ORIGINAL ARTICLE

PREVALENCE OF *CHLAMYDIA TRACHOMATIS* AMONG ASYMPTOMATIC WOMEN

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Background: *Chlamydia trachomatis* is a ubiquitous pathogen worldwide and causes ocular, urogenital, and respiratory infections in humans. *C. trachomatis* infection of lower genital tract is one of the most prevalent sexually transmitted diseases (STDs) in different parts of the world. Their treatment, follow-up, and hopefulness for future is very important. Objectives of this study were to see the prevalence of *Chlamydia trachomatis* infection among women of child bearing age and to determine the incidence of Chlamydia infection in neonates of women infected with Chlamydia. **Methods:** This observational study was carried out in Department of Obstetrics & Gynaecology, CMH Abbottabad, and Department of Ophthalmology, Women Medical College Abbottabad from January 2012 to June 2012. Urine samples were collected from 200 women aged 20–39 years attending Obs/Gyn Department of CMH Abbottabad. After delivery, babies who were born to mothers with infection of their genital tracts were examined with a 2.5×binocular loupe within a week of birth to rule out eye infection (Chlamydia Ophthalmic neonatorum). **Results:** The overall prevalence of *Chlamydia trachomatis* was 4% in 200 eligible patients. The overall incidence of *Chlamydia trachomatis* in neonates was 1.66%. **Conclusion:** A significant proportion of women resident of Abbottabad District expressed evidence of exposure to *Chlamydia trachomatis* and significant number of neonate eyes were infected with the pathogen.

Keywords: *Chlamydia trachomatis*, Chlamydia ophthalmic neonatorum, Sexually Transmitted Disease

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INTRODUCTION

Chlamydia trachomatis is a ubiquitous pathogen worldwide and causes ocular, urogenital, and respiratory infections in humans.[1] *C. trachomatis* infection of lower genital tract is one of the most prevalent sexually transmitted diseases (STDs) in different parts of the world.[2] Worldwide, an estimated 92 million new cases of *C. trachomatis* infection occur each year. More than two-thirds of these cases occur in the developing world where diagnostic and treatment services are scanty.[3] Asymptomatic in nearly 80.0% of women and 40.0% of men,[4] and untreated genital infections have serious ramifications for reproductive health of women as it may evolve into complications such as ectopic pregnancy, pelvic inflammatory disease, salpingitis with tubal scarring and infertility in women[5]. Undiagnosed and untreated chlamydial infections are thus not only creating major health problems and consequences for individuals but also result in major epidemiological, social and economical problems. The developing countries have a high incidence of new chlamydial infection, however, with the exception of sporadic testing, screening for Chlamydia is rare. The prevalence of chlamydial infection among women, specifically sex workers, in developing countries varies from 8.5% to 37.0%.[6] The prevalence among female sex workers ranged from 27.0–36.0% in Philippines, while it is 24.0% in Bangladesh.[7] The incidence of chlamydial infection in female sex workers in Surat India was estimated to be 8.5%.[3] The prevalence of sexually transmitted diseases could be as high as 17.6% among females from tribal population[4] to varying degree in metropolitan cities. It has been estimated that there are approximately 4 million new *C. trachomatis* infection each year in the USA.[8]

Chlamydial infection in woman is known as a 'silent' infection, because most infected people have no symptoms. If symptoms do occur, they may not appear until several weeks after exposure. Even when it causes no symptoms, Chlamydia can damage a woman's reproductive organs. In women, the bacteria first infect the cervix and/or the urethra. Some infected women have an abnormal vaginal discharge or a burning sensation when urinating. Untreated infections can spread upward to the uterus and fallopian tubes, causing pelvic inflammatory disease (PID) which can be silent, or can cause symptoms such as abdominal and pelvic pain. Even if PID causes no symptoms initially, it can lead to infertility, and other complications later on.

The risk of neonatal infection, at delivery may be more than 50% in pregnant women with active cervical infection. The most common clinical manifestation is neonatal conjunctivitis, which usually presents between the 3rd and 13th day of life. The severity of the conjunctivitis may range from a mild 'sticky eye', to severe inflammation and discharge and closure of the eyes. An untreated neonatal infection may lead to a severe pneumonitis between the 4th and 12th weeks of life.[9]

Sexually transmitted infections (STIs) cause significant morbidity and mortality in the United States each year. The Center for Disease Control and Prevention (CDC) estimates that 19 million new infections occur annually in the United States, almost one half of which occur in persons 15 to 24 years of age. This includes an estimated 2.8 million new Chlamydia infections and 1.6 million new genital herpes infections.

