Chlamydia trachomatis Seropositivity by Age among Women in Uganda and Zimbabwe

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Conclusions

- Seroprevalence of CT anti-MOMP IgG increased with age in Uganda but not in Zimbabwe.
- A high proportion of CT anti-MOMP IgG positive women in Uganda were also cHSP60 positive, which may indicate more severe infection.
- The proportion of CT anti-MOMP IgG positive women who were also cHSP60 positive was lower in Zimbabwe, and varied by age group.

Limitations

- Results may not be generalizable to other patient populations.
- Cross sectional data preclude drawing conclusions about the persistence of antibodies in individual participants.

Implications

- Longitudinal assessments of correlates of seropositivity and antibody persistence are needed to determine utility of serologic assays in epidemiologic studies of CT infection and infertility.
- Further analyses of data from this study will examine persistence of CT seropositivity over time in individual women, along with impact of incident infection and sequelae (e.g., pelvic inflammatory disease) on antibody titers.

Acknowledgements

- Jim Braxton, CDC

Abbreviations

- HSV-2: Herpes simplex virus type 2
- CT-IgG: Chlamydia trachomatis IgG
- cHSP60: Chlamydia Heat Shock Protein 60
- ELISA: Enzyme-Linked Immunosorbent Assay
- P-value: Statistical significance

Background

- Chlamydia trachomatis (CT) serum IgG antibodies, if they develop consistently and persist, could provide evidence of past infection for epidemiologic studies.
- Antibodies to chlamydial heat shock protein (cHSP60) have been associated with complicated infection and infertility.
- Few studies have evaluated persistence of either antibody.
- Herpes simplex virus 2 (HSV-2) serostatus is a biomarker of sexual risk. HSV-2 IgG antibodies are known to persist following initial infection, so that seropositivity in a given cohort reflects cumulative incidence of infection.

Objectives

- To describe CT seropositivity by age among women seeking reproductive health services at selected sites in Uganda and Zimbabwe.
- To compare CT seropositivity by age with prevalence of HSV-2 IgG antibodies among these women.

Methods

- Analysis of leftover sera obtained for a study of hormonal contraception and HIV risk.
- Used baseline sera from a sample of 1088 18-35 year-old women seeking reproductive health services in Uganda and Zimbabwe, from among those study participants who had negative CT PCR cervical swabs (i.e., no evidence of active CT infection) at baseline.
- Serologic assays were performed in-country in Uganda and Zimbabwe using commercial test kits:
  - CT major outer membrane protein (MOMP) and cHSP60 IgG: CT-IgG-ELISA plus medac, cHSP60-IgG-ELISA medac
  - HSV-2 IgG: type-specific HerpeSelect ELISA
- Assessed statistical associations using Mantel-Haenszel chi-square and extended chi-square for linear trend.

Results

<table>
<thead>
<tr>
<th>Study Site</th>
<th>Proportion CT Anti-MOMP IgG Positive</th>
<th>HSV-2 Positive</th>
<th>HSV-2 Negative</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>146/388 (37.8%)</td>
<td>61/210 (29.1%)</td>
<td>85/178 (47.7%)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>62/206 (30.2%)</td>
<td>18/160 (11.3%)</td>
<td>44/246 (17.9%)</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

- CT anti-MOMP and HSV-2 seropositivity were associated at both sites.

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>95/251 (38.0%)</td>
<td>42/164 (25.7%)</td>
<td>53/87 (29.6%)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>34/107 (31.7%)</td>
<td>9/27 (33.3%)</td>
<td>25/78 (32.1%)</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

- Among women with CT anti-MOMP IgG, cHSP60 seropositivity trended downward with age in Zimbabwe, but not in Uganda.

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Implications

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