

A STUDY ON PREVALENCE OF *ENTAMOEBIA HISTOLYTICA* & *Giardia Lamblia* INFECTION AMONG PATIENT ATTENDING QURNA HOSPITAL IN BASRAH

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(Received 20 February 2007,Accepted 16 July 2007)

Key Words: *Entamoeba histolytica*, *Giardia lamblia*, prevalence.

ABSTRACT

Stool samples were collected from 7537 persons attending Qurna hospital in Basrah from the period of Jan. 2005 to Dec. 2005 were examined and studied to define the role of intestinal protozoal infections (*Entamoeba histolytica* , *Giardia lamblia* and mixed infection) in rural region (Qurna) and effect of risk factors of age and sex related to these parasites.

A high percentage of patient (29.2%) had infection with *Entamoeba histolytica* followed by (15.0%) infected with *Giardia lamblia*.

The influences of age on infection with *Entamoeba histolytica* was studied, a higher incidence is found at >45yr. (35.7%) and also at (1-14)yr. age groups (31.9%).whereas the high percentage in *Giardia lamblia* infection (21.5%) was found within the age group (30-45)yr.

Significant difference ($p < 0.05$) was seen in the rate of infection with *Entamoeba histolytica* between males (33.9%) and females (26.7%) and No significant difference ($p < 0.05$) have been found in the infection rate in *Giardia lamblia* (16.4%) were male and (14.7%) were females and mixed infection (11.2%) were males and (10.7%) were females.

INTRODUCTION

Intestinal protozoa infections are relatively common in world. They are varied from one area to another depending on the degree of personal and community hygiene, sanitation and climatic factor [1]. A summary of surveys of 134,966 people throughout the world showed that the prevalence of the infection ranged from 2.4 % to 67.5% with Giardiasis [2]. In 1984, 26,560 cases of Giardiasis were reported in the United States [3]. Approximately 500 million persons, of whom about 100 million suffer acute or chronic effect of the amebiasis [4]. *Entamoeba histolytica* is well established from Alaska to the southern tip of argentina, the prevalence of infection varies widely, depending on local conditions, from less than 1% in canada and Alaska to 5% in the contiguous united states to 40% in many tropical areas [5].

In Iraq, few studies on the prevalence of parasitic infections had been performed in North, in Baghdad and its vicinity as well as in the South [6, 7].the results were variable in these regions, due to variations in relationship between intestinal parasites and environmental factors, as well as the standered of personal hygiene in different socio-economic regions and economic factors which might influence the local prevalence of infection in each region [8].

The **aim** of this study is to find out the prevalence rate of intestinal protozoa infections in the rural region of Qurna in Basrah province and to compare that in both sexes and different age groups.

MATERIALS AND METHODS

Stool samples were collected from 7537 person aged from 1 yr. to < 45 yr. at rural region of Qurna in Basrah province. The study was carried out during the period from Jan. 2005 to Dec. 2005

Each person was given a plastic cup marked with age and sex and asked to provide a stool sample. Each sample was processed using formalin-ether centrifugal sedimentation technique [9] and examined for the presence of parasiti infections(trophozoite and Cyst of *E.histolytica* & *G. lamblia*).

Statistical analysis: all values were expressed as the percentage rate, significance differences between infection, sex and different age groups were determined using ANOVA :(CRBD), by using SPSS program, Difference were considered significant at the P< 0.05 level.

RESULTS

Out 4183 patients were found infected from 7537 person examined in this study, Table (1). The prevalence of Intestinal protozoa infections [*E. histolytica* , *G. lamblia* and mixed infection] in the four age groups, both sexes ,is given in table (2) .the highest prevalence percentage(43.6%) was in male group of (<45)yr. and in (1-14)yr. the percentage was (42.2%) the following female group of (30-45)yr. (35.7%) which were observed in *E. histolytica* infection .While *G. lamblia* high percentage were recorded within female and male group (30-45)yr. (21.7%) and (21.2%) respectively. Again high percentage of mixed infection which were observed in both male and female group (15-29) yr. (13.0%) and (13.1%) respectively. However, the *E. histolytica* shows the highest percentage followed by *G. lamblia* while mixed infections were the lowest percentage.

