

***Chlamydia trachomatis* in Women with Full-Term Deliveries and Women with Abortion**

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Abstract: Problem statement: There are some documents which support the role of some certain infections such as *Chlamydia trachomatis* in spontaneous abortion. As there were not data about role this bacterium in abortion in this area of IRAN, this study was conducted to evaluate the prevalence of *Chlamydia trachomatis* in women with abortion and compare it with healthy women with no previous history of abortion. **Approach:** This case-control study was carried out in Shariatee hospital of Hormozgan University of medical sciences, during 2004-2005. A number of 220 women with definite diagnosis of previous abortion and 200 matched women with normal full term delivery and negative history of miscarriage as controls were studied as case and control groups. All obtained PAP smears from the case and the control groups were then tested using Immunoflourescent method for detection of *Chlamydia trachomatis*. Data was analyzed, using SPSS software (chi square and t-test). **Results:** The prevalence of positive direct immunofluorescent test on PAP smears indicating the presence of *Chlamydia trachomatis* was 56 (25.45%) in women with abortion comparing to 13 (5.20%) in women in control group, the difference was significant ($p = 0.0001$). **Conclusion:** This study showed *Chlamydia trachomatis* is an important causative agent for abortion in this area of IRAN.

Key words: *Chlamydia trachomatis*, spontaneous abortion, etiologic factor, direct immunofluorescent, sexually transmitted infections, full-term deliveries

INTRODUCTION

Most Sexually Transmitted Infections (STIs) caused by bacteria have been declining in industrialized countries since 1980, but they are of major public health concern in developing countries (Senise *et al.*, 2008).

Chlamydia trachomatis is also the most commonly reported noticeable disease in the US and the leading cause of bacterial STI in industrialized countries (Spiliopoulou *et al.*, 2005).

It is estimated that <10% of these cases are diagnosed, resulting in an adverse impact, especially in women not treated for this infection (Spiliopoulou *et al.*, 2005).

Infection with *C. trachomatis* can lead to severe complications of the reproductive tract and adverse pregnancy outcomes. The common clinical manifestations of this infection include cervicitis, pelvic inflammatory disease and tubal factor infertility (Singh *et al.*, 2010).

In pregnant women, *chlamydia* infection has been associated with an increased risk of ectopic pregnancy,

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preterm delivery, spontaneous abortions, low birth weight, premature rupture of membranes, perinatal mortality and postpartum endometritis (Mardh, 2002).

The prevalence and the risk factors of STIs in women differ by country and setting and by the existence of symptoms (Borges *et al.*, 2010). Reports have shown that risk factors for *Chlamydia trachomatis* infection are: Age 18-27 years, non-use of contraceptives, frequent post-coital bleeding, painful maturation, urban residence, low income, cervical infection, polygamous marriage and mucopurulent cervical discharge (Singh *et al.*, 2002).

The aim of this study was to determine the frequency of *Chlamydia trachoma* is women with abortion and healthy women in this aria of IRAN.

MATERIALS AND METHODS

This cross sectional and descriptive study was conducted at in the delivery population of University Hospital (Hormozgan Province, Iran) between Feb. 2004-Jun. 2005, to investigate whether prevalence of *Chlamydia trachomatis* in two groups of women with spontaneous abortion and without history of abortion to determine a relation between the role of *Chlamydia* infection in abortion as well as factors which might have an influence in the pathogenesis of this infection.

Cases were 220 women who were identified with spontaneous abortion by gynecologist during the study period and control group consisted of 200 asymptomatic women with no history of abortion and full term delivery who were referred to Hormozgan University Hospital.

All subjects gave written consent for obtaining their blood samples according to research purposes. PAP smears were taken from all women in both groups.

A structured interview using a standard maternal questionnaire was administered by trained interviewers with the women at their first visit. Questions were asked about the following: age, parity, gynecologic and medical history of abortion, residence and socioeconomic status.

The direct immunofluorescent technique was performed using fluorochrome conjugated anti-*Chlamydia trachomatis* from bioMerieux company, Ref. 97001 to detect *Chlamydia trachomatis* in the PAP smears were taken from all women in both groups.

Data analysis: For assessment of risk factors for *Chlamydia trachoma* is infection (exposure), characteristics of case patients and control subjects were examined using a two-sample Student t test. Cross-tabulation and chi-square or Fisher exacts tests were used to examine the relationship between variables using a 95% confidence interval as a measure of association.

