. Untreated CT can lead to serious reproductive sequelae for women, including pelvic inflammatory disease (PID), tubal factor infertility, ectopic pregnancy, and an increased risk of acquiring other STIs. Hence, this study was planned to evaluate the burden of chlamydial cervicitis among women of reproductive age group attending a tertiary care centre of Bihar. **Methodology:** All women of reproductive age group Gynecology Outpatient Clinic at the Darbhanga Medical College and Hospital, Laheriasri, Bihar, India from January 2021 to December 2021 were included in the study. A total of 100 patients were eligible for enrolment. Ethical Committee approval for study protocol and written informed patient consents were taken for this study. Three Dacron-tipped endocervical swabs from patients. The first swab was transported to the laboratory in 0.2 M sucrose phosphate buffer chlamydial transport medium for C. trachomatis PCR assays. Two swabs were placed in two screw cap test tubes containing 2 ml pleuropneumonia-like organism (PPLO) broth for detection of Ureaplasma spp. and M. hominis. Statistical analysis was done using SPSS ver. 21.0 (IBM, Chicago). **Results:** C. trachomatis was detected in 17% of patients with urogenital infections. C. trachomatis infection was significantly associated with vaginal discharge, abdominal pain, low back pain, burning micturition and dyspareunia. Of all samples collected, 61 showed positive growth. Apart from 17 C. trachomatis positive samples, 20 were positive for Ureaplasma spp., 11 for M. hominis, 2 for N. gonorrhoeae, 1 for T. pallidum and 2 were HIV seropositive. Co-infection with Ureaplasma and M. hominis was detected in 8% of patients by PCR. **Conclusion:** Screening for C. trachomatis isolates could be useful for epidemiological characterization of circulating C. trachomatis strains in the community and could provide additional information for vaccine development.

Key Words: Chlamydial Cervicitis, Women of Reproductive Age Group

Introduction

Worldwide, Chlamydia trachomatis (CT) is the most common bacterial sexually transmitted infection (STI), with approximately 105.7 million new infections occurring annually[1]. Untreated CT can lead to serious reproductive sequelae for women, including pelvic inflammatory disease (PID)[2, 3], tubal factor infertility[1, 3], ectopic pregnancy[4, 5], and an increased risk of acquiring other STIs[6]. In addition, pregnant women are at an increased risk of having a preterm birth and giving birth to a low birth weight infant[7, 8]. Neonates born to infected mothers are more likely to have pneumonia and neonatal conjunctivitis[8].

As the rate of CT around the world has been climbing over the last decade[1], public health agencies have increasingly been concerned with identifying and screening populations at high risk and those who have the most serious consequences from untreated infections. Recommendations for screening have focused largely on adolescent and pregnant women[9, 10] due to the increased risk of long term adverse consequences of unidentified infections. These programs are based on information about the population based prevalence of CT and distribution of infection among age groups, ethnicities, and other subgroups of interest. Few studies have been conducted to determine the effectiveness of screening programs to reduce sequelae and have shown mixed results, but some have shown a decrease in PID, infertility, and ectopic pregnancy[11, 12].

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Though many studies of STIs have been done throughout the country, most of this piece of information has focused on high risk populations, mainly HIV positive women and female sex workers[13, 14]. Information on the general population of childbearing age women is sparse and spread between studies conducted in diverse geographical settings. Hence, this study was planned to evaluate the burden of chlamydial cervicitis among women of reproductive age group attending a tertiary care centre of Bihar.

Methodology

All women of reproductive age group Gynecology Outpatient Clinic at the Darbhanga Medical College and Hospital, Laheriasri, Bihar, India from January 2021 to December 2021 were included in the study. Patients who had been treated with antibiotics within the past four weeks and those who tested positive for bacterial vaginosis and Candida were excluded, whereas patients tested positive for Niesseria gonorrhoeae, Treponema pallidum and HIV were included in the study. A total of 100 patients were eligible for enrolment. Ethical Committee approval for study protocol and written informed patient consents were taken for this study.

Three Dacron-tipped endocervical swabs from patients. The first swab was transported to the laboratory in 0.2 M sucrose phosphate buffer chlamydial transport medium (7.5 g sucrose, 0.052 g KH_2PO_4, 0.122 g K_2HPO_4, 72 g glutamine, 10 µg/ml gentamycin, 10 µg/ml amphotericin B) for C. trachomatis PCR assays. Two swabs were placed in two screw cap test tubes containing 2 ml pleuropneumonia-like organism (PPLO) broth for detection of Ureaplasma spp. and M. hominis. The PPLO broth for Ureaplasma spp. contained 2.1 g PPLO broth (Difco, USA), yeast extract (25%), horse serum (unheated), urea solution (50% w/v), penicillin solution (10^4 units/ml), trimethoprim

(7.5 mg/ml), and phenol red (0.2 % w/v), and for M. hominis 2.1 g PPLO broth, yeast extract (25%), horse serum (unheated), arginine (20%), penicillin solution (10^4 units/ml), trimethoprim (7.5 mg/ml), thallium acetate solution (1/80 w/v), and phenol red (0.2% w/v).

