

Original Research Article

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Detection of Chlamydia Trachomatis Specific IgM Antibodies among Women of Reproductive Age Group Attending a Tertiary Care Hospital of South India

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ABSTRACT

Keywords

Chlamydia trachomatis, Sexually transmitted diseases, Pregnant women

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Sexually transmitted infections (STIs) have a major impact not only on the reproductive health of women but fetus also. *Chlamydia trachomatis* infection of the lower genital tract is one of the most prevalent sexually transmitted diseases in the world. Hence, the present study was undertaken to assess the presence of *C. trachomatis* infection among the pregnant women. The study population includes 300 pregnant women of all gestational age with clinical symptoms of genital infections. ELISA test was done to detect seropositive IgM antibodies. Among the 300 samples 42 blood samples were Chlamydia trachomatis IgM-seropositive with a prevalence of 14%. This information provides evidence for the need of implementing active screening of *C. trachomatis* genital infection in sexually active pregnant women belongs to all socioeconomic groups.

Introduction

Chlamydia trachomatis is an obligate intracellular bacterium causing genital tract infections in man. Sexually transmitted infections (STIs) have a major impact not only on the reproductive health of women but fetus also. Centre for Disease Control and Prevention (CDC) notified that genital Chlamydial infection was found to be one among the five sexually transmitted diseases such as gonorrhea, Human

Immunodeficiency Virus (HIV) infection, syphilis, and hepatitis B (Papp *et al.*, 2014) According to the World Health Organization (WHO) reports, 101 million Chlamydial infections annually reported (WHO, 2005).

The knowledge of the prevalence of the *C. trachomatis* genital infection is essential for the design of appropriate Chlamydial infection control programs. Though countless research information has been explored about the

genital infections caused by *C.trachomatis*, at National and International level, still it seems less research information are revealed by the Indian authors comparatively (Jayanti *et al.*, 2012). Hence, the present study was undertaken to assess the presence of *C.trachomatis* infection among the pregnant women.

Materials and Methods

The study was conducted for a period of three years from March 2015 to November 2018 as part of PhD thesis after obtaining institutional ethical clearance. The study population includes pregnant women of all gestational age with clinical symptoms of genital infection coming for antenatal check-up in Azeezia medical college hospital, Kollam. Patients consent was obtained before collecting sample. A total of 300 blood samples were collected and ELISA test (Novatec *chlamydia trachomatis* Germany) was done to detect IgM antibodies.

Statistical Analysis

The statistical Analysis was performed by using Systems software SPSS version 20.0. Chi-square was used to assess differences in proportions and p values <0.05 were considered statistically significant.

According to the manufactures instruction, serum samples were stored in the deep freezer (-70°C to -20°C) was taken out and kept at room temperature for one hour and then it is diluted as 1:100 and that was subjected to the ELISA test assay. Each diluted (1:100) sera (100µl) was dispensed in to the microtitre wells, and 100 µl each of positive control, negative control and cut-off control which was supplied by the manufacturer also delivered to the specified micro well. Then the microtitre plate was covered by the foils supplied with the kit and incubated for 1 hour at 37°C. After incubation, 300µl of wash buffer was added in

to each well and kept for 5 seconds, then discarded the content and washed 3 times.

After washing, 100µl of the conjugate was dispensed to all micro wells and incubated for 30 minutes at room temperature. Then the wells were washed and add 100 µl of Tetra Methyl Benzidine (TMB), substrate solution to the wells, incubated for 15 minutes at room temperature in dark. Added 100 µl of stop solution (0.2 molar sulphuric acid) and microtitre plate was measured by ELISA reader with the absorbance at 450/620 nm within 30 minutes after the addition of the stop solution (Fig. 1).

Results and Discussion

Among the 300 samples 42 blood samples were Chlamydia trachomatis IgM-seropositive with prevalence of 14%. *Chlamydia trachomatis* infection was more prevalent in patients with pelvic inflammatory diseases (PID), urethritis and cervicitis (Mylonas 2012). In our study, patients with mucopurulent discharge were found to be more predominant with *C.trachomatis* IgM positivity. Ohman *et al.*, 2012, Peuchant *et al.*, in 2015 documented the highest prevalence rate of *C. trachomatis* infection among younger women of reproductive age.

The ELISA was based on a synthetic peptide from the immunodominant region of the major outer membrane protein (Das and Allan, 2006).

It is thought that *C. trachomatis* may infect the fetus, triggering a harmful inflammatory response with cytokine release leading to miscarriage, premature rupture of membranes, or preterm labor or possibly causing a maternal inflammatory response that induces embryonic rejection due to homology of the Chlamydial and human 60 KDa heat shock proteins (Goldenberg *et al.*, 2011).

