Infection with Kala Azar Among Children in Babylon Province and Their Effect on Hematocrit Reading and Their Relation with Blood Type
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Abstract

A prospective study of Hospitalized cases of children in Babylon Maternity and Children Hospital, Al-Hilla General Hospital and Al-Hashmya Hospital was carried out from 1st September 2007 to 1st March 2008, blood samples were collected. It has been documented 54 patients of children were infected with Leishmania donovani (Kala azar) by positive serological test (IFAT). The age of those children was between 3 months to 3 years old, they were divided into two groups (under 1 years old and 1-3 years old). Hematocrit of these children were measured and compared with Hematocrit of other healthy children. Blood group test (ABO) was also carried out. Kala Azar was highly number in children within age 1-3 years old (46). Also Al-Hashmya district showed highly number of Leishmaniasis (32) than other districts including Al-Mahaweel, Al-Hilla and Ashomaly (9, 7 and 6) respectively. Leishmaniasis caused highly significant decrease (p<0.01) in hematocrit of children under one years old (27.13 ± 1.48) and highly significant decrease (p<0.001) in hematocrit of children within 1-3 years old (26.96 ± 0.39). Kala Azar was highly percentage in blood group type A (24.5%) as compared with other blood group type O, B and AB (24%, 20.3% and 12.9%) respectively.

Introduction
Visceral leishmaniasis or (kala azar) is a systemic disease which is caused by Leishmania donovani complex (Fakhar et al., 2006) which is known to be endemic in areas of the middle east including Yemen, Oman, Kuwait, Iraq, Saudi Arabia, United Arab Emirates and Bahrain (Zeibig, 1997; Elnour et al., 2001; Al-Marzoki, 2002; Al-Muhamadi et al., 2004; Fakhar et al., 2006) as well as in Tunis (Khalidi et al., 1991) and Turkey (Ozensoy et al., 1998). In Europe visceral leishmaniasis are endemic in all Mediterranean countries such as southern France (Mindoier et al., 1998), Southern Greece (Maltezou et al., 2000) and Southern Spain (Pineda et al., 1998). Also there is documented cases of kala azar in central European countries such as Germany (Bogdan et al., 2001).

Materials and Methods
Hospitalized cases of children in Babylon Maternity and Children Hospital, Al-Hilla General Hospital and Al-Hashmya Hospital was carried out from 1st September 2007 to 1st March 2008. It has been diagnosed 54 patients of children were infected with Leishmania donovani by demonstrate Leishmania antibody in their sera by using indirect Immunofluorescent Antibody Technique (IFAT) according to Randox Co. kit, as recommended by manufacture.
The age of those children was between 3 months to 3 years old, which arranged into two groups. First group from 3 months to under one year. Second group from one year to three years old (Al-Muhammadi et al., 2004).

Blood was collected by antecubital vein puncture at 9–11 a.m. Hematocrit (Hct) of these children was measured according to Talib & Khurana (1996), and compared with Hct of other healthy children (control 5 children of each age group). Blood group ABO test was carried out according to Talib & Khurana (1996). Results of Hct were statistical analyzed using t-test (Campbell, 1967).

Results and Discussion

Table (1) shows highly number of visceral leishmaniasis in children within 1-3 years old (46) as compared with the number of infection in children under one years old (8) which agree with the results of Mindoier et al. (1998). This goes with the fact that the infantile type is the commonest type in our area (Al-Marzoki, 2002) and may be the symptoms can be persist for weeks to several months before patients come to medical attention (Ravanbod, 2002).

There was no such difference in the sex factor (male: female 31:23) of visceral leishmaniasis in children which agree with Al-Marzoki (2002) and Al-Muhammadi et al. (2004).

In table (2), Al-Hashmya district showed highly number of kala azar infection (32) than other districts of Babylon province including Al-Mahaweel, Al-Hilla and Ashomaly (9,7, and 6) respectively, this agree with Al-Marzoki (2002) and Al-Muhammadi et al. (2004).

Iraq has been reported to be one of the endemic area of Kala azar (Zeibig, 1997; Al-Marzoki, 2002; Al-Muhamadi et al., 2004). The high prevalence of leishmaniasis in Al-Hashmya district and then Al-Mahaweel district may be due to the highly prevalence of the vector (Sandflies) of visceral Leishmaniasis in these specific area that get a big attention for controlling in this area.

