Prevalence of *Chlamydia trachomatis* among Iranian Women, Tehran, Iran

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Sexually transmitted infection (STIs) are a major global cause of acute illness, infertility, long term disability and death with severe medical psychological consequence for millions of men, women and infants. Meanwhile, Chlamydia trachomatis which is a gram negative bacteria could place a heavy burden on women and neonatal health, consist of chronic pelvic pain, pelvic inflammatory disease, ectopic pregnancy, infertility, infant pneumonia and neonatal ophtalmia. The world health organization (WHO) estimated that 90 million cases occur annually on a global basis and in young women the proportion infected ranges from 8–40%, with a median of about 15%. In Iran the information about prevalence of chlamydia trachomatis is rare, so having more information could help to prepare complete static about situation of infection and also could help to mother and children healthy.

In this study we had 3 groups of women who referred to gynecologist for genital problems, D&C or spontaneous abortion. With dacron swab, specimens were gathered and placed in 2sp medium for each patient and reservoir in -70°C refrigerator for molecular detection. Consequently with 2 pairs of primers Nested PCR were done. Our result revealed that the prevalence of chlamydia Trachomatis among 3 groups in order of was 35%, 43%, 43.8%, mean of prevalence between 3 groups was: 40.6%, there is not significant difference between 3 groups.

Key words: *Chlamydia trachomatis*, Genital infection, Prevalence.

Chlamydia trachomatis is a gram negative bacteria with a unique biphasic life cycle: Elementary body which is transmissible form of the organism capable of extracellular survival attaches to a susceptible epithelial cell to initiate the cycle and replicative form of the organism. In addition to ocular trachoma, Chlamydia trachomatis serovar D&K can causes genital infections in male and female with different consequences, from an asymptomatic infections to symptomatic ectopic pregnancy or mucopureulent cervicitis, inflammatory disease (PID) in women or urethritis in males and pneumonia, neonatal ophtalmia in infants and children. According to the world health organization (WHO) in most countries Chlamydia trachomatis is the most common bacterial sexually transmitted infection worldwide. The prevalence of Chlamydia trachomatis in the world is differ from one country to another, according to WHO information most of data comes from countries like USA, Britain, Sweden, Norway and Denmark but data from developing and indeveloping countries are rare or poor, The prevalence of Chlamydia in
women of developing countries like Asian or African countries is rare and spreading.

**MATERIALS AND METHODS**

**Bacterial isolates**

In the present descriptive study 200 patients in 3 groups were enrolled: group 1 consisted of 100 women who referred to gynecologist at Imam Hossein hospital, Tehran, Iran for having vaginal discharge with bleeding, abdominal pain or dysuria. Group 2: 50 women with oligomenorea or hypermenorea having D&C in surgery room. Group 3: 50 pregnant women who had spontaneous abortion in surgery room. For all specimens (a Dacron swab with entrance to endocervical canal and rotate it for 60 seconds were taken then the swabs were placed in 2sp (2-sucrose phosphate transport medium) and placed on ice then transfer to laboratory of molecular microbiology, faculty of medicine, shahid beheshti university of medical sciences, Tehran, Iran. referrergeratedat -70 c for next work.

DNA Extraction and nested PCR: DNA was extracted from bacteria by using DNA isolation columns (Bioneer Korea) according to the manufacturers procedures. By designing of a pair of primers which amplified a 500 bp fragment of OMPA gene. Nested PCR were done, with following protochole:

External Primers for PCR1: TGA ACC AAGCCT TAT GAT CCA C, TAG AGG CAT CCT TAG TTC CTG

Internal Primers for PCR2: TTG GTG TGA CGC TAT CAG CAT G, AGC ATA TTG GAA TGA AGC TCC

PCR1: Primer forward=0.5µl, primer revers: 0.5µl, DNAtemplate 5 µl, Mastermix 12 µl, H₂O 7 µl. **total volume=25 µl.**

PCR2: Primer forward=0.5µl, primer revers: 0.5µl, DNAtemplate 5 µl, Mastermix 12 µl, H₂O 7 µl. **total volume=25 µl.**

**RESULTS**

From 200 patients in this study, 80 cases were positive for chlamydia trachomatis. In table 1 the prevalence of Chlamydia trachomatis in 3 groups were shown: group 1 consist of 100 women (35 number were positive =35%), group 2 consist of 50 women (21 number were positive =42%) and group 3 consist of 50 women (22 number were positive =44%). The mean of prevalence among 3 groups is 40% and there are not a significant difference between 3 groups. The mean age of group 1 was 36.2, group 2 was 39.2 and group 3 was 27 year old.

<table>
<thead>
<tr>
<th>Table 1. Prevalence of chlamydi Trachomatis among 3 groups of women:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive result for PCR</td>
</tr>
<tr>
<td>GROUP 1</td>
</tr>
<tr>
<td>GROUP2</td>
</tr>
<tr>
<td>GROUP3</td>
</tr>
</tbody>
</table>

Pvalue=0.345 (0.05)

**Table 2. The mean age of women among 3groups**

<table>
<thead>
<tr>
<th>Mean age</th>
<th>Total number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>36.2</td>
</tr>
<tr>
<td>Group 2</td>
<td>39.2</td>
</tr>
<tr>
<td>Group 3</td>
<td>27</td>
</tr>
</tbody>
</table>

GROUP 1 = paatients with cervicitis
GROUP2 = paatients refer for D&C
GROUP3 = paatients with spontaneous generation

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DISCUSSION

According to CDC information the prevalence of chlamydia trachomatis in American women from 1989 through 2008 were risen from 102.5 to 401.3 cases per 100,000 population.\(^6\)\(^7\) In European women by information from ECDC was 203/100000population in 2010\(^5\)\(^8\). In different countries of Asia there are different report of prevalence. In a recent study The prevalence of CT in south India was 10.5%\(^9\) in both male and female and in men from Taiwan was 7.9%\(^10\) and in fertile student with active sexualbehaviour was 12.5%\(^11\). In Bangladesh the prevalence of bacteria in women with cervicitis was 21.6% and in asymptomatic women was 44.1%\(^12\). Another study in Bangladesh of sex worker women and sexually active women was 58% and 27%\(^13\).

In Tehran, Iran the prevalence of chlamydia trachomatis in women with cervicitis between 2003-2004 was 15.5%\(^14\). With urine of pregnant women in east of Iran (Sabzevar) the prevalence was 15.8%\(^15\). With comparison of infertile women with fertile women the prevalence of chlamydia trachomatis was 29% and 19%\(^16\). Another study on pregnant women and their children the prevalence in women was 15.5% and their children with neonatal ophtalmia was 11.7%\(^17\). In Zanjan, Northwest of Iran women who referred to gynecologist was 10.3%\(^18\) and in north of Iran (Babol) was 14.6%\(^19\). Other study from women with sexually active behaviour age (15-50) the prevalence was 14.9%\(^20\).

In our study with symptomatic women among 3 groups consist of women with bleeding, abdominal pain, vaginal discharge or referring for D&C or spontaneous abortion determined the prevalence of bacteria in order was 35%, 42%, 44% which notice to high prevalence of chlamydial infection in women, so it is important to pay attention of controlling programme on women health in order to prevent spreading and transmitting bacteria to their partners or their infants and also wide spectrum of complications.

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