



**SEROPREVALENCE OF IGM ANTIBODY TO CHLAMYDIA TRACHOMATIS AMONG
ANTENATAL WOMEN PRESENTING WITH GENITAL INFECTION ATTENDING
GOVERNMENT MATERNITY HOSPITAL, SV MEDICAL COLLEGE, TIRUPATI**

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ABSTRACT

Chlamydia trachomatis is an obligate intracellular Gram-negative bacterium and is a sexually transmitted bacterial pathogen. It may produce cervicitis, urethritis, pelvic inflammatory disease and also adverse pregnancy outcome. Apart from culture methods, detection of IgM antibodies to Chlamydia trachomatis antigen among pregnant women may help for the early diagnosis. Since Chlamydia trachomatis is an important preventable disease early diagnosis and appropriate treatment will help in preventing adverse pregnancy outcome.

KEYWORDS: Chlamydia trachomatis, Pregnancy, Abortions, ELISA, Premature rupture of membranes(PROM).

INTRODUCTION

Maternal infections play a critical role in influencing the outcome of pregnancy and their occurrence is a significant factor in patients with Bad Obstetric History (BOH). Chlamydia trachomatis is an obligate intracellular Gram-negative bacterium and is a sexually transmitted bacterial pathogen. More than 10% of women of reproductive age report a history of Chlamydia trachomatis disease and 5 to 12% of adequate endocervical swabs have been reported positive. Ascending of Chlamydia trachomatis l infection can lead to endometritis and salpingitis an infertility. It also causes urethritis, epididymitis and prostatitis in men. The organism can be transmitted from the mother to her offspring causing conjunctivitis and pneumonia in infants. Hence in developing countries like India where there are no National programmes to detect Chlamydia trachomatis infection among pregnant women, steps for treating high risk groups for chlamydial infection can prevent maternal and neonatal morbidity. Chlamydia trachomatis infection is identified as one of the most common sexually transmitted infections (STIs) worldwide^[1] In United states and in UK genital Chlamydia infection caused by Chlamydia trachomatis is the most frequently reported bacterial sexually transmitted infection with its highest prevalence amongst young men and women.^[2,3] It was also observed that

mothers with Chlamydia trachomatis infection had a higher incidence of preterm deliveries and Low Birth Weight (LBW) babies.^[4] Further, more recent cohort studies support the association of maternal Chlamydia trachomatis with low birth weight (LBW), preterm delivery and intrauterine growth retardation. The prevalence of Chlamydia trachomatis infection among pregnant women in India is unclear. The prevalence rate, available from hospital settings ranges from 2 to 35%. The present study was conducted to address these issues. Chlamydia trachomatis is an obligate intracellular Gram-negative bacterium. In women, the bacteria may cause cervicitis, urethritis and may also cause pelvic inflammatory disease (PID), which may be asymptomatic.^[5] Infection with this agent mostly asymptomatic, which makes diagnosis difficult. In many countries the incidence of ectopic pregnancy is increasing and it remains the principal cause of maternal death in the first trimester of pregnancy. Chlamydia trachomatis is one of the important cause of spontaneous abortion and ectopic pregnancy.^[6] The asymptomatic nature of Chlamydia trachomatis infection makes screening essential and regular screening will help to identify most infections in order to reduce rates of adverse sequelae among these in women and to control this infection.^[7] The 'gold standard' for detection of chlamydia is still considered to be cell culture. Culture is

100% specific, but estimates of sensitivity are as low as 50%. As the urogenital infections with these bacteria are usually asymptomatic, determination of antibodies to *Chlamydia trachomatis* antigens may be useful in determining whether a patient has had a previous infectious encounter.^[8] Further enzyme-linked immunosorbent assay (ELISA) was considered to be cost effective tool in widespread screening of asymptomatic pregnant women because it is inexpensive and was easy to do and does not require skilled personnel to interpret the result.

Aims and Objectives

Aim of the present study is to know the prevalence of *Chlamydia trachomatis* among in antenatal women by screening them for serum IgM antibodies to *Chlamydia trachomatis* by ELISA. Then to correlate the seropositivity with adverse outcomes of pregnancy.

MATERIAL AND METHODS

A total number of 186 blood samples were collected from antenatal women who attended Government Maternity Hospital, attached to Sri Venkateswara Medical College, Tirupati, during the period of July 2011 to August 2012. The blood samples were processed for serum IgM antibodies to *Chlamydia trachomatis* in the department of microbiology, Sri Venkateswara Medical College, Tirupati. This study was conducted after ethical approval from the ethical committee of S.V. Medical College. Written consent was taken from all the antenatal women participated in the study.

Among the 186 blood samples 156 blood samples were collected from the antenatal women with previous bad obstetric history as test group and 30 blood samples were collected from the antenatal woman with normal pregnancy outcome in previous pregnancies as the control group. Among the 156 test group samples there were samples collected from antenatal women with

different bad obstetric history as was shown in the table 1.

Following aseptic precautions 5ml of venous blood was drawn from each woman, serum was separated and stored at -20° C until tested. All the samples were screened for *C.trachomatis* specific IgM antibodies by Enzyme Linked Immunosorbent Assay (ELISA) using "Anti *Chlamydia trachomatis* IgM ELISA" kit of Euroimmune following the manufacturer's instructions. The ELISA test kit provided a semiquantitative in vitro assay for human antibodies of the IgM class against *Chlamydia trachomatis* in serum. Validity of the assay was verified according to manufacturer's instructions.

Results were evaluated by calculating a ratio of extinction value of the control or patient sample ÷ extinction value of calibrator. The results were interpreted as Negative if Sample / Calibration was less than 0.8 Borderline if it was between 0.8 to 1.1 and Positive it was more than or equal to 1.1.