Visceral leishmaniasis caused highly significant decrease (p<0.01) in Hct of children under one years old (27.13±1.48) and very high significant decrease (p<0.001) in Hct of children within 1-3 years old (26.96±0.39) as shown in table (3). This result agree with Al-Muhammadi et al. (2004). That is to say visceral leishmaniasis caused anemia (Mindoier et al., 1998; Ozensoy et al., 1998; Maltezou et al., 2000; Elnour et al., 2001; Al-Muhammadi et al., 2004; Joshi et al., 2006). Anemia always present with leishmaniasis and may be severe, it is usually normocytic normochromic and appears due to a combination of factors including hemolysis, marrow replacement with visceral Leishmaniasis infected macrophages, hemorrhage, splenic sequestration of erythrocytes, hemodilution (Ravanbod, 2002) and due to effect of malnutrition (Al-Marzoki, 2002) then it appears as iron deficiency (Microcytic hypochromic) anemia (Elnour et al., 2001). In table (4) visceral leishmaniasis was highly percentage in blood group type A (42.5%) as compared with other blood group types O, B, and AB (24%, 20.3%, and 12.9%) respectively. This was agree with (Al-Mamouri, 2000) who found that protozoa related with type A blood group due to the presence of genetic factors and the antigens of these protozoa are similar to the antigens of type A blood group subjects and so do not recognized by immune system.
Table (1) : Distribution of Leishmaniasis according to age and sex.

<table>
<thead>
<tr>
<th>Age(year)</th>
<th>Male</th>
<th>percentage</th>
<th>Female</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1</td>
<td>3</td>
<td>5.5</td>
<td>5</td>
<td>9.2</td>
</tr>
<tr>
<td>1-3</td>
<td>28</td>
<td>15.8</td>
<td>18</td>
<td>33.3</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>57.4</td>
<td>23</td>
<td>42.5</td>
</tr>
</tbody>
</table>

Table (2) : Distribution of leishmaniasis according to location.

<table>
<thead>
<tr>
<th>No.</th>
<th>Location</th>
<th>Patient</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Al-Hilla District</td>
<td>7</td>
<td>12.9%</td>
</tr>
<tr>
<td>2</td>
<td>Al-Mahaweel District</td>
<td>9</td>
<td>16.6%</td>
</tr>
<tr>
<td>3</td>
<td>Al-Hashmya District</td>
<td>32</td>
<td>59.2%</td>
</tr>
<tr>
<td>4</td>
<td>Ashomaly District</td>
<td>6</td>
<td>11.1%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>54</td>
<td>100</td>
</tr>
</tbody>
</table>

Table (3) : Effect of leishmaniasis on hematocrit reading.

<table>
<thead>
<tr>
<th>Age(year)</th>
<th>Hematocrite reading (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
</tr>
<tr>
<td>Less than 1</td>
<td>34 ± 0.39</td>
</tr>
<tr>
<td>1 – 3</td>
<td>36.2 ± 1.48</td>
</tr>
</tbody>
</table>

* Significant decrease (p<0.01)
** Significant decrease (p<0.001)

Table (4) : Relation of leishmaniasis with blood group (ABO).

<table>
<thead>
<tr>
<th>Blood group</th>
<th>No.of patients</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>23</td>
<td>42.5</td>
</tr>
<tr>
<td>B</td>
<td>11</td>
<td>20.3</td>
</tr>
<tr>
<td>O</td>
<td>13</td>
<td>24.0</td>
</tr>
<tr>
<td>AB</td>
<td>7</td>
<td>12.9</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>100</td>
</tr>
</tbody>
</table>
Recommendation:
From above we recommend
1. The screening (Survey) study should be taken on the areas close to those documented endemic areas in this study.
2. Protection against sandflies accomplished by repellents, protective clothing are essential measures to reduce future \( L.\ donovani \) infection. Promote treatment of human infections as well as control of sandflies population will also help to control of disease.

References


حمض اللحمية الاحشائية لدى أطفال بعض مناطق محافظة بابل

ملاحظة: هذه النصوص مترجمة للنضال العربية.

athed al-bab el-adjal wa al-waladat wa mashtef al-hala al-arba'ee wa al-kisneet al-taarit hadda ajrith

الخلاصة

في مشفى بابل للاطفال والكبار ومستشفى الحلية للرابعة والخمسين طافاً، درست هذه الاجراءات على أسنان الأطفال المراهقين، حيث تم جمع عينات الدم

حتى لتشخيص Leishmania donovani، تراجعت العمر من شهر إلى ثلاث سنوات، وبدأت في التسجيل في السنة الثانية. تضمنت فحص الدم حصة بروتينات الدم

مع عليه في مقارنة حصوله. في بيان علاقته بالحمض، بلغت الفئة العمرية في السنة والثانية حصة الدم للاطفال 46 من إصابة المشمية، أظهرت المراهقة المختارة

كانت للاطفال من ذوي الدم A حيث بلغت نسبة 42.5، وBs 24، و B 20.4، وأخيراً AB في الدم 12.9.

نتيجة: فيبـاء

لا يوجد

La湔d یم یک n یک

Leishmania donovani

سـبـب

807

2007/9/1

Leishmania donovani

27.13

% كـنـا

0.39

P<0.01

Leishmania donovani

12.9

% كـنـا

0.39

P<0.01

Leishmania donovani

36.2

% كـنـا

0.4

P=0.4

Leishmania donovani

24

% كـنـا

0.24

Leishmania donovani

42.5

% كـنـا

0.24

Leishmania donovani

20.4

% كـنـا

0.24

Leishmania donovani

12.9

% كـنـا

0.24

Leishmania donovani

% كـنـا

0.24

Leishmania donovani

% كـنـا

0.24