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Parasitic infections with *Entamoeba histolytica* in Al-Rifa'i district, Dhi Qar province

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ABSTRACT
The present study was carried out inAl-Rifa'i district, Dhi-Qar Province. A total of 640 samples of stool were collected from July to October 2019. The ages of patients ranged from ≤1 month to more than 55 years from both sex, males (265 samples) and females (375 samples). Trophozoite and cyst for *Entamoeba histolytica* were reported in stool samples with prevalence 20.46% (17.35 % for male, 22.66 % for female). The results show that the highest rate of infection in was reported in 6- 12 years old (4.06%) while the lower infection was in the ≤ 2 years old age group (0.78%). Generally, the infection was highest in villages of Al-Rifa'i district (41.13%) than in city center of Al-Rifa'i district (5.86%).
Keywords: Parasite, Protozoa, *Entamoeba histolytica*, Dhi-Qar province.

Introduction
Parasitic infections may cause mortality and morbidity for human. Protozoan parasites as *Entamoeba histolytica* one of these infections [1, 2]. *E. histolytica* is an entero-parasite and the primary cause of a disease called amoebiasis in human, which is largely endemic in developing countries [3]. The main reasons for the high prevalence of parasite infections in tropical and subtropical countries were increasing population density, poor sanitation conditions, poor public health practices, inadequate toilet facilities, contaminated food and water, malnutrition, low host resistance and environmental changes. An acute amoebic infection presents frequent diarrhea or dysentery with small or bloody stools. Chronic amoebic infection may present gastrointestinal symptoms such as weight loss, fatigue and intermittent fever which related with gastroenteritis [4, 5, 6].
In Iraq, many studies have been conducted to investigate the spread of *E. histolytica* in different cities [7, 8]. Few studies were conducted in Al-Rifai district, Dhi Qar province for detect the prevalence of infection with intestinal parasite *E. histlytica*. Therefore, the present study is aimed to determination the infections existing in Al-Rifa'i district and in its surrounding area in Dhi-Qar province.

Materials and methods
Samples collection: A total of 640 samples of stool were collected from persons attending to general Al-Rifa'i Hospital (Al-Rifa'i district, Dhi-Qar province) through the period from July to October 2019. The age of persons was ranged from 1 month to more than 55 years old and the sex of them was males (265) and females (375). Fresh fecal samples were collected in sterile containers and then transported to the laboratory for detect *E. histolytica*.

Stool sample examination

Macroscopic examination: Before microscopic examination of stool samples, the stool was examined by the naked eye for its characteristics such as its consistency, color, texture, Macroscopic examination has several implications and includes: consistency (formed or un-formed; liquid, semi liquid, solid) and gross abnormalities (mucoid, bloody, watery).These features can be refers clinically to the type of parasite may be detected in the sample [10].

Microscopic examination: Stool samples observed by the preparation of direct smear methods using clean glass slides, a small drop of normal saline (0.9%) and lugol's iodin solution put on two slide glass and mix well with a small portion of feces using wooden stick, then was put cover slides, and examined the sample using microscope [11, 12].

Results
Through the period from July to October 2019, the present study was performed in Al- Rifa'i district, Dhi-Qar province to identify the infection with *E. histolytica*. Fecal samples from 640 patients were examined. *E. histolytica* detected in

131 (20.46%) patients in total number of infected cases, it is reported in 22 (5.86%) patients living in city center and in 109 (41.13%) patients living in villages (table 1).

Table (1): Prevalence of infection with *E. histolytica* in Al-Rifa'i district, Dhi-Qar province.

Center of Al-Rifa'i district	No. of examined	375
	No. of infected	22
	Prevalence of infection %	5.86
Villages of Al-Rifa'i district	No. of examined	265
	No. of infected	109
	Prevalence of infection %	41.13
Total	No. of examined	640
	No. of infected	131
	Prevalence of infection %	20.46

The prevalence of infection with *E. histolytica* was higher in females 85 (22.66%) than in males 46 (17.35%) as illustrated in Table (2).

E. histolytica parasitic infections detected in 131 patients of all age groups started from ≤ 2 years old to ≥ 55 years old. The highest infection prevalence with this parasite was 4.06% within 6-12 year age group, followed by the age group of 20-26 years which recorded in 17 (2.65%) cases, whereas the lowest prevalence was reported in 5 cases (0.78%) which detection in ≤ 2 years age group (table 3).

