PREVALENCE OF CHLAMYDIA TRACHOMATIS INFECTIONS IN KARACHI, PAKISTAN

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(Received April 8, 1991. Accepted December 17, 1991)

SUMMARY: An epidemiological study was carried out to determine the prevalence of Chlamydia infections in adult females by enzyme immunoassay and microscopic examination of Giemsa-stained smears. Endocervical swabs were collected from 126 females attending OB/GYN ward at Abbasi Shaheed Hospital, Karachi. 13.5% of 126 females tested were positive by enzyme immunoassay and only 5.6% were positive by the Giemsa-staining method. The infection rate among pregnant and nonpregnant women with urinogenital problems were 11.8% and 14.7%, respectively. The majority of females complained of excessive cervical discharge and pain in the lower abdomen. A high prevalence of infection in normal pregnant women (18.2%) indicates the asymptomatic nature of this infection.

Chlamydia trachomatis is an important agent of sexually transmitted diseases and of pneumonia and conjunctivitis in neonates (1). Female genital tract infections include mucopurulent cervicitis, endometritis, salpingitis and peri-appendicitis (2). Until very recently, the diagnosis of chlamydial infections was based on symptoms and history of contact with an infected person. Nowadays, however, improved cultural methods and the development of the antigen-detection test allow rapid screening for chlamydial infections. Cultures, however, are not commonly performed due to expense and time. Chlamydia
inclusions can also be detected in cervical smears by Giemsa and iodine staining techniques. There is an increasing incidence of urinogenital infections in adult females in Karachi, but the etiology of such infections is unknown. In this study an attempt was made to establish the prevalence of *C. trachomatis* infection in pregnant and non-pregnant women with urinogenital problems and to determine the association of *Chlamydia* if any with other bacteria present in the genital tract. Duplicate endocervical swabs were collected from women presenting with cervicitis (patient) and from apparently healthy women (control) attending for a regular check-up. One swab specimen from each patient and control in sucrose phosphate glutamate transport medium supplemented with streptomycin (50 µg/ml), vancomycin (100 µg/ml) and nystatin (25 units/ml) was agitated on a vortex mixer and the resulting suspension was used for making smears and for streaking on blood and chocolate agar plates supplemented with vancomycin, colistin and nystatin (VCN - bioMerieux, France) for the isolation of *Neissaria gonorrhoeae*. The plates were incubated at 37 C for 48 hr in a candle jar and the isolated bacteria were identified by standard methods (3). The air-dried smears were fixed with absolute methanol and then covered with a freshly prepared working solution of Giemsa's stain. After an incubation for 1 hr, smears were rinsed with 90% ethyl alcohol, dried and examined under a microscope for the presence of intracytoplasmic inclusion bodies and pus cells. The other swab was processed for the presence of *Chlamydia* antigen by an amplified enzyme immunoassay (IDEIA) according to the instructions of the manufacturer (Boots Cell-Tech Diagnostics, UK). Briefly, all specimens including the positive and negative controls were agitated on a vortex mixer for 15 sec, boiled in a waterbath for 15 min, cooled at room temperature, and then agitated again just before testing. Samples (200 µl) were added to antibody-coated wells. Each run included three negatives and one positive control. The reaction tray was incubated for 2 hr at room temperature in a moist chamber before addition of 50 µl of enzyme-conjugated monoclonal antibody-detector reagent and incubated for another hour. The plate was then washed and blotted, and substrate and amplifier were added in sequence. After the addition of a stopping solution, the plate was read in a Lab Systems ELISA reader at 492 nm. The cut-off was determined by adding 0.05 to the mean absorbance of the negative controls, and specimens having a value greater than the cut-off were considered positive.

Out of 126 cervical specimens screened for the presence of chlamydial antigen, only 17 (13.5%) were positive by the IDEIA method and seven (5.6%) were positive by the Giemsa-staining method. All of the latter seven were
positive in the IDEIA. A comparison of the two methods indicated the enzyme immunoassay to be far more sensitive for the rapid diagnosis of *Chlamydia* infections than the Giemsa-staining method. Among the various groups (pregnant with problems 11.8%, nonpregnant with problems 14.7% and normal pregnant 18.2%) of women included in this study, we observed a high incidence of *Chlamydia* in the normal pregnant group (Table I). Like Chernesky et al. (4) we found that both *Chlamydia*-positive and -negative patients experienced similar types of symptoms such as excessive cervical discharge, pain in the lower abdomen and a history of miscarriages. These observations suggest that chlamydial infections cannot be diagnosed on the basis of symptoms alone. A higher incidence of *Chlamydia* infection was recorded in women who were in their early stages of pregnancy (8 - 12th week). This could be due to less attention and care of women in the early stages and usually no sex during the last stages of pregnancy. The mean age of *Chlamydia*-positive women (26 years for pregnant and 35 years for nonpregnant) included in this study was found to be slightly higher than the earlier report of Mahony et al (5). This could be due to the fact that in western society women are sexually more active in their teens, whereas in

<table>
<thead>
<tr>
<th>Category of cases</th>
<th>Total number of cases</th>
<th>Number of cases Positive IDEIA</th>
<th>Number of cases Positive Giemsa</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Pregnant with problems*</td>
<td>34</td>
<td>4 (11.8%)</td>
<td>2 (5.9%)</td>
</tr>
<tr>
<td>(b) Nonpregnant with problems*</td>
<td>75</td>
<td>11 (14.7%)</td>
<td>5 (6.7%)</td>
</tr>
<tr>
<td>(c) Normal pregnant</td>
<td>11</td>
<td>2 (18.2%)</td>
<td>Nil</td>
</tr>
<tr>
<td>(d) Normal nonpregnant</td>
<td>6</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Total</td>
<td>126</td>
<td>17 (13.5%)</td>
<td>7 (5.6%)</td>
</tr>
</tbody>
</table>

an Islamic society like ours, the sexual life of a female starts only when she gets
married.

Although, concomitant isolation of *N. gonorrhoeae* and *C. trachomatis* has
been reported in literature (6), surprisingly none of our subjects was positive for
both the pathogens. From this limited study of 109 patients and 17 controls, we
can conclude that *C. trachomatis* infection is present in adult females in Karachi,
Pakistan. The incidence of this infection is 13.5% (17/126). These results may not
reflect the actual magnitude of infection in our community because we screened
only those women who attended the hospital during the course of this study. The
presence of *Chlamydia* in normal pregnant women indicated the asymptomatic
nature of this infection and the need for a routine screening of all pregnant
women in order to prevent the transmission of this pathogen to neonate while
passing through the infected birth canal.

ACKNOWLEDGEMENT

We thank Dr. Alan Freke of Boots Cell-Tech Diagnostic Limited, UK for
providing IDEIA reagents and University Grants Commission Islamabad,
Pakistan for providing an ELISA reader for this study.

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