A Study of prevalence of intestinal parasitic infection in Shatrah district / Thi-Qar governorate

Zahraa Sadoon Hadi

Department of Biology / College of Education / Thi-Qar University

Summary

720 stool samples were collected from attending individuals to Al-Shatrah hospital in Shatrah district of the province of Thi-Qar, and check the usual known methods for the detection of intestinal parasites. The incidence of total intestinal parasites found 43.1% and have revealed the incidence of parasite *Entamoeba histolytica* 29.2%, then the parasite *Giardia lamblia* 12.9%, then *Hymenolepis nana* 0.7% and the lowest percentages involved are *Enterobius vermicularis* 0.3%, did not show significant differences in the proportion of infection male and female with the proportion of female infection 43.6% and male 42.4 %, for the age group, the age group 6-10 years were more likely to have a rate of 54.8%, followed age group 1-5 years and by 48.2%, while the lowest rate was in the group > 21 years by 27%, and showed the current results there were significant differences rates of parasitic infections between the rural area and by 47.1% and between the urban area and by 39.2%.

Introduction

Diarrheal diseases are a major cause of mortality in developing countries; their control and prevention are one of the main objectives of the World Health Organization (WHO) within the Division of Diarrheal and Acute Respiratory Disease Control programs in developing countries (WHO, 1995). It is impossible to give an accurate estimate of the economic importance of parasitic disease because it varies so greatly between countries and between regions (Kadir & Rasheed, 2008). Intestinal parasites are among the most common human infections which are distributed throughout the world with high prevalence rates in developing countries (Raza & Sami, 2008).

Despite the great development that has occurred on the quality of medical services in terms of diagnosis of parasitic diseases,
treatment and control, which in turn led to a decrease evident in the spread of these diseases in many industrialized countries and developing countries, most of the parasitic diseases still consider a major challenge for health staff in many developing countries and poor (Sayyari et al., 2005; Agi, 1995).

The privacy of geographical, demographic, economic and social third world countries may have the greatest impact on the survival of parasitic diseases on the list of medical problems that have not yet been resolved (Dieng, 1999).

The intestinal parasites different whether protozoan or worms, parasites most prevalent in the world generally and the level of the third world in particular, where its widespread to be affected the climatic and environmental conditions such as heat and high humidity, in addition to economic conditions and social conditions such as poverty, lack of clean water supply and the low level of health services increases the incidence of intestinal parasites and reduce the chances of control or eradication of diseases they cause (Mohamed et al., 2009).

The importance of intestinal parasites in the capacity of spreading and infecting a large segment of the population, especially children in most developing countries and poor countries. For ease of infection in most types example Entamoeba histolytica and Giardia lamblia, and some worms example Hymenolepis nana, which is contagion by eating food and drinks contaminated with one of the roles of her life and be on the likely contamination of vegetables and water sanitation, excreta, as is the case in many parts of the world (Esfandiari et al., 1995; Dieng, 1999).

The aim of this study perform to determine the prevalence of intestinal parasites in the district Shatrah, also to identify some of factors affecting the deployment.

**Materials and methods**

During the period from the beginning of February 2010 until the end of July 2010 collected 720 stool samples from diarrhea patients and attending to Shatrah hospital with different age groups rang from one year to more than 21 years which living at different regions of Shatrah district from urban and rural
inhabitants. Took samples stool in the cups plastic clean and dry with a wide opening and equipped with pay-tight to prevent dry samples and cups given serial numbers with the writing of the name.

Registered complete information for each person taken from samples of stool in a special questionnaire stating the name, age, sex and area. Samples examined during the hours prior to their arrival at the laboratory parasites in the hospital above.

**EXAMINATION OF STOOL SAMPLES**

**Examination by the naked eye:**

Before microscopic examination of stool samples, the stool was examined by the naked eye for its characteristics such as its consistency, color, texture

**Microscopic examination**

1- **Direct smear method**

Put a drop of Normal saline 0.9 % on the left half of the slide and drop a second solution of iodine water Lugol's Iodine on the right half of the slide itself, and mediated by rods clean wood took a small amount of stool as head of the match from different parts of it and mix well with the drop of saline solution, it must be thin and swab the same way as mixing the same amount of the sample with iodine solution with a water slide on the cover of both cases (WHO, 1991).

2- **Sedimentation technique:**

Method included mixing stool with the amount of water and ran through a piece of gauze to remove large and coarse and then allowed to filtrate sedimentation out for thirty minutes or more and pouring leachate then added a new water and allowed to stagnate again with the return of this process multiple times until the appearance of leachate color net, and then taking the part of the sediment and examine microscopically (Al-Hadeithy and Awad, 1986).