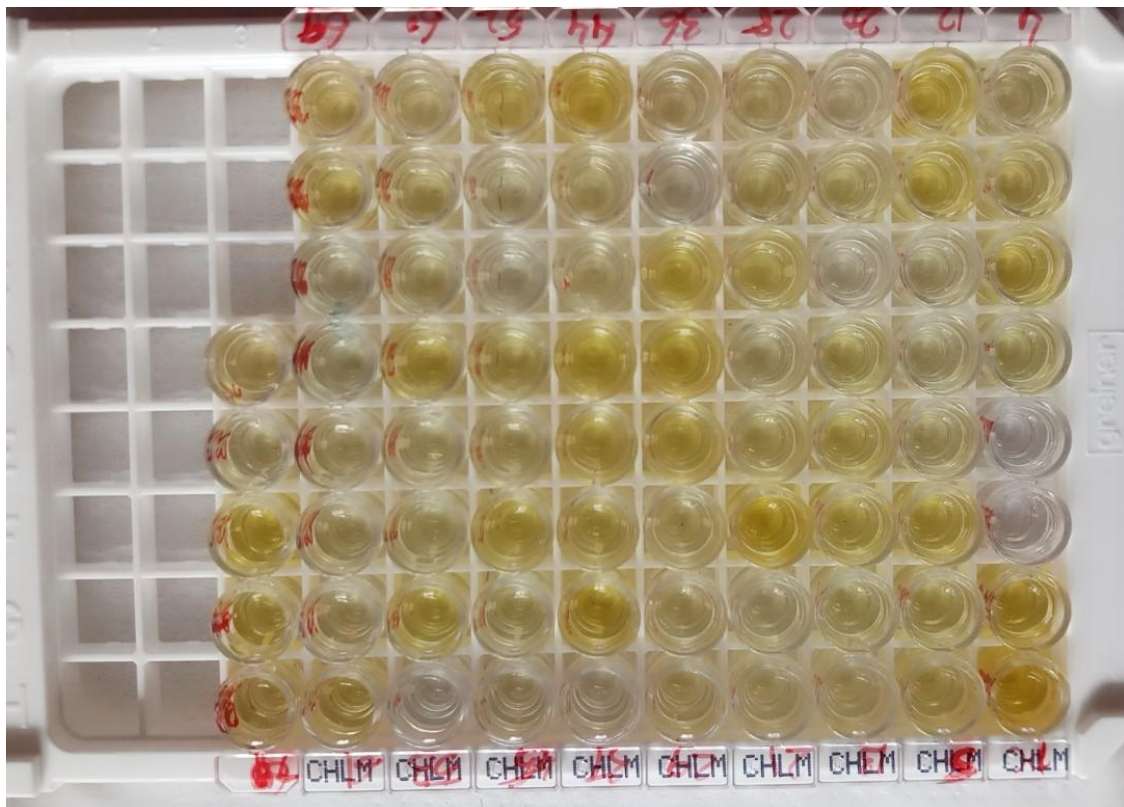
The current study also reveals the prevalence of *C. trachomatis* infection among the pregnant women at significant percentage. The overall prevalence observed by Singh *et al.*, (2003) and Patel *et al.*, (2010) from New Delhi, India also is in concordance with our study.

Historically, considerable obstacles have also prevented efforts to improve global *chlamydial* screening and treatment practices for pregnant women. In spite of molecular-based nucleic acid testing, more patient friendly specimen collection methods, and simple, highly effective, single regimens, few countries around the world have made *Chlamydia trachomatis* screening and treatment a priority for pregnant women. (Workowski and Bolan, 2015; Public health agency Canada, 2012).

Prevalence of *Chlamydia* genital infections remains significant in our study population especially in women of reproductive age living in highly urbanized areas. The enzyme immunoassay (EIA) is a commonly used front line assay for the diagnosis of *C. trachomatis* infection. Molecular methods are more sensitive than other methods, but they are also more expensive. The ELISA was based on a synthetic peptide from the immunodominant region of the major outer membrane protein.

This information provides evidence for the need of implementing active screening of *C. trachomatis* genital infection in sexually active pregnant women belongs to all socioeconomic groups. So it is pertinent to introduce screening of *C. trachomatis* as mandatory for pregnant women like HIV, HBV and VDRL screening during pregnancy.

Fig.1 Microtitre wells of *C. trachomatis* IgM ELISA



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