Also, univariate odds ratios 0.19 and 95% Confidence Intervals (CIs) using the exact method were calculated. All data analyses were performed using SAS 8 Statistical Software (SAS Institute, Inc., Cary, NC).

RESULTS

The mean age of participants was 25.6±7.6 and 25.3±6.5 years in the pregnant women with abortion and with full term delivery, respectively. The mean gestational age was 8 weeks and the mean parity was 2.52 children in abortion group. The mean gestational age was 37±2 weeks and the mean parity was 2.2 children in full term group. There was no significant difference between age and parity in two groups (p = 0.650) (Table 1).

The prevalence of positive direct immunofluorescent test on PAP smears indicating the presence of *Chlamydia trachomatis* was 56 (25.45%) in women with abortion comparing to 13 (5.20%) in women in control group, the difference was significant (p = 0.0001).

There was a significant association between woman's age (<25 years) and CT infection; age <25 years was associated with a significantly higher risk of CT infection in the both groups.

We did not find any statistically significant association between positive PAP smear test for *Chlamydia trachomatis* and residence (city or village) and between positive PAP smear test for *Chlamydia trachomatis* and parity neither in patients nor in healthy women.

Table 1: Baseline data of case and control groups*

Variables	Cases n = 250	Controls n = 200	p-value
Age (year)	24.6±7.4	25.6±7.2	0.650
Residence city	186 (84.54%)	154 (77.0%)	0.040
Village	34 (15.45%)	46 (23.0%)	

*: Data are presented as n (%) or mean ± standard deviation

DISCUSSION

According to significant difference between the prevalence of *Chlamydia trachomatis* infection in women with abortion 25.45% compared women with full-term deliveries 5.20%, *Chlamydia trachomatis* is an important causative agent for abortion in this area of IRAN.

Studies conducted in the Islamic Republic of Iran are very limited. A studies in the north of the country, the prevalence of *Chlamydia trachomatis* in pregnant women was 11.60% in Babol (north of IRAN) (Bakhtiari and Firoozjahi, 2007), which is lower than our finding. Other reports from STI clinics or only in symptomatic women (2.3-12%) are also lower than our result which suggests that the *Chlamydia trachomatis* prevalence obtained in our study is relatively high (Claeys *et al.*, 2002).

Previous studies *Chlamydia trachomatis* suggested as an etiologic factor for spontaneous abortion (Wilkowska-Trojnieł *et al.*, 2009; Avasthi *et al.*, 2003; Bakhtiari and Firoozjahi, 2007).

In a study performed by Abdul-Karim *et al.* (2009) *Chlamydia trachomatis* suggested as an etiologic factor for spontaneous abortion in Baghdad, Iraq.

In a research performed by Wilkowska-Trojnieł *et al.* (2009) *Chlamydia trachomatis* suggested as an etiologic factor for spontaneous abortion in Bialystok, Poland.

In a research performed by Avasthi *et al.* (2003) *Chlamydia trachomatis* suggested as an etiologic factor for spontaneous abortion in Ludhiana.

Previous studies about etiologic factors for abortion in this area of IRAN (Bandarabbas), infectious agents such as *Listeria monocytogenes* (Jamshidi *et al.*, 2009), *Toxoplasma gondii* (Jahromi, 2007) and Cytomegalovirus (Jahromi *et al.*, 2010) and also immunologic factor such as anticardiolipin antibody and antinuclear antibody (Jahromi *et al.*, 2002) were suggested as important causative agents for spontaneous abortion.

In some countries socio-economic and demographic factors (Alpu and Kurt, 2004), dengue virus (Alvarenga *et al.*, 2009) and Women age and their parity (Adeleke and Adepoju, 2010) were suggested as cause of abortion.

CONCLUSION

In conclusion, as *Chlamydia trachomatis* infection is a sexually transmitted disease, thus as well as a sexual health promotion policy for controlling STIs, specific preventive and intervention strategies for

Chlamydia trachomatis should be developed and targeted among the sexually active general population. These include promotion of community awareness about STIs by the media and the establishment of STI clinics free of charge. Additionally, because sexual activity in men is probably less limited in comparison with that in woman, women are often infected through their male partners. Because of social barriers, high-risk sexual behavior in our community is not recognized or admitted. Thus if we do not address this situation, STIs will remain unknown and under-diagnosed and-treated in the community and may develop into a real public health problem.

ACKNOWLEDGMENT

We thank the staffs of the Shariatee Hospital of Bandar Abbas who provided the sera and the staff at the Microbiology department of Hurmozgan University of Medical Sciences for their help in processing and testing the sera.

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