Results were analyzed statistically By using the t-test and the level of morale $P \leq 0.05$ (Al-Rawi, 1984).
Results

The current study showed that the incidence of parasitic diseases in Shatrah district in Thi-Qar governorate was 43.1% where the highest rate of infection was with *E. histolytica* 29.2% and then followed by parasite *G. lamblia* 12.9% and parasite *H. nana* 0.7% and the lowest rates of infection were for *E. vermicularis* 0.3%. As in table No. (1)

Table (1): - Rates (%) of infection with intestinal parasites of human of 720 fecal samples examined in Shatrah district

<table>
<thead>
<tr>
<th>Parasites</th>
<th>No. of positive samples</th>
<th>% from total number of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protozoa</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>E. histolytica</em></td>
<td>210</td>
<td>29.2</td>
</tr>
<tr>
<td><em>G. lamblia</em></td>
<td>93</td>
<td>12.9</td>
</tr>
<tr>
<td>helminths</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>H. nana</em></td>
<td>5</td>
<td>0.7</td>
</tr>
<tr>
<td><em>E. vermicularis</em></td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>total</td>
<td>310</td>
<td>43.1</td>
</tr>
</tbody>
</table>
This study also reported that there were no significant differences in the rate of infections with intestinal parasites according to sex. The overall rates of infection were higher 43.6% in females than in males 42.4%. As in table No. (2)

**Table (2): Rates of infections with intestinal parasites according to gender**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parasites</td>
<td>330</td>
<td>390</td>
<td>720</td>
</tr>
<tr>
<td>Preserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. histolytica</td>
<td>95</td>
<td>115</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>28.8</td>
<td>29.5</td>
<td>29.2</td>
</tr>
<tr>
<td>G. lamblia</td>
<td>43</td>
<td>50</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>13.0</td>
<td>12.8</td>
<td>12.9</td>
</tr>
<tr>
<td>H. nana</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>0.6</td>
<td>0.8</td>
<td>0.7</td>
</tr>
<tr>
<td>E. vermicularis</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>0.0</td>
<td>0.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>170</td>
<td>310</td>
</tr>
<tr>
<td></td>
<td>42.4</td>
<td>43.6</td>
<td>43.1</td>
</tr>
</tbody>
</table>

t cal.=10.3 , P= 0.06
Note: the first line of each field represents the number of samples testing positive and the second line represents the percentage of samples positive.

The highest rate of Infection with intestinal parasites among children age 6-10 years was 54.8% and it was followed by children age 1-5 years 48.2% and the lowest rates of infection were for children age <21 years 27%. There are observed differences moral in the abstract level P <0.05. Table(3)

Table(3): -Rates of infections with intestinal parasites according Age groups

<table>
<thead>
<tr>
<th>Age groups(year)</th>
<th>1-5</th>
<th>6-10</th>
<th>11-15</th>
<th>16-20</th>
<th>&gt; 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preserved specimens</td>
<td>135</td>
<td>155</td>
<td>210</td>
<td>120</td>
<td>100</td>
</tr>
<tr>
<td>E. histolytica</td>
<td>54</td>
<td>52</td>
<td>61</td>
<td>23</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>33.6</td>
<td>29.1</td>
<td>19.2</td>
<td>20</td>
</tr>
<tr>
<td>G. lamblia</td>
<td>11</td>
<td>31</td>
<td>34</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>8.2</td>
<td>20</td>
<td>16.2</td>
<td>8.3</td>
<td>7</td>
</tr>
<tr>
<td>H. nana</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0.0</td>
<td>1.3</td>
<td>1.4</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>E. vermicularis</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0.0</td>
<td>0.0</td>
<td>1.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
There were significant differences in the rate of infections with intestinal parasites according to regions, in the rural area were recording 165 case with 47.1%, the highest compared to the urban area which the number of people infected 145 case with 39.2%. Table(4)

Table(4): Rates of infections with intestinal parasites according area

<table>
<thead>
<tr>
<th>Area</th>
<th>Parasites</th>
<th>E. histolytica</th>
<th>G. lamblia</th>
<th>H. nana</th>
<th>E. vermicularis</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural area</td>
<td>350</td>
<td>112</td>
<td>48</td>
<td>3</td>
<td>2</td>
<td>165</td>
</tr>
<tr>
<td></td>
<td></td>
<td>32</td>
<td>13.7</td>
<td>0.9</td>
<td>0.6</td>
<td>47.1</td>
</tr>
<tr>
<td>Urban area</td>
<td>370</td>
<td>98</td>
<td>45</td>
<td>2</td>
<td>0</td>
<td>145</td>
</tr>
<tr>
<td></td>
<td></td>
<td>26.5</td>
<td>12.2</td>
<td>0.5</td>
<td></td>
<td>39.2</td>
</tr>
<tr>
<td>Total</td>
<td>720</td>
<td>210</td>
<td>93</td>
<td>5</td>
<td>2</td>
<td>310</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29.2</td>
<td>12.9</td>
<td>0.7</td>
<td>0.3</td>
<td>43.1</td>
</tr>
</tbody>
</table>
t cal.=15.5 , P= 0.04

**Note**: the first line of each field represents the number of samples testing positive and the second line represents the percentage of samples positive

**Discussion**

Intestinal parasitic diseases are still prominent in the tropical and sub-tropical areas of the world and are more common in undeveloped or developing nations. The prevalence of intestinal diseases in different areas and countries can indirectly reflect the local sanitation conditions and living conditions (Abu-zeid et al., 1998).

Showed the current study that the incidence of total intestinal parasites reached 43.1% and this result approach to the conclusions of each of Jassim and his group (1997) 41.5% in some areas of Diyala province, Al-Obeidi (1998) 49.2% for patients in some hospitals in Baghdad, Al- Izzi (1998) 44% in the city of Mosul, Al-Naimi (2001) in a number of residential districts in the province of Ninewa 41.4% and Salman (2002) 44% in two children's hospitals in the city of Baghdad and were less than the record of Al-Janabi (2002) in Baghdad governorate 51.5% and Sheinin (2005) in terms of Al-Fuhod in Thi-Qar governorate 53.5% and Al-Abadi & Al-Knzawi (2000) 82.4% among children reviser to some health centers and children's hospital in the city of Nasiriyah higher than the record Hashim et al (1999) 37.8% in the city of Hilla, Babil province and Rhadi (1994) in the city of Basrah 35.3 %.

That convergence and divergence in the rates of infection recorded in the current study, compared with the studies mentioned above can be interpreted on the basis of similarity of environmental and climatic conditions of place and that the different ages on the present study or the exclusive use method of laboratory and one in the diagnosis, as well as different time period covered by the study or not covered by some protozoa *Entamoeba coli* in the calculation of ratios are all factors that could explain the reasons for the discrepancy in the rates of infection in different studies (Obed, 2006).
As shown in the current study that the incidence with Entamoeba histolytica are the most common among parasites and the rates of infection Entamoeba histolytica 29.2% recorded the present study is less than the record Al-Saadi et al. (1994) and it is 31.8 % in the city of Kufa, Najaf province, Al-Mashhadani (2000) 45.1% in hospitals in Baghdad and at the same time, infection rates are higher than he found many researchers including Shuaibi (2000) in the primary school in Baghdad 28.9 % , Al-Nuaimi (2001) 23% in the villages of Ninewa province, Muezzin (2001) 8.4% in school children and 5.9% in preschool children in Baghdad governorate and Moussawi (2001) 10.4% in the province of Karbala.

We Can be attributed to the high prevalence of the parasite to the mode of transmission of direct since it does not need to intermediate host , this side and the other side less attention to the treatment of drinking water aseptics and materials necessary for the purification of water and lack of pesticides, as it represents flies carrier mechanical for cysts of parasites (Al-Tikriti, 2005 ), also came parasite Giardia lamblia in the current study after Entamoeba histolytica of infection rates and this result was less than his record number of researchers in Iraq, including Mawllod et al., (1997) in some areas of Diyala 13.6%, Issa (1998) in children suffering from diarrhea in city of Basrah 21.2% and Al-Mashhadani (2000) in some hospitals of the city of Baghdad 25.3% while the rate was recorded this parasite is higher than he found both the Al-Mallah (1998) in the city of Mosul 4%, Mehdi (1998) in infants with diarrhea in the city Baghdad 2% and Al-Haidari et al.(2000)in Baghdad 3% .

The reason is attributed to the widespread this parasite to the way the direct transmission through contaminated water and food as well as to low standards of hygiene and sanitation Untreated sewage is sometimes discharged into rivers and lakes, which represents a clear health hazard (Muller ,2002; Al-Hanoon & Hayatee,1980).

Record in the current study, two types of intestinal worms are H. nana and E. vermicularis ,was the rate of H. nana 0.7% less than the record Al -Maamouri (2000) in the district of Mahaweel in Babylon 5.9% , is attributed its spread to the session her direct and play a hands contaminated with the dangerous role in their transition to the mouth directly, in addition to the role of mice that are adding appropriate for these parasites (WHO,1987),was the
rate of *E. vermicularis* 0.3% very low is less than the record Mohamed (2010) in Thi-Qar 0.9% but this result does not represent the actual proportions of the infection but rather a serious infection so because the eggs of this worm does not appear in the faeces when infection moderate and light (Schmidt and Roberts, 1989), attributed the Al-Abiady (1988) to the migration of the worms during the night to the area around the director to lay eggs so they do not notice when you examine the faeces.

According to the results of this study, there was no significant differences (\( p> 0.05 \)) in the prevalence of intestinal parasites according to sexes. The rate of infection with parasites in females was 43.6% and in males 42.4% .our results was agreement with studies conducted by Al-Maamori(2000) in Babel city, Al-Nahi (1998) in Najif city. On the other hand, disagree with the results of Al-Saeed et. al (2001) in Dohuk city, and Mahdi et al.(1996) in Basrah city, in which they found higher rates of infection in males as compared with females. Of the reasons for the lack of significant differences due to the convergence of habits leading to parasite dissemination of infection between the sexes (Al-Maamory,2000).

The current results show a significant difference between the rates of infection by age group with the highest infection rate in the age group 6-10 years 54.8%, followed by age group 1-5 years 48.2% while the lowest percentage infection in the age group >20 years 27% and this result agreement with result Al-Tikriti (2005) in the city of Tikrit, either outside the country in Syria, The reason for the fact that children in this age group were not knowing the conditions of hygiene, such as eating different foods from a variety of sources may be outside the home which gives a greater chance of infection diarrhea and lack of parental interest in trying their self-reliance in addition to the incomplete maturity of the immune system of children( Rice et al.,2003).

The results showed that the frequency of intestinal parasitic infections in rural areas was 47.1% higher than the prevalence rate of intestinal parasitic infection in an urban area 39.2% with significant differences (\( p\leq 0.05 \)) in the prevalence of intestinal parasites. The current result was consistent with the study Mohamed et al. (2009) conducted outside the country in the Sudan in Kassala Town , The proportion of rural infection 22.2% is higher than the urban infection 12.9 %.
Explain the disparity in the rates of parasitic infection in regions, mainly due to direct contact and a long time for children in the agricultural area with dust and mud and water contaminated during their parents working in the fields, knowing that the sewage treatment used to irrigate some land in this region. The presence of the child for a long time in the field to help his family and especially during the agricultural seasons makes it difficult for him to comply with the most elementary rules of health protective spread of intestinal parasites example, washing hands thoroughly after defecation or before eating, or washing raw vegetables before eating it (Mohamed et al., 2009).

References

- **Dieng, Y.** (1999). Intestinal parasitosis in the inhabitants of a suburban zone in which the groundwater is polluted by nitrates of fecal origin (Yeumbeul, Senegal)]. Sante, 9(6): 351-356.


• Sheinin, W. F. (2005). Epidemiological study of intestinal parasites, some of the pupils in primary schools and the auditor of the health center
in terms of the Al-Fuhod / Chabaish district / Thi-Qar province. Master Thesis, college Faculty of Education, University of Basrah: 100 pages.


**الخلاصة**

جمعت 720 عينة براز من المرضى المراحعين لمستشفى الشطرة العام بقضاء الشطرة في محافظة ذي قار وتم فحص العينات بالطرق المговорة لفحص الطفيليات المعوية حيث بلغت نسبة Entamoeba histolytica الاصابة بالطفيليات المعوية 43.1% وبلغت نسبة الاصابة بطفيلي Giardia lamblia بنسبة 24.2% ثم Hymenolepis nana بنسبة 12.9% ثم Enterobius vermicularis بنسبة 1% لم تظهر فروق معنوية بين نسب اصابة الاتنين والذكور حيث بلغت 3.6% على التوالي. بالنسبة للعمر كانت اعلى نسبة اصابة للفئة العمرية 2-10 سنة بلغت 34.8% بينما اقل نسبة اصابة للفئة 21 سنة حيث بلغت 0.7%، اظهرت النتائج الحالية وجود فروق معنوية بين نسبة الاصابة في المنطقة الريفية حيث بلغت 47.1% ونسبة الاصابة في منطقة المدينة حيث بلغت 39.2%.