Table (2): Parasitic infection with *E. histolytica* according to the gender of patients.

Groups	**Male No. of examined = 265**		**Female No. of examined = 375**		**Total No. of examined = 640**	
	No. of infection	Prevalence of infection %	No. of infection	Prevalence of infection %	No. of infection	Prevalence of infection %
E. histolytca	46	17.35	85	22.66	131	20.46

Table (3): Parasitic infection with *E. histolytica* according to the age of patients.

Age (year)	No. of examined cases = 640	
	No. of infected cases	Prevalence of Infection %
≤ 2	5	0.78
3- 5	8	1.25
6 – 12	26	4.06
13 – 19	12	1.87
20 – 26	17	2.65
27 – 33	11	1.71
34 – 40	13	2.03
41 – 47	13	2.03
48 – 54	9	1.40
≥ 55	17	2.65

Discussion

In present study, *E. histolytica* are diagnosed in Al-Rifa'i district, Dhi-Qar province. The prevalence of infection with this parasite was lower in the city center compared with villages of Al-Rifa'i district. Parasitic infections affecting third world countries are considered the most common diseases prevalent in developing countries [13]. *E. histolytica* was one of the most common protozoa infections. This could be attributed to the faster transmission of this *E. histolytic* by ingestion of cysts that are transmitted primarily by oral-fecal route in contaminated food and water. The humid climate in tropical and sub-tropical countries, include Iraq, provides favorable environmental conditions for the maturity of *Entamoeba* cyst [14]. Housefly has important role in transmission of infections [15]. This result agreement with other studies detected in Iraqi cities, for example the studies conducted in Baghdad [16, 17, 18, 19], in Mosul [20, 21], in Kirkuk [22], in Dohok [23], in Erbil [24], in Najaf province (Kufa city) [25], in Karbala province [26].

The highest rate of infection with *E. histolytica* parasites (recorded in present investigation was highest in females than in males. This result is in agreement with the study had done in Baghdad [27]. The results of current study illustrated an equal exposure of the both genders to parasitic infections due to sharing the same environmental conditions. The distinct variations among females and males prevalence of the recorded parasites may be attributed to some factors such as sex-contrasts in immune reactions, social activities, and differences in exposure to these parasites according to social behaviors.

In present results, the effect of age on the prevalence of infection with *E. histolytica* is no clear, and these data are similar to other infections with intestinal parasites [28]. Although the high infection are reported in age group 6-12 years, and these high prevalence, probably, indicating reduced parental personal, eating habit and activities linked to soil contaminated with infected fecal matters. The higher prevalence among children appears to be associated with their behavior. Children usually practice less strict hygiene and engage in more play activities with soil. They are, also, prone to contaminate food and drink. Children also buy food from streets vendors and do not practice proper personal hygiene and may also be carriers of some of these infective parasites. In present study, the high rate of infection among children could be related to a number of factors such as toilet training, overcrowding, low education of children, low socio-economic status and climatic conditions [29].

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الاصابات الطفيلية بطفيلي *Entamoena histolytica* في قضاء الرفاعي، محافظة ذي قار

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الملخص

انجزت الدراسة الحالية في محافظة ذي قار، قضاء الرفاعي، حيث جمعت 640 عينة من البراز خلال المدة من شهر تموز إلى تشرين الاول 2019. تراوحت أعمارالمرضى من ≥ شهر إلى ≤ 55 سنة ومن كل من الجنسين الذكور (265) والإناث (375). سجلت الإصابة بالطور المتغذي والطور المتكيس لطفيلي *Entamoeba histolytica* بنسبة اصابة 20.46% (17.35% للذكور، 22.66% للاناث). لوحظ من نتائج الدراسة الحالية، ان أعلى نسبة للاصابة بالطفيلي *E. histolytica*، قد كانت في الفئة العمرية أقل من 6–12 سنة (4.06%)، بينما سجلت اقل نسبة اصابة في الفئة العمرية اقل من 2 سنة (0.78%). وعموما، ظهرت اعلى نسبة للاصابة في قرى قضاء الرفاعي (41.13%) مقارنة مع نسبة الاصابة لدى سكان مركز مدينة الرفاعي (5.86%).