Since 2000, the US Preventive Services Task Force (USPSTF) has issued 8 clinical recommendation statements on screening for STIs. The USPSTF recommends that women at increased risk of infection be screened for Chlamydia, gonorrhoea, HIV, and syphilis. Pregnant women at increased risk should be screened for Chlamydia and gonorrhoea. Non-pregnant women and men not at increased risk do not require routine screening for sexually transmitted infections. Engaging in high-risk sexual behaviour places persons are at increased risk of sexually transmitted infections. The USPSTF recommends that all sexually active women younger than 25 years be considered at increased risk of Chlamydia and gonorrhoea. Because not all communities present equal risk of STIs, the USPSTF encourages physicians to consider expanding or limiting the routine sexually transmitted infection screening they provide based on the community and populations they serve.[10]

In England and Wales the aims of NHS National Chlamydia Screening Programme (NCSP)[11] were to:

1. Prevent and control Chlamydia infection through early detection and treatment of asymptomatic infection;
2. Reduce onward transmission to sexual partners;
3. Prevent the consequences of untreated infection; at least 25% should be tested.

Therefore, a closer attempt should be made to correlate risk factors and disease entity when screening for *C. trachomatis* and the choice of laboratory investigations. Thus, in the populations at high risk of the disease, it would be more effective to detect antigen especially in sexually active young women. The objectives of the present study were to determine the prevalence of *C. trachomatis* infection, in women reporting to Obs/Gyn Department of CMH Abbottabad and determine the incidence of *C. trachomatis* infection in neonates of women infected with *C. trachomatis*.

PATIENTS AND METHODS

The subjects were married, pregnant and non-pregnant women, aged 20−39 years (mean age 30.11 years, median 31 years). A questionnaire for the collection of information on age, level of education, contraceptive method, symptoms and fertility status was completed. Patients who were receiving antibiotics were excluded.

The urine samples were collected for Chlamydia Antibody Testing (CAT) in patients. The recommended sample size was 200. The patients were sent to collection point of Aga Khan University Karachi in Abbottabad for samples of urine collection. After delivery, babies born to mothers with infection of their genital tract were examined with a 2.5×binocular loupe within a week of birth for chlamydial ophthalmic neonatorum.

RESULTS

Our study included 235 eligible participants over a period of 6 months (Jan−Jun 2012). Thirty-five participants refused to participate due to cost effectiveness of the test, and the remaining 200 constituted the study population. The subjects were married, pregnant and non-pregnant women, aged 20−39 years (mean age 30.11 years, median age 31 years).

Among patients, 17.5% were between 20 and 24 years of age, 21% were between 25 and 29 years, and 39.5% were 30 years and above.

Eighty patients were infertile and 6 (7.5%) were positive for *C. trachomatis*. In the rest of sample 120 were fertile and 2 (1.66%) were positive for *C. trachomatis*. Lower abdominal pain was found in 50 patients and 3 (6%) were positive for *C. trachomatis*. From 120 fertile women who were positive for *C. trachomatis*, 2 (1.66%) newborn were positive.

Table-1: Demographic data of the patients

Characteristics	No. tested	*C. trachomatis* positive	%
Infertility			
Yes	80	6	7.5
No	120	2	1.66
Low abdominal pain			
Yes	50	3	6
No	150	5	3.33
Low back pain			
Yes	54	2	3.7
No	146	6	4.1
Age group (years)			
20−24	35	4	11.42
25−29	42	3	7.14
30−34	79	1	1.26
35−39	44	0	0
Residence			
Rural	126	1	0.79
Urban	74	7	9.45

DISCUSSION

C. trachomatis is an obligate intracellular pathogen and can cause numerous disease states in both men and women.[12] The patients can display urethritis, proctitis, trachoma, and infertility. The bacterium can cause prostatitis and epididymitis in men. In women, cervicitis, PID, ectopic pregnancy, and acute or chronic pelvic pain are frequent manifestations. The infection is primarily issue of women healthcare since the

manifestation and consequences are more damaging to the reproductive health in woman than in man.[9] *C. trachomatis* is also an important pathogen in neonates, where it can lead to infections of the eye (trachoma) and pulmonary complications.[9] *Chlamydia trachomatis* is the single most important infectious agent associated with blindness; approximately 600 million people worldwide suffer from *C. trachomatis* eye infections and 20 million are blinded as a result of the infection.

The overall prevalence of *C. trachomatis* was found to be 4% in the present study. In a study from Makkah Saudi Arabia[13], 8.7% of the women were positive for IgG antibodies to *C. trachomatis* with antibody indexes of 1.4−2.0. The low prevalence in Saudi patient population may be due to the adherence of strict moral principles and code of ethics in Saudi Arabia. For these reasons, mucopurulent cervicitis is not commonly described among Saudi patients and very few patients suffer from this disease entity.[13]

In contrast, it has been shown in the USA and Europe that demographic factors which increase the risk of chlamydial infection include youth, non-white race, single marital status, multiple sexual partners and the use of oral contraceptives in women.[14] Therefore, a closer attempt should be made to correlate risk factors and disease entity when screening for *C. trachomatis*. In the populations at high risk of the disease, it would be more effective to detect antigen especially in sexually active young women.

