Screening for *Chlamydia Trachomatis* Infection among Pregnant Women in a Tertiary Care Hospital

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**ABSTRACT**

To determine the prevalence of Chlamydia trachomatis urogenital infection and to identify behavioral, demographic, and clinical factors associated with the infection in pregnant women’s. One-hundred-eleven patients 15-39 years old, at 10-16 weeks of gestation and attending the prenatal clinic at our hospital, were tested for Chlamydia trachomatis infection by using ELISA IgM to screen all the young women with PID, Infertility for Chlamydial infections. 50 negative groups were included in the study. In this cohort, out of 111 patients 76 (68.5%) pregnant women were found positive for IgM antibodies. The cut off value for ELISA test is 0.558. Pregnant women’s within the age of 20-35 were taken positive if the value is 0.558 and 0.999 with less than >1.000 were low positive. So out of 76 positive patients 48 (43.24%) were low positive by ELISA IgM and 28 (25.22%) were in the high positive category in the age group 25-32 years. Statistical significance was observed when high positive and negative groups were compared. High positivity was observed mostly in the first trimester of the pregnancy. None of the factors associated with chlamydial infection was sensitive enough to permit efficient selective screening. It is cost effective to recommend a routine screening for chlamydial infection together with an educational program. We stress the importance of large-scale screening of pregnant women for C. trachomatis infection, particularly in developing countries where sophisticated techniques for collection/diagnosis are as yet unavailable.

**Keywords**

Infection, ELISA, technique

**Article Info**

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**Introduction**

Chlamydia trachomatis is one of the most common sexually transmitted treatable infection worldwide. *C. trachomatis* are silent clinical infections having a major public health concern (1). In women’s *C. trachomatis* infection can lead to tubal infertility, Pelvic inflammatory disease, ectopic pregnancy etc (2-5). During pregnancy chlamydia infection influences the pregnancy outcomes such as premature membrane rupture, low birth weight, mortality and other infections involving conjunctiva and respiratory infections (6-8).

Untreated co morbid sexually transmitted infection (STI) predisposes the risk of acquiring HIV with early detection and treatment of STI’s burden of HIV can be reduced (9-25). Screening of *C. trachomatis* in pregnant women can reveal the prevalence rate of *C. trachomatis*. In general the prevalence rate ranges from 0-37% with
underlying associated comorbid risk factors including socioeconomic status and age of the patients (23,25). Diagnosis of STI’s in developing countries is essential based on symptoms, physical examination, clinical criteria than laboratory diagnosis. Hence we undertook the study to assess the prevalence of *C.trachomatis* infection in pregnant women.

**Materials and Methods**

**Study design**

**Demographic details**

The patient’s details were obtained from hospital record and the information recorded include age, sex, clinical diagnosis, duration of hospital stay, antibiotic usage.

**Sample size**

111 from study population, 50 samples from healthy women's were collected served as a control group.

**Samples collected**

Blood collected and Serum separated

**Hospital**

Meenakshi Medical College & Research Institute, Kanchipuram.

**Period of study**

March 2019- July 2019

**Age group**

15-39 years old

**Inclusion criteria**

Pregnant women's at 10-16 weeks of gestation are included.

Prior to antibiotics administration samples were collected.

**Exclusion criteria**

Prior diagnosed STI patients were excluded

**Methods**

A total of 111 blood samples were collected from study group population after getting their informed consent. 50 samples from healthy women's were collected served as a control group. The study was carried out in Department of Microbiology, Meenakshi Medical College Hospital and Research Institute, Kanchipuram.

The study was approved by Institutional ethical board. All the blood samples were collected and transported to Microbiology laboratory. The serum was separated and stored until use.

**IgM ELISA**

Detection of IgM antibodies against *C.trachomatis* was done from serum samples collected. The IgM was detected using the ELISA kit (Novum diagnostics) following the manufacturer’s instruction. The sample were considered positive for IgM if the absorbance value is more than 10% of the cutoff value as per manufacturer’s protocol.

**Results and Discussion**

Out of 111 patients 76 (68.5%) pregnant women were found positive for IgM antibodies. The cut off value for ELISA test is 0.558. Pregnant women’s within the age of 20-35 were taken positive if the value is 0.558 and 0.999 with less than >1.000 were low positive. Out of 76 positive patients 48
were low positive by ELISA IgM. 28 (25.22%) were in the high positive category in the age group 25-32 years. (Table 1, Graph 1). In our study all the positive patients both high and low positivity were in the age group of 25-32 years of age (Table 2, Graph 2).

In our study 111 pregnant women’s included of which 76 (68.5%) were positive which includes high and low positivity whereas in control group population only 4 (8%) were positive for presence of IgM against C.trachomatis (Graph 3).

Statistical significance were observed when high positive and negative groups were compared (p<0.05). High positivity was observed mostly in the first trimester of the pregnancy. No statistical significance was observed in the control group.

In the present study prevalence of C.trachomatis is 25.22% observed which is less compared to global reports with 29.4%, 38.3%, 56.1% respectively (26-29). The present study differs from others in age group, geographic distribution and socioeconomic status of the individual with similar method of diagnosis (30). In the present study when age group is compared to rate of prevalence of infection we found 25-32 years are more prone which is almost concordant with other studies which reports 25-29 years having higher rate of C.trachomatis infection (30). When high positive rate of C.trachomatis infection was compared in our study we observed females in 1st trimester are more prone for high positive C.trachomatis infection which is similar to other studies (31).

Early detection and prompt treatment of STI’s are the only strategy to prevent the infection (32). Regular screening of asymptomatic STI’s will have major impact on public health and will have financial burden on patients quality care. In accordance with other studies we observed that improved routine cost effective periodic screening to detect C.trachomatis infection would reduce the disease burden considerably (33-39).further studies with large sample size and molecular methods detection of C.trachomatis will give a clear insight about the magnitude of C.trachomatis infection.

**Table.1 Number positivity in study and control group population**

| Total Number of samples | High Positivity (%) | Low Positivity (%) |
|-------------------------|---------------------|--------------------|
| Study population (N=111)| 28 (25.22%)         | 48 (43.24%)        |
| Control population (N=50)| 4 (8%)              | -                  |

**Table.2 Age wise distribution among study and control group**

| Age (years) | Study group (n=111) | Control group (N=50) |
|-------------|---------------------|----------------------|
|             | High Positivity     | Low positivity       | High Positivity | Low Positivity |
| 15-25       | 0                   | 0                    | 0               | 0              |
| 25-35       | 28 (25.22%)         | 48 (43.24%)          | 4 (8%)          | 0              |
| 35-45       | 0                   | 0                    | 0               | 0              |
Total chlamydia trachomatis IgM positivity

Graph.1 Number positivity in study and control group population

Age wise positivity of chlamydia trachomatis infection

Graph.2 Age wise distribution among study and control group

Comparison of positivity among pregnant and healthy cases

Graph.3 Shows the comparison of positivity between Pregnant and healthy individuals
Since it is cost effective we emphasis a routine screening for chlamydial infection together with an educational program. From our study we stress the importance of large-scale screening of pregnant women for *C. trachomatis* infection and access to treatment among the high risk patients which would substantially reduce the risk of HIV transmission and disease progression.

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