Campylobacter jejuni Antibodies in Nigerian Children

E. AGATHA ANI,* T. TAKAHASHI, AND R. A. O. SHONEKAN
Infantine Diarrhoea Research Laboratory, Department of Medical Microbiology, University of Jos, and Japan International Cooperation Agency, Jos, Nigeria

Received 15 May 1987/Accepted 1 December 1987

Titers of complement-fixing (CF) antibody to Campylobacter jejuni were demonstrated in 87 (36.7%) of 237 infants 6 to 15 months old in Jos, Nigeria. Of the total number of children examined, 81 had acute diarrhea and 27 of them (33.3%) were found to have CF antibodies in their serum. The remaining 156 children were asymptomatic, and 60 (38.4%) of them had CF antibodies. In the diarrheal group, 27 of 75 children 6 to 8 months old were CF antibody positive. There was no significant difference in the incidence of CF C. jejuni antibodies in the diarrheal and nondiarrheal infants (P > 0.05). Also, infants 9 to 15 months old had a higher incidence of CF antibodies (46.5%) than those 6 to 8 months of age (25%). The data suggest that the infants whose sera were CF antibody positive had had an exposure to C. jejuni. All 33 infants 6 to 8 months of age who had no diarrhea were CF antibody negative.

It has been reported that enteric infections caused by Campylobacter jejuni are endemic in developing countries, with higher rates of asymptomatic excretors among people over 2 years of age (2, 5). Studies done in different parts of the world have shown that people in endemic areas and constantly exposed individuals have higher levels of serum immunoglobulins to C. jejuni (3, 7). Thus far in Nigeria, there has been no report on antibodies to C. jejuni in humans. We looked for serological evidence of infection caused by C. jejuni with a view toward examining the extent of the immune response to C. jejuni infection in Nigerian infants.

A total of 237 serum samples were collected from children less than 15 months of age. The samples were inactivated at 56°C for 30 min before being assayed.

A lyophilized commercially available pool of antigen, comprising five C. jejuni strains (CZH 7854, 6894, 7051, BE 1148, and 3893) (Institut Virion, Zurich, Switzerland), was used. CF (complement-fixing)/KBR-positive serum (human) 3206 for C. jejuni (Institut Virion) and CF/KBR-negative serum (guinea pig) for the gastrointestinal group campylobacter, yersinia, meningocella, and listeria (Institut Virion) were used as controls.

We used the Honma Reagent Test Kit for CF assay (Takefuji Medical Laboratory Co., Ltd., Shizuoka, Japan). The kit contains rabbit hemolysin-sensitized sheep erythrocytes (8.5%), lyophilized pooled guinea pig serum as complement, and 0.005 M Veronal buffer as diluent. All reagents were diluted and used for the test according to manufacturer instructions.

In brief, serial doubling dilutions of each test serum were done from 1:10 to 1:40 with the buffer solution. A 25-μl volume of each diluted sample was transferred into different wells of a U-type microdilution plate. An equal volume of antigen was added into each of the serum-containing wells. The antibody-antigen mixtures were thoroughly mixed with a micromixer, and then 50 μl of reconstituted complement was added to each well. The plates were covered with a wrapper, stored in a refrigerator at 4°C for 18 h, and then kept at room temperature for about 15 min. Fifty microliters of 0.85% rabbit hemolysin-sensitized sheep erythrocytes was added to each well, mixed on a micromixer, incubated at 37°C for 15 min, and centrifuged at 1,000 rpm for 3 min. Controls were treated as the test assay was, with CF C. jejuni-negative guinea pig serum and CF C. jejuni-positive human serum.

Controls and test specimens were examined visually for the absence of lysis (positive result) and the presence of lysis (negative result). Each serum titer was recorded as the highest dilution at which lysis was not observed.

Of the total number of infants examined, 87 (36.7%) had C. jejuni antibodies in their serum. Positive CF titers of 1:10 and 1:20 were demonstrated. A total of 69 (29.1%) of the infants had a serum titer of 1:10, 18 (7.6%) had a titer of 1:20, and 150 (63.3%) had a negative titer of <1:10. A serum CF titer of 1:40 was not demonstrated.

Of the 87 positive infants, 27 (33.3%) were symptomatic for diarrhea, and 60 (38.4%) were asymptomatic.

There was no significant difference in the incidence of C. jejuni antibodies in the symptomatic and asymptomatic children (P > 0.05) (Table 1). The reason for this could not be ascertained based on the present data. However, it is likely that the asymptomatic children had been exposed to C. jejuni antigen, with the resultant stimulation of antibodies.

There was a significantly (P < 0.05) higher incidence of antibodies in the infants 9 to 15 months of age (46.5%) than in infants 6 to 8 months of age (25%). Also, all 33 asymptomatic infants in this study who were below 9 months of age were CF antibody negative. These findings further affirm our assumption that the CF titers obtained in this study were the result of antigenic stimulation by C. jejuni and therefore not greatly influenced by acquired maternal immunoglobulin G to C. jejuni.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>No. of infants with CF antibody/total no. (%) in age group:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6-8 mo</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>27/75 (36.0)</td>
</tr>
<tr>
<td>No diarrhea</td>
<td>0/23</td>
</tr>
<tr>
<td>Total</td>
<td>27/108 (25)</td>
</tr>
</tbody>
</table>

* Corresponding author.
Since it has been reported that *C. jejuni* is endemic in developing countries, with symptomatic infections more frequent in children than in adults (1, 3–6), we think that an immune-type prophylactic measure, if considered for use early in life, would minimize infantile morbidity and mortality caused by *C. jejuni*.

We acknowledge the great effort of H. Takahashi, the team leader of the Japan International Cooperation Agency in Nigeria.

LITERATURE CITED

ERRATA

Campylobacter jejuni Antibodies in Nigerian Children

E. AGATHA ANI, T. TAKAHASHI, AND R. A. O. SHONEKAN

Infantile Diarrhoea Research Laboratory, Department of Medical Microbiology, University of Jos, and Japan International Cooperation Agency, Jos, Nigeria

Volume 26, no. 3, p. 605, column 1, paragraph 3, line 2: “CZH” should read “ZH.”
Page 605, Table 1: In column 1, “33” should read “27” and “108” should read “102.” In column 2, line 3, “129” should read “135.”
Page 606, reference 2, line 2: “evidence” should read “study.”
Page 606, reference 7: The title should read as follows: “Sero logical studies in two outbreaks of Campylobacter jejuni infection.” The page numbers should read “166-170.”

Cross-Reactions between Neisseria meningitidis Group H and Escherichia coli K2 and K62 Polysaccharides

LOEK VAN ALPHEN, AGAATH ARENDTS, AND CARLA HOPMAN

Netherlands Reference Laboratory for Bacterial Meningitis, World Health Organisation Collaborative Centre for Bacterial Meningitis, Department of Medical Microbiology, University of Amsterdam, Meibergdreef 15, NL-1105 AZ Amsterdam, The Netherlands

Volume 26, no. 2, p. 395, legend to Fig. 2: “adapted from reference 9” should read “reproduced with permission from the European Journal of Biochemistry”; “adapted from reference 2” should read “reproduced with permission from FEMS Microbiology Letters.”