Seroprevalence of IgG Anti-Toxoplasma Antibodies in Asymptomatic Patients Infected with Human Immunodeficiency Virus in Japan

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Abstract

The seroprevalence of IgG antibodies to Toxoplasma gondii was assessed in 56 non-hemophiliac human immunodeficiency virus (HIV)-infected adult patients in Japan. Seroprevalence of T. gondii infection was only 5.4%, which is lower than reported for most other countries. Given these results, patients in Japan displaying lesions of the central nervous system and antibodies to T. gondii have a high probability of toxoplasmosis.

Key words: toxoplasma, HIV, antibody, Japan

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Short Communication

Toxoplasma encephalitis (TE) represents an important opportunistic infection in HIV-infected patients. Measurement of IgG antibodies to Toxoplasma gondii is crucial, as HIV-infected patients with these antibodies need to start oral pharmacotherapy for toxoplasmosis prophylaxis. Nissapatorn et al previously reported that nearly half (44.4%) of HIV-infected or acquired immunodeficiency syndrome (AIDS) patients in Malaysia show Toxoplasma seropositivity without TE (1), and previous reports from other countries have also shown high seropositive ratios (2-6). However, no reports have described the seroprevalence in Japan. Analysis in Japan is important, as seroprevalence may differ with race, region and era, and the results of such analysis would help determine the clinical diagnosis. Thus, we investigated the prevalence of antibodies to Toxoplasma in HIV-infected patients in Tokyo, Japan.

Seroprevalence of T. gondii infection was assessed in 56 non-hemophiliac HIV-infected adult patients (50 men, 6 women). The study group comprised asymptomatic Japanese HIV-infected patients living in Japan examined prospectively in the Department of General Medicine at Juntendo University Hospital, Tokyo, Japan, between 1999 and 2005. Mean (±SD) age was 38.0±11.0 years (range, 21-68 years). The vast majority of patients had acquired HIV through a sexual route, 44.6% being homosexual men, 37.5% being heterosexual and 10.7% being bisexual. Of the 56 patients (me-

<table>
<thead>
<tr>
<th>City, Country</th>
<th>Methods</th>
<th>HIV positive</th>
<th>Tokyo vs other cities, P value</th>
<th>HIV negative</th>
<th>Year</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tokyo, Japan</td>
<td>ELISA</td>
<td>3/56 (5.4%)</td>
<td>-</td>
<td>4/56 (7.1%)</td>
<td>2006</td>
<td>present report</td>
</tr>
<tr>
<td>Kuala Lumpur, Malaysia</td>
<td>ELISA</td>
<td>198/448 (44.4%)</td>
<td>P&lt;0.001</td>
<td>not done</td>
<td>2004</td>
<td>(1)</td>
</tr>
<tr>
<td>Bombay, India</td>
<td>ELISA</td>
<td>60/89 (67.8%)</td>
<td>P&lt;0.001</td>
<td>51/165 (30.9%)</td>
<td>1997</td>
<td>(2)</td>
</tr>
<tr>
<td>California, USA</td>
<td>agglutination test, dye test</td>
<td>42/443 (9.5%)</td>
<td>P=0.1691</td>
<td>75/630 (11.9%)</td>
<td>1993</td>
<td>(3)</td>
</tr>
<tr>
<td>London, UK</td>
<td>agglutination test, dye test</td>
<td>133/500 (26.6%)</td>
<td>P&lt;0.05</td>
<td>not done</td>
<td>1990</td>
<td>(4)</td>
</tr>
<tr>
<td>Prague, Czechoslovakia</td>
<td>ELISA</td>
<td>20/87 (29.9%)</td>
<td>P&lt;0.05</td>
<td>203/777 (28.1%)</td>
<td>1992</td>
<td>(5)</td>
</tr>
<tr>
<td>Jos, Nigeria</td>
<td>ELISA</td>
<td>85/219 (38.8%)</td>
<td>P&lt;0.001</td>
<td>30/144 (20.8%)</td>
<td>2005</td>
<td>(6)</td>
</tr>
</tbody>
</table>
dian baseline CD4+ lymphocyte count, 371/μL), 41.8% had a baseline CD4+ lymphocyte count of <200/μL, and no patient was diagnosed with AIDS according to the case definition. Serological testing for IgG anti-Toxoplasma antibodies was performed by SRL (Tokyo, Japan) using enzyme-linked immunosorbent assay (ELISA) from first consultation to our outpatient department. We also conducted the same procedure in 56 immunocompetent Japanese volunteers living in Japan (34 men and 22 women; 33.5±12.1 years of age; range, 18-56 years), most of whom were medical workers; these patients formed the control group. Antibodies to \textit{T. gondii} were detected in only 3 HIV-infected patients (5.4%), comprising 2 homosexual men and 1 heterosexual man (ages, 27, 47 and 53 years, respectively). Antibodies were detected in 4 adults in the control group.

The seroprevalence of IgG anti-Toxoplasma antibodies in HIV-infected patients was significantly lower than reported in other countries (Table 1). As shown in Table 1, the local prevalence in HIV-infected patients may depend on that in healthy adults. Yamaoka and Konishi show that the seroprevalence of IgG anti-Toxoplasma antibodies in 2,564 healthy Japanese was 9.3% in 1993 (7). Healthy controls in this report had a lower seroprevalence (7.1%). \textit{T. gondii} typically infects human after the ingestion of tissue cysts in undercooked meat from an infected animal, or by ingesting infectious oocysts from the environment, usually from soil contaminated with feline feces. The lower prevalence might be related to a lower risk of \textit{T. gondii} infection, reflecting the dietary habits and good sanitary conditions in Japan.

These results might also explain the lower incidence of TE in Japan. Although 13 to 33% of HIV/AIDS patients develop toxoplasmosis in the USA (8), only 1.07% of such patients had toxoplasmosis in Japan (9). TE in HIV-infected patients is often difficult to distinguish from malignant lymphoma or progressive multifocal leukoencephalopathy. However, the present results suggest that patients in Japan displaying lesions of the central nervous system and antibodies to \textit{T. gondii} have a highly probability of TE.

References


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