It has been found out in our study that *Chlamydia trachomatis* is an important causative factor in infertile women. In a study from Mumbai India[15] in 2012, results similar to ours were reported from their local population.

Statistical analysis revealed significant association between current *C. trachomatis* infection with infertility when comparing infected fertile. Significant proportions of infected women with infertility and with recent pregnancy were asymptomatic. Infected women who became negative after treatment conceived with end result of live pregnancy.

Lower abdominal pain and low backache was more during pregnancy in our patients. These symptoms were found in some women with Chlamydia.[16] This infection is easily spread because it often causes no symptoms and may be unknowingly passed to sexual partners. In fact, about 75% of infections in women and 50% in men are without symptoms.[17] It is more common (11.42%) in younger group (20−24 year).

In our study, the 2 newborns were suffering with follicular trachomitis. The high risk of *Chlamydia trachomatis* could be prevented by treating the expecting mothers if detected in time. This can also reduce incidence of blindness in the community.

CONCLUSION

A significant proportion of women resident of Abbottabad District expressed evidence of exposure to *Chlamydia trachomatis* and many of neonates eyes are infected by the pathogen. It is recommended that every woman should be investigated, and treated if need be for, *Chlamydia trachomatis* infection before delivery.

REFERENCES

1. Sexually Transmitted Diseases –Chlamydia, CDC for Disease Control and Prevention National center for STDs. Available from: www.cdc.gov/std/chlamydia/ [Accessed Mar 4, 2013]
2. Jeanne M. Clinical manifestation and diagnosis of *Chlamydia Trachomatis* infection. Available from: http://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-chlamydia-trachomatis-infections [Accessed on May 2nd 2013]
3. Patel LA, Sachdev D, Nagpal P, Chaudary U, Sonkar AS, Mendiratta LS, *et al*. Prevalence of Chlamydial infection among women visiting a gynaecology outpatient department: evaluation of an in-house PCR assay for detection of *Chlamydia trachomatis*. Ann Clin Microbiol Antimicrob 2010;9:24–33.
4. Rao VG, Anvikar A, Savagaonkar D, Bhatt J, Tiwary BK, Abbad A. Prevalence of sexually transmitted disease syndromes in tribal population of central India. Epidemiol Community Health 2009:63:805–6.
5. Bébéar C, deBarbeyrac B. Genital *Chlamydia trachomatis* infections. Clin Microbiol Infect 2009;15:4–10.
6. Kim AA, Sun LP, Chhorvann C, Lindan C, Van Griensven F, Kilmarx PH, *et al*. High prevalence of HIV and sexually transmitted infections among indirect sex workers in Cambodia. Sex Transm Dis 2005;32:745–51.
7. Nessa K, Waris SA, Alam A, Huq M, Nahar S, Chawdhury FA, *et al*. Sexually transmitted infections among brothel-based sex workers in Bangladesh: high prevalence of asymptomatic infection. Sex Transm Dis 2005;32(1):13–9.
8. Chlamydia: Definition with Chlamydia Pictures and Photos Case studied in USA. Available from: www.lexic.us/definition-of/chlamydia. [accessed on May 5th 2013]
9. Jupelli M, Murthy AK, Chaganty BK, Guentzel MN, Selby DM, Vasquez MM, *et al*. Neonatal chlamydial pneumonia induces altered respiratory structure and function lasting into adult life. Lab Invest 2011;91:1530−9.
10. Mevers D, Wolff T, Gregory K, Marion L, Mover V, Nelson H, Petitti D. *et al*. USPSTF recommendations for STI Screening. Am Fam Physician 2008;77:819−24.
11. National Chlamydia Screening Programme –Data tables. Available from: http://www.swpho.nhs.uk/resource/item.aspx?RID=71424 [Retrieved on 28-8-2009]
12. Ryan KJ, Ray CG. (Eds). Sherris Medical Microbiology (4th ed.). McGraw Hill: 2004. p. 463–70.
13. Ghazi HO, Daghestani MH, Mohamed MF. Seropositivity of *chlamydia trachomatis* among Saudi pregnant women in Makkah. J Family Community Med 2006;13(2):61–4.
14. Qadri SM, Akhter J, Ingacio K. Incidence of *Chlamydia trachomatis* in a large Metropolitan in Saudi Arabia. Saudi Med J 1993;14:152–5.
15. Mania-Pramanik J, Kerkar S, Sonawane S, Mehta P, Salvi V. Current *Chlamydia trachomatis* Infection, A major cause of infertility. J Reprod Infertile 2012;13(4):204−10.
16. Chlamydia infections in women: MedlinePlus Medical *Encyclopedia*. Available from: www.nlm.nih.gov/medlineplus/ency/article/000660.htm
17. Chlamydia in Women/Men: Symptoms, Treatments. Available from: www.webmd.com/sexual-conditions/guide/chlamydia.

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