RESULTS

A total number of 186 blood samples (156 + 30) were screened for IgM antibodies against *Chlamydia trachomatis*, using Anti *C.trachomatis* IgM kit by ELISA, as per the manufacturer's instructions. Of the 186 blood samples 156 blood samples from antenatal women with bad obstetric history formed the Test group and the remaining 30 samples from the women with previous normal deliveries formed the control group. Results showed that among the test group, 8 (5.12%) were positive for IgM antibodies to *Chlamydia trachomatis* and in the control group, 1 (3.33%) were positive for IgM antibodies to *Chlamydia trachomatis*

Results for IgM seropositivity among subgroups with different bad obstetric history was shown in the table 1.

Table: 1

| Bad obstetric history | No. of samples tested | No. of positives | Percentage |
|--|-----------------------|------------------|------------|
| Repeated abortions | 82 | 5 | 6.097% |
| Intra uterine death | 26 | - | - |
| Preterm delivery with IUD | 8 | - | - |
| Preterm delivery with repeated abortions | 5 | - | - |
| PROM with recurrent abortion | 1 | 1 | 100% |
| Congenital malformations | 1 | - | - |
| Still births | 14 | 1 | 7.143% ^ |
| Abortion with intrauterine devices (IUD) | 19 | 1 | 5.26% |
| TOTAL | 156 | 8 | 5.128% |

Accordingly highest percentage of seropositivity was observed in the cases of Premature rupture of membranes (PROM) with (100%) followed by cases with Still birth (7.143%), recurrent abortions (6.097%), abortion with intrauterine devices (IUD) (5.128%)

The results were also compared in relation to the samples collected from urban and rural populations. Among 97

urban samples 5 samples (5.154%) and among 59 rural samples 3 samples (5.084%) were seropositive for IgM antibodies to *Chlamydia trachomatis*. The results showed no much difference among urban or rural population.

With reference to seropositivity among different age groups, our study as in table 2 showed that seropositivity

for Chlamydia trachomatis was more prevalent among age group between 18 years to 25 years.

Table: 2.

| Age | No of cases | IgM positive | % of positivity |
|-------|-------------|--------------|-----------------|
| 18-25 | 36 | 8 | 22.22% |
| 26-30 | 80 | - | - |
| >30 | 40 | 1 | 2.5% |

The results are also compared in relation to urban and rural population in Table 3. This table shows that Chlamydia trachomatis infection is equally prevalent

among both urban population (5.154%) and rural population (5.084%).

Table: 3.

| Area | Total cases | Positives | Percentage |
|-------|-------------|-----------|------------|
| Urban | 97 | 5 | 5.154% |
| Rural | 59 | 3 | 5.084% |

DISCUSSION

Infection with Chlamydia trachomatis can be a major health problem in pregnancy as majority of pregnant women are asymptomatic and the infection can persist for extended periods in undiagnosed and untreated cases. Chlamydia trachomatis becomes responsible for adverse pregnancy outcome in most of the antenatal women with Bad Obstetric History. With availability of screening tests like ELISA a large population can be screened. Antenatal screening is necessary to prevent subsequent complications in mother and neonates. Though culture is 'gold' standard technique for diagnosis of Chlamydia trachomatis, it is expensive and is limited to only some tertiary care centers. IgM antibody assay considered to be more specific for active or recent infection. The detection of specific IgM antibody to Chlamydia trachomatis is helpful in determining pregnant women with recent infection and to treat them. Present study was undertaken at the department of Microbiology to study the prevalence of IgM antibody to C. trachomatis among pregnant women attending to government maternity hospital, attached to S.V. Medical college, Tirupati during the period from July 2011 to August 2012. Pregnant women were studied for the prevalence of IgM antibody and assessed the effect of Chlamydia trachomatis I infection on the outcome of pregnancy.

The present study shows the evidence that Chlamydia trachomatis infection during pregnancy is associated with premature rupture of membranes. Also young age was the independent risk factor for Chlamydia trachomatis infection among pregnant women. In the present study, among the pregnant women with genital infections, IgM antibody to Chlamydia trachomatis was positive among 8 (5.12%) of them and among healthy antenatal women IgM antibody to Chlamydia trachomatis was positive only in one (3.33%) antenatal women and the results of which are in concordance with other studies.^[9,10,11] Chlamydia trachomatis infection is common in the age group of less than 25 years^[12,13,14,15] and similar results were observed in my study. In the present study, 22.22% IgM sero positivity was observed

in 18 -25 years of age group. If not treated Chlamydia trachomatis infection in pregnant women may result adverse outcomes of pregnancy like abortions, preterm delivery, premature rupture of membranes and low birth weight.^[16,17,18,19] In the present study also, adverse outcome of pregnancy were observed among pregnant women who are positive for IgM serology to Chlamydia trachomatis. Here highest percentage of seropositivity was observed among cases of still birth (7.143%) followed by recurrent abortions (6.097%) and among abortion with IUD (5.128%). In this study no significant difference in prevalence between rural(5.084%) and urban (5.154%) population was noted. Similar such results were found in other studies.^[20]

CONCLUSION

This study indicate that infection with Chlamydia trachomatis is more common among young women. The study also indicates that routine screening and appropriate treatment for Chlamydia trachomatis should be made a part of routine prenatal care to reduce these adverse pregnancy outcomes, and for those with prior history of adverse pregnancy out come like recurrent abortions etc the screening should be made mandatory. One such screening test may be of IgM antibody detection for the Chlamydia trachomatis antigen. Since Chlamydia trachomatis is an important preventable disease early diagnosis and appropriate treatment will help in preventing adverse pregnancy outcome.

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