Prevalence of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in Chilean asymptomatic adolescent males determined by urine sample

**Introduction**

Genital *Chlamydia trachomatis* infection is a sexually transmitted disease of special relevance because of its high frequency and severe complications. Sexually active adolescents are among the highest risk groups for this STD. As the infection is usually asymptomatic, it is necessary to apply screening methods to determine its real prevalence. The enzyme immunoassay (EIA) in first catch urine seems to be a simple and practical method for this purpose in males.1

This investigation was designed to establish the prevalence of *C trachomatis* and *Neisseria gonorrhoeae* genital infection in a group of asymptomatic adolescent males in Santiago, Chile, using urine samples.

**Methods**

A total of 154 males, aged 17–19 years, who attended senior schools in a low income area of Santiago, Chile, were studied between April 1993 and August 1994.

Subjects were interviewed, had a physical examination, and were asked to provide 25 ml of first catch urine. Those with symptoms or signs of urethritis, or those who had received antibiotics in the past 7 days were excluded.

*Chlamydia* antigen was detected with the Microtrak Chlamydia EIA (Syva Company, USA), using the cellular deposit. Polymerase chain reaction (PCR) targeting the C trachomatis outer membrane protein was also performed.

*Neisseria gonorrhoeae* was cultured from urine samples using Thayer–Martin media.

Those subjects with positive results were offered treatment with doxycycline. A clinical and laboratory follow up was done after treatment.

Sexual partners were offered the same treatment.

**Results**

The mean age of the subjects was 18 years and 3 months; 61 (39.61%) reported sexual intercourse. Two were positive for *C trachomatis* by EIA and PCR. Both denied previous coitus but admitted petting grade III (genital to genital contact, without coitus) with a female partner.

There was a total concordance between EIA and PCR tests in the analysed samples (table 1). Considering the PCR as our diagnostic gold standard for chlamydia infection, Microtrak Chlamydia EIA had a 100% sensitivity, specificity, positive and negative predictive values. No cases of *N gonorrhoeae* genital infection were detected.

<table>
<thead>
<tr>
<th>EIA</th>
<th>PCR</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>− −</td>
<td>− −</td>
<td>152 (98.71)</td>
</tr>
<tr>
<td>+ +</td>
<td>+ +</td>
<td>2 (1.29)</td>
</tr>
<tr>
<td>− +</td>
<td>+ −</td>
<td>0 (0)</td>
</tr>
<tr>
<td>− −</td>
<td>+ +</td>
<td>154 (100)</td>
</tr>
</tbody>
</table>

*First catch urine; EIA=enzyme immunoassay; PCR=polymerase chain reaction.*

The prevalence of genital *C trachomatis* was 1.29% in the total population and 3.17% in the sexually active adolescents. The positive subjects were treated, with good results. It was possible to treat only one sexual partner.

**Discussion**

We observed a prevalence of *C trachomatis* genital infection lower than those reported both among North American and Chilean adolescents. In the United States, prevalence rates vary from 8% to 35% in different groups of male and female adolescents.1 The only study previously performed on Chilean adolescents found a 6% rate in pregnant teenagers.3

Our observation that both infected individuals had probably only indulged in petting grade III stresses the importance that this could have as a mechanism of chlamydia spread between adolescents.

We did not find any cases of *N gonorrhoeae* infection. *N gonorrhoeae* prevalence in asymptomatic males ranges between 2.5% and 10%.6 Although urine is not ideal for its isolation, researchers have demonstrated good results using this diagnostic approach.6

This investigation received financial support from the Special Programme of Research, Development and Research Training in Human Reproduction, World Health Organisation, Project No 91447 INPA.

We thank Raquel Gerenzcineco, RN, and Jorge F Romero, MCo, for their contribution to this investigation.

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No differences in the prevalence of venereological disease in Norwegians compared with non-Norwegians

Material and methods

Data were retrospectively collected from the statistical system EPI-INFO and the patients were recorded as being born in Norway, or abroad.

Results

A total of 17 201 patients (10 108 men and 7093 women) visited the clinic in 1996 and 1997. There were 14 703 Norwegians (8412 men, 6291 women), and 2498 non-Norwegians (1696 men, 802 women). In all, 4258 men and 2385 women suffered from one or more of the following sexually transmitted diseases: chlamydia, urethritis, gonorrhoea, syphilis, lymphogranuloma venereum, herpes genitalis, condyloma acuminata, HIV, hepatitis B, C, or A (Table 1).

Discussion

The importance of analysing carefully the factors race and ethnicity have been stressed. African-American adolescents have shown high rates of STDs, which in part could be explained by racial and ethnic differences. In our data, covering 2 years with over 17 000 patients, we found no difference in incidence of STDs among Norwegians compared with non-Norwegians: 5705 out of 14 703 Norwegians (39%) and 938 out of 2498 non-Norwegians (38%) attending the clinic suffered from one or more STDs. Chlamydia infection was found in 16% of Norwegian and 17% in non-Norwegian patients, herpes genitalis was found in 7% irrespective of birth. However, differences were seen in the incidence of condylomata acuminata; 16% of the Norwegian patients vs 9% in the non-Norwegian population.

In Amsterdam, the STD prevalence was higher among men born in Turkey, and Surinam, compared with Dutch men. While Turkish men had mainly risky sexual behaviour with prostitutes, Surinam men had risky sexual contact more often with private partners. Among women, STD prevalence was higher among western European and Latin American women, compared with Dutch women. Latin American women had risky sexual contact more often with clients; the sexual behaviour of western European women was risky with both clients and private partners.

In the United States, syphilis occurred 45 times as often among non-Hispanic blacks as among non-Hispanic whites and 13 times as often among Hispanics as among non-Hispanic whites. Gonorrhoea was reported more commonly among some minorities, with 54 per 100 000 in whites, 1801 in blacks, and 201 in Hispanics.

In conclusion, differences in risky sexual behaviour and risk for STDs has been reported to vary by both race and ethnic background. However, in Oslo we were not able to detect significant differences between native Norwegians and non-Norwegians.

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Table 1. Incidence of venereological disease among native Norwegians and non-Norwegians in 1996 and 1997 (men/women)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Norway</th>
<th>Europe</th>
<th>Africa</th>
<th>Asia</th>
<th>North America</th>
<th>South America</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlamydia</td>
<td>576</td>
<td>46</td>
<td>30</td>
<td>26</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Urethritis</td>
<td>365</td>
<td>28</td>
<td>6</td>
<td>12</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gonorrhoea</td>
<td>2016</td>
<td>184</td>
<td>101</td>
<td>95</td>
<td>17</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Syphilis</td>
<td>1132</td>
<td>75</td>
<td>13</td>
<td>32</td>
<td>8</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Lymphogranuloma venereum</td>
<td>84</td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Herpes genitalis</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Condyloma acuminata</td>
<td>561</td>
<td>37</td>
<td>7</td>
<td>10</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>HIV</td>
<td>339</td>
<td>25</td>
<td>1</td>
<td>11</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>20</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>3580</td>
<td>300</td>
<td>155</td>
<td>161</td>
<td>33</td>
<td>24</td>
<td>5</td>
</tr>
</tbody>
</table>

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