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Investigation of infection of intestinal parasites *Entamoeba histolytica* and *Giardia lamblia* among patients which attending of the Health Centers of Gharraf City / Thi-Qar province

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Abstract:

The intestinal parasites of *Entamoeba hstolytica* and *Giardia lamblia* are among the major causes of diarrhea throughout the world.The current study was conducted from October 2015 to February 2016 to investigate the spread of intestinal parasites *Entamoeba histolytica* and *Giardia lamblia* for patients who have been referred to the Gharraf Model Center and the Main Graff center , which suffer from intestinal disorders. The study included 488 stool samples for patients of different ages and both sexes (males and females). The number of samples required for examination was 228 and 46.72% compared with 260 negative samples for examination and 53.27%. The positive results were 202 for *Entamoeba histolytica* parasites by 5, 88% compared with 20 and 8.7% of the *Giardia lamblia* parasite and 2.6 % for *Entamoeba hstolytica* and *Giardia lamblia*.The study showed no significant differences between males and females. The highest rates of parasitic infection in the largest of the 15-year age group, which reached 49.12%. The highest incidence of the city population was 65.75% compared with the Rusticate population 34.21%.

Key words: *Entamoeba hstolytica* and *Giardia lamblia* ,intestinal parasite, Prevalence rate.

Introductio:

Intestinal parasitic infections are among the most common infections among humans in the world and are an important cause of many diseases and a common cause of death , *Giardia lamblia* and *Entamoeba histolytica* are considered the most common infectious diseases (Jean *et al* .,2001) . Despite the remarkable development of diagnostic methods for parasitic diseases and the continuous awareness of their treatment and control, which led to a clear reduction in the spread of these diseases in a number of developed and industrial countries ,however, parasitic diseases of all types continue to be a major health problem in many countries (Sayyari *et al* ., 2005). The geographical, demographic, economic and social characteristics of third world countries may have an impact on the survival of parasitic diseases on the list of unresolved medical problems (Odu *et al* ., 2013) . In Iraq, due to the deteriorating conditions of insecurity, the severe shortage of medicines, the contamination of food prepared and sold in an unhealthy manner, and the raising of domestic animals, all these factors have helped to provide conditions for the growth and reproduction of household insects carrying cysts and eggs parasites (Khalid *et al* ., 2010) .There are two main types of intestinal parasites, parasitic protozoa and parasitic worms which can not multiply in the body of the organism in its adult form , the protozoa are present as one cell and can multiply within the body of the organism in its adult form, which contributes to survival and allows serious infection Sometimes two or more parasites can cause infection at the same time and this condition is known polyparasitism (Corry and Brett , 2004). Giardiasis is a disease of animal origin (Glaser *et al* ., 2000) , the Giardia life cycle consists of two phases, the cyst phase, which is transmitted to the mouth with food contaminated with stool and the vegetative stage that causes the disease .

Cysts have the ability to survive for several months with adequate environmental conditions such as moisture , 10 - 25 of them can cause an infection of humans , after ingestion of the cysts and its arrival to the stomach and its appropriate environment in terms of acidity breaks down into vegetative stages , then the vegetative phase migrates to the duodenum to complete its divisions (Leder *et al* ., 2002). Peocop (2001) referred that yellow salts , carbohydrate and low oxygen level are all factors that increase the growth of *Giardia* in small intestine ,*Entamoeba histolytica* is similar to *Giardia* in the way of infection and life cycle, the vegetative phase has the ability to penetrate the mucous intestine layers and through the blood stream can reach the liver, lungs and brain (Reed ,2001) .Worldwide, the parasite is estimated at 40-50 million cases per year and 10,000 - 40,000 deaths per year(WHO , 1997). In a study carried out by AL-Aboody (2015) on the infection of intestinal protozoa at Bint al-Huda Hospital and Al-Hussein Teaching Hospital in Nasiriyah, the center of Thi- Qar province, the infection rate of *Entamoeba histolytica* was 97% higher than that of Giardia lamblia 3% ,Salman(2002) studied intestinal parasites at Ibn al-Baladi Children's Hospital and Kadhimiya Hospital, where 220 samples of faces were examined , the total infection rate in the two hospitals was 48% and 39.8% the percentage of infection of *Entamoeba histolytica* was 70.7% and 67.8% respectively. Waqar *et al* .(2014) pointed out the rate of infection of Giardia and Entamoeba among children with diarrhea in Baghdad - Iraq was higher than the other protozoa because of the susceptibility of these two parasites to move through water and food contaminated on the one hand and resistance to chlorine used in the sterilization of drinking water in addition to the small size that can penetrate water treatment systems. The aim of this study was to investigate the infection of intestinal parasites *Entamoeba histolytica* and *Giardia lamblia* among the patients who visited the health centers in Al Gharraf city - Thi - Qar province.

Material and method:

Material:

1- Normal Saline

Solve 8.5 g of NaCl in a little distilled water and then supplement with distilled water to 1 liter

2- Lugols – Iodine Stain

Dissolve 1 g of KI in 50 ml of distilled water and 1.5 g of I_2 in 50 ml of distilled water and mix the solvents

Collection of samples:

Fecal samples were collected from children and adults suffering from diarrhea who visit the health centers in Gharraf district of Thi- Qar province and for the period from October 2015 to the end of February 2016, where the number of samples to 488 at the end of the period scheduled for the study of various intestinal disorders and collected information for each patient (age, sex and habitation).

Laboratory examination:

Fecal samples were examined with the naked eye prior to microscopic examination, observation of color and the condition of the faces. The faces were observed whether they contained mucus or blood.

Microscopic examination:

Direct smear Method in normal saline (Singth , 2009)

Smear method prepared using Lugols – Iodine Stain(Singth , 2009).

Result:

The results showed that the number of positive samples was 228 and by 46.72% compared with 260 samples negative by 53.27% table (1).

Table (1) Total incidence of parasites *Entamoeba histolytica &Giardia lamblia*

No. of Tolal sample exa.	Positive		Negative	
	N	%	N	%
488	228	46.72	260	53.27

The number of infections by parasite type was 202 with *Entamoeba histolytica* and by 88.5% compared to 20 infection with *Giardia lamblia* and by 8.7 % a common infection of both types of parasites was reported by 2.6% and 6 case table (2).

Table (2) Percentage of infection according to the type of parasite

Parasite	N	%
E. histolytica	202	88.5
G. lamblia	20	8.7
Both parasites	6	2.6
Tolal	228	100

The results showed that there were no significant differences in total infections between males and females. The number of infections in males was 110 case and 48.24%, compared to 118 case in females and 51.75% table (3).

Table (3) Percentage of infection according to sex groups

sex group	N	%
Male	110	48.24
Female	118	51.75
Total	228	100

The results showed significant differences in the percentage of infection and for different age groups the highest incidence of parasites was observed in the age group above 15 years where was 49.12% compared with 22.36% and 28.25% for age groups 1-6 years and 7-15 years respectively table (4).

Table (4) Percentage of infection according to the age groups

Age groups	N	%
1-6	51	22.36
7-15	65	28.50
15>	112	49.12
Total	228	100

Infections according to the type of habitation were the highest among the urban population, with 150 case and 65.75% compared with the rural population 78 case and 34.3% and a significant difference table (5).

Table (5) Percentage of infection according to the habitation

Habitation	N	%
Urban	150	65.78
Rural	78	34.21