Statistical analysis was done using SPSS ver. 21.0 (IBM, Chicago). Multivariate analysis was done and results have been tabulated to show crude Odd's ration and the respective p value. A P value of < 0.05 has been considered significant.

Results

C. trachomatis was detected in 17% of patients with urogenital infections. The presenting symptoms and demographic characteristics of patients with urogenital infections in relation to C. trachomatis status are given in Table 1. The mean age of the patients was 33.6 ± 6.2 yr. C. trachomatis infection was significantly associated with vaginal discharge, abdominal pain, low back pain, burning micturition and dyspareunia.

Of all samples collected, 61 showed positive growth. Apart from 17 C. trachomatis positive samples, 20 were positive for Ureaplasma spp., 11 for M. hominis, 2 for N. gonorrhoeae, 1 for T. pallidum and 2 were HIV seropositive. Co-infection with Ureaplasma and M. hominis was detected in 8% of patients by culture and/or PCR. U. parvum (biovar 1) was detected in 17 out of 20 and Ureaplasma urealyticum was detected in 4 out of 20 patients. [Table 2] None of the patients were infected with both biovars. U. parvum isolates were further subtyped into different serovars. Serovar 3/14 (10/17) was the most frequent isolate followed by serovar 1 (4/17) and serovar 6 (3/17).

Table 1: Demographic and clinical characteristics in patients with positive growth of C. trachomatis among those with urogenital infections

Characteristic	Positive sample for C. trachomatis	OR	P value
Age (<32 years)	7/17	0.33	>0.05
Education (illiterate)	3/17	1.21	>0.05
Cervicitis	15/17	0.65	>0.05
Urethritis	14/17	0.62	>0.05
Vaginal discharge	15/17	3.21	**<0.05**
Abdominal pain	11/17	2.65	**<0.05**
Low back ache	9/17	1.52	**<0.05**
Burning micturition	14/17	2.76	**<0.05**
Pruritis	12/17	0.9	>0.05
Dyspareunia	13/17	1.74	**<0.05**

Table 2: Distribution of cases based on isolated organism

Isolated organism	Number
Chlamydia trachomatis	17/61
Ureaplasma spp.	20/61
Mycoplasma hominis	11/61
Neisseria gonorrhea	2/61
HIV	2/61
Treponema pallidum	1/61
Co-infection with M. hominis and ureaplasma spp.	8/61

Discussion

Genitourinary tract infections due to C. trachomatis are a major cause of morbidity in sexually active individuals[15], and women carry the major burden of the disease[16]. In the present study, C. trachomatis was found in 12.3 per cent samples by PCR assays; similar detection rates of C. trachomatis in patients with urogenital infections have been reported in previous studies from developing countries[17]. In our study, the highest rate of chlamydial infections was found in ≤30 yr of age group. This is the sexually active group and more vulnerable to sexually transmitted infection (STI) acquisition[18, 19]. A multivariate analysis showed that the most common presenting symptoms which were significantly associated with C. trachomatis-infected women were vaginal discharge, low back pain and dysuria. The clinical presentation was similar to those described in previous studies[20, 21].

Ureaplasma spp. and M. hominis have been implicated in a variety of clinical conditions primarily related to lower genital tract colonization and infection. In the present study also a significant proportion of study population with urogenital infections were infected by genital mycoplasmas. Similar rates of infection have been reported by others[22, 23]. Among the Ureaplasma isolates, U. parvum (Biovar 1) was the most prevalent and serovar 3/14 was the most frequent serovar detected, suggesting a possible pathogenic role of U. parvum serovar 3/14. The non-ulcerative STIs caused by C. trachomatis and genital mycoplasmas, namely Ureaplasma spp., and M. hominis, potentially increase the susceptibility of acquiring and transmitting HIV[24]. Our study highlighted the importance of early laboratory diagnosis and specific treatment of these agents as these increase the risk of transmission many folds when exist together.

Conclusion

In conclusion, patients infected with C. trachomatis have a significant risk of being infected with other STIs, namely U. urealyticum and HIV, suggesting screening of these agents along with C. trachomatis. Screening for C. trachomatis isolates could be useful for epidemiological characterization of circulating C. trachomatis strains in the community and could provide additional information for vaccine development.

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