Serum Immunoglobulin Levels in Giardiasis

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Introduction

Giardiasis is a common disease of the small intestine of man caused by the flagellated protozoan parasite. The influence of host immunity on infection and on modulating its clinical course remains uncertain. Infection in some hosts may be short lived and spontaneously self-limited\textsuperscript{1}, while in others it may result in prolonged debilitating illness\textsuperscript{2}. Though specific antibody response occurs in the host following \textit{G. lamblia} infection, the immune alteration especially at the gut level which allows the parasite to colonize, multiply and damage the brush border membrane are ill understood. Local immune factors responsible for elimination of parasite are not clear\textsuperscript{3}. Susceptibility to giardiasis has been closely mated to the immunological status of the host\textsuperscript{4}. Increased incidence of giardiasis has been reported in adults having low levels of immunoglobulins\textsuperscript{5-7}. This study was done to determine serum immunoglobulin levels in giardiasis.

Patients, Methods and Results

Sixty-six adults (males 38, females 28) reporting with abdominal pain and persistent diarrhoea and diagnosed on stool examination positive for \textit{G. lamblia} were included in the study. The control group consisted of 34 apparently healthy subjects (Males 23, Females 11) with stool negative for parasite. Blood samples were collected and serum samples stored at -20°C. Total serum immunoglobulins IgM, IgG and IgA were determined by Radial Immunodiffusion method (Binding Site Ltd., U.K.) and total serum IgE by ELISA method (Melotec IgE kit). Results indicate that IgM and IgG were higher and IgA lower in patients as compared to controls (Table I).

<table>
<thead>
<tr>
<th>Immunoglobulins</th>
<th>Patients (66)</th>
<th>Controls (34)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IgM</td>
<td>4.19±1.9</td>
<td>2.08±1.5</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>IgG</td>
<td>19.3±7.07</td>
<td>13.7±2.92</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>IgA</td>
<td>2.55±1.52</td>
<td>3.24±1.28</td>
<td>P&lt;0.05</td>
</tr>
</tbody>
</table>

Total Serum IgE levels were not significantly different in patients and controls (Table II).
Decreased levels of all immunoglobulins were found in chronic carriers (Table III).

Table II. Total Serum Immunoglobulin E by ELISA method.

<table>
<thead>
<tr>
<th>Group</th>
<th>IgE (IU/ML)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Uptil 150</td>
</tr>
<tr>
<td>Patients (50)</td>
<td>No (%)</td>
</tr>
<tr>
<td>No (%)</td>
<td>20 (40)</td>
</tr>
<tr>
<td>Controls (30)</td>
<td>12 (40)</td>
</tr>
</tbody>
</table>

Comments

In the present study, serum IgM and IgG were high while low levels of IgA were observed in patients as compared to controls. Total serum IgE was found to be similar in both groups. Other reports indicate normal levels of total serum IgG and IgM. Although IgA deficiency does occur but reduced levels of IgA alone are not associated with increased susceptibility to giardiasis or severity of symptoms. Serum IgE was found to be significantly higher in patients with giardiasis than in controls and recovery from giardiasis was correlated by a decrease in serum IgE levels while other reports indicate that G. lamblia infection was not related to difference in serum IgE levels.

G. lamblia is being reported as a frequent cause of chronic diarrhoea. In the present study, decreased levels of all immunoglobulins were found in chronic cases while other reports indicate increased total serum immunoglobulins in patients with persistent diarrhoea and giardiasis. Hypogammaglobulinemia and giardiasis may occur together but difference from normal levels of any immunoglobulin did not seem to explain either the presence of giardiasis or the variability of its clinical features. Individuals with lower immunoglobulin levels are not at greater risk of acquiring giardiasis than those with higher immunoglobulin concentrations, but the immunodeficient individuals once infected are much more likely to have an infection that results in symptoms. It appears that serum immunoglobulins (IgM, IgG, IgA) have some relationship with giardiasis especially in chronic cases.
and a decrease in immunoglobulins may contribute to *O. lamblia* infection.

**References**