Table (3) shows the number and the percentage of protozoa infections in different age groups .there was marked high percentage in *E. histolytica* infection were seen. It was (35.7%) within the age group of (> 45) yr. the second is within (1-14) yr. (31.9%).Table (4) shows the number and percentage of sex in different age groups , a high percentage were recorded in age group (>45)yr.(31.6%) were males while age group (30-45)yr. (23.0%) were female .

The *E. histolytica* shows the highest percentage (33.9%) were males and (26.7%) were females .However , mixed infection were the lowest percentage both male and female Table (5).

Table (1) the Number & percentage of *E. Histolytica* & *G. lamblia* infection in persons attending Qurna hospital.

| Age | No. Examined | | <i>E. histolytica</i> | | | | <i>G. lamblia</i> | | | | mixed infection | | | |
|----------|--------------|---------|-----------------------|---------|------------------|---------|-------------------|---------|------------------|---------|-----------------|---------|------------------|---------|
| | | | No. infected | | Non-infected No. | | No. infected | | Non-infected No. | | No. infected | | Non-infected No. | |
| | mal e | fema le | mal e | fema le | mal e | fema le | mal e | fema le | mal e | fema le | ma le | fema le | mal e | fema le |
| 1-14 | 113 | 848 | 479 | 183 | 655 | 665 | 14 | 102 | 987 | 746 | 11 | 59 | 101 | 789 |
| | 4 | | | | | | 7 | | | | 6 | | 8 | |
| 15-29 | 175 | 126 | 458 | 279 | 129 | 986 | 21 | 179 | 154 | 108 | 23 | 167 | 152 | 109 |
| | 6 | 5 | | | 8 | | 1 | | 5 | 6 | 0 | | 6 | 8 |
| 30-45 | 925 | 713 | 222 | 255 | 703 | 458 | 19 | 155 | 728 | 558 | 10 | 87 | 823 | 626 |
| | | | | | | | 7 | | | | 2 | | | |
| >45 | 493 | 403 | 215 | 112 | 278 | 291 | 97 | 45 | 396 | 358 | 37 | 49 | 456 | 354 |
| Total(%) | 7537 | | 2203(29.2%) | | 5334(70.7%) | | 1133(15.0%) | | 6404(84.9%) | | 847(11.2%) | | 6690(88.7%) | |

Table (2) - Number and the prevalence rates (percentage) of *E. histolytica* & *G. lamblia* infections and effect infection on sex and different age groups in Qurna hospital.

| Age | <i>E. histolytica</i> | | <i>G. lamblia</i> | | Mixed infection | |
|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Male No. (%) | Female No. (%) | Male No. (%) | Female No. (%) | Male No. (%) | Female No. (%) |
| 1-14 | 1134 (42.2) ^a | 848 (21.5) ^d | 1134 (12.9) ^e | 848 (12.0) ^e | 1134 (10.2) ^e | 848 (8.59) ^f |
| 15-29 | 1756 (26.0) ^c | 1265 (22.0) ^d | 1756 (12.0) ^e | 1265 (14.1) ^e | 1756 (13.0) ^e | 1265 (13.1) ^e |
| 30-45 | 925 (24.0) ^c | 713 (35.7) ^b | 925 (21.2) ^d | 713 (21.7) ^d | 925 (11.0) ^e | 713 (11.6) ^e |
| >45 | 493 (43.6) ^a | 403 (27.7) ^c | 493 (19.6) ^d | 403 (11.1) ^e | 493 (7.5) ^f | 403 (9.8) ^f |

- symmetrical letters Non-significant differences
- asymmetrical letters significant differences (p<0.05)

Table (3) - Number and the prevalence rates (percentage) of *E. histolytica* & *G. lamblia* infections between different age groups in Qurna hospital.

| infection | <i>E. histolytica</i> | <i>G. lamblia</i> | Mixed infection |
|-----------|--------------------------|--------------------------|--------------------------|
| Age | No. (%) | No. (%) | No. (%) |
| 1-14 | 1982 (31.9) ^b | 1982 (12.4) ^e | 1982 (8.5) ^f |
| 15-29 | 3021 (24.6) ^d | 3021 (13.0) ^e | 3021 (13.1) ^e |
| 30-45 | 1638 (29.8) ^b | 1638 (21.5) ^d | 1638 (11.6) ^e |
| >45 | 896 (35.7) ^a | 896 (15.4) ^e | 896 (9.8) ^f |

- symmetrical letters Non-significant differences
- asymmetrical letters significant differences (p<0.05)

Table (4) - Number and the prevalence rates (percentage) of *E. histolytica* & *G. lamblia* infections and effect it on sex and different age groups in Qurna hospital.

| Age | Male No. (%) | Female No. (%) |
|-------|-------------------------|-------------------------|
| 1-14 | 1134(27.6) ^b | 848(14.0) ^e |
| 15-29 | 1756(19.0) ^d | 1265(16.4) ^f |
| 30-45 | 925(22.6) ^c | 713(23.0) ^c |
| >45 | 493(31.6) ^a | 403(16.2) ^f |

- symmetrical letters Non-significant differences
- asymmetrical letters significant differences (p<0.05)

Table (5) - Number and the prevalence rates (percentage) of *E. histolytica* & *G. lamblia* infections and effect of infection on sex in Qurna hospital.

| Sex | <i>Entamoeba histolytica</i> No. (%) | <i>Gairdia lamblia</i> No. (%) | Mixed infection No. (%) |
|--------|--|--------------------------------------|-------------------------------|
| Male | 4308(33.9) ^a | 4308(16.4) ^c | 4308(11.2) ^d |
| Female | 3229(26.7) ^b | 3229(14.7) ^c | 3229(10.7) ^d |

- symmetrical letters Non-significant differences
- asymmetrical letters significant differences ($p < 0.05$)

DISCUSSION

Many studies on prevalence of intestinal parasites have been done all over the world and have shown variations in the prevalence of infections depending on geographical regions and localities, sanitary environment and hygienic habits of people living there [10,11], this may be cause the contrast percentage in Table (1).

The results of the present study revealed a higher percentage of *E. histolytica* infection was recorded in the age group (>45) yr. in males and in the (30-45) yr. age group females. As shown in Table (2&4) this might be due to deterioration of the standard of personal hygiene and sanitary conditions in these groups. Also because of the use of human feces as soil fertilizers which increases the chance of spreading infection, and horticulture practice, most of whom are of this age group (females & males) was also suspected [5], furthermore, the rural regions, which could be due to the problem of food and drinking water contamination by fecal rodents, dogs, cats and sheep that act as reservoirs for these parasites and water contamination is a great important in this respect, because chlorinated tap water is not available in most of the area and infect people using contaminated water supplies, together with suitable environmental factors such as moisture and temperature that facilitate spreading and completion of the life cycle of these parasites [12,13]. it is also possible to attribute the filth flies and cockroaches also are important mechanical vectors of cysts [4]. on the other hand, the demonstration in the present study Non-significant difference ($p < 0.05$) both female and male infected by *G. lamblia* within the age group (30-45) yr. (21.7%) and (21.2%) respectively, these findings are higher than other work, in North of Iraq; who reported {No.472 (15.9%)} [1]. in study in the Saudi Arabia (Jeddah) the prevalence of *G. lamblia* (6.8%) [26]. And {No.328 (13%)} the prevalence of giardiasis in pre-school children [25]. A prevalence of 2%-7% has been reported for most developed countries, including north America and Australia in New Zealand most cases of giardiasis occurred in the 1-4 yr. age group followed by the 25-44 yr. age group [27], this could be due to most of whom are employed and students in these age groups result from increase the standard of personal hygiene and sanitary conditions with advance of education and cysts *G. lamblia* cannot remain long period in environment [17] this may be result to reduce infection between these groups.

In the present study the age influences the prevalence of infection (Table3). The high percentage in *E. histolytica* infection (35.7%) within the age group (>45) yr. the second is within (1-14)yr. (31.9%), and {No.5510(9.9%)} the prevalence of dysentery in middle Iraq, infection with *E. histolytica* within age groups were from the first week of life to 12 yr. and affected mainly the age group of 2mon.-1yr.(45%) and (1-5)yr. (38.2%) while less predominant cases were seen below the age of 2month (9%) and over 5yr.(7.2%) [18]. on the other hand our result was contradictory with other study, the *E. histolytica* shows the lowest percentage {No.472 (4.9%)} of primary School

children in three regions of southern Iraq[1]. and Kean [5] had reported in the United States the greatest prevalence occurs in the age group (26 to 30) yr.

We cannot compare our results with previous ones, despite that our numbers seems to be higher than Kirkuk (1.7%), Saudi Arabia(0.4%) and Erbil(6.9%) reported previously[7, 11,and 22] in other study it was higher than that reported in similar studies by Omar et al. [23]; the most prevalent parasites were *E. histolytica* (4.1%) and *G. lamblia*(10.9%) during examined 1282 children between the age of 5&13 years attending 10 primary school for boys in the city of Abha. In a recent study in the North of Lebanon between (1997-2001), the *E. histolytica* shows the percentage was (4.57%) & (15.39%) were *G. lamblia* from 17126 patients and evidence of parasitic infections was found in 5713(33.35%) cases[24]. However, which may be due to lower standards of sanitation and the greater longevity of cysts in a favorable environment [14] and may result from cook or cookery is the most important contiguous factor of this disease, during the direct passage of cyst or/and trophozoite from stool to the hands of a food preparer and then to the food itself, which that can infect the rest of their family group or even hundreds of people if they work in restaurant [15]

The high prevalence rate of intestinal protozoa infection observed among boys can be attributed to the fact that boys are more active, mobile and integrated into the environment. Furthermore, Child has an incomplete immune system.

In the present study the *E. histolytica* shows the highest percentage compare with *G. lamblia*, and this is consistent with previous studies which explained that cysts of *E. histolytica* can remain viable and infective in a moist, cool environment for at least 12 days, and in water they can live up to 30 days, however, they can withstand passage through the intestines of flies and cockroaches, the cysts are resistant to levels of chlorine normally used for water purification. But these properties do not have the cysts of *G. lamblia* [17, 19, 20 and 21]

In the present study mix infection were the lowest percentage both male and female was (11.2%) and (10.7%) respectively in the Table (5). It s higher than that reported in similar studies [19,16 and 17], this may be attributed to carriers to the single Intestinal protozoa infection more frequent than double infection.

دراسة محددة للإصابة بالمتحولة الزحارية وداء الجيارديّة اللمبية في الأشخاص الوافدين الى مستشفى القرنة-في محافظة البصرة

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الخلاصة

لقد تم جمع 7537 نموذج من براز أشخاص راجعوا مستشفى القرنة في البصرة خلال الفترة من كانون الثاني لعام 2005 الى كانون الأول لعام 2005 في دراسة استهدفت تحديد حجم مشكلة الإصابة بالمتحولة الزحارية (*Entamoeba histolytica*) و الجيارديّة اللمبية (*Giardia lamblia*) والإصابة المختلطة فيما بينهما في المناطق الريفية لقضاء القرنة وكذلك تحديد تأثير عوامل الخطورة للعمر والجنس في الحالات المتعلقة بهذا الطفيليات. اعلى نسبة إصابة سجلت في حالة الإصابة بالمتحولة الزحارية وبلغت (29.2%) في حين بلغت نسبة الإصابة (15.0%) بحالة الجيارديّة اللمبية. والعمر تأثير على نسبة الإصابة حيث سجلت أعلى نسبة للإصابة بالمتحولة الزحارية ضمن الفئة العمرية فوق 45 سنة وبلغت (35.7%) يتبعها الفئة العمرية التي تتراوح من (1-14) سنة وبلغت (31.9%) في حين بلغت أعلى نسبة للإصابة بحالة الجيارديّة اللمبية ضمن الفئة التي تتراوح بين (30-45) سنة وبلغت (21.5%). لوحظ أن هناك اختلافات معنوية عند مستوى ($p < 0.05$) في نسبة الإصابة بالمتحولة الزحارية بين الجنسين حيث بلغت (33.9%) في الذكور و (26.7%) في الإناث؛ ولم تلاحظ أي فروق معنوية في نسبة الإصابة بين الجنسين بحالة الإصابة

بالجياردية اللمبية والإصابة المختلطة. حي بلغت (%16.4) في الذكور و (%14.7) في الإناث بحالة الإصابة بالجياردية اللمبية وبحالة الإصابة المختلطة بلغت (%11.2) في الذكور و (%10.7) في الإناث

CONCLUSION

The present study found a very high incidence of infection with *E. histolytica* & *G. lamblia* compared to other studies in Iraq and other countries. A high incidence of *E. histolytica* was found in the age group of >45 yr. and for *G. lamblia* in age group of (30-45) yr. The lack of clean water supplies and sanitary conditions should be considered as relevant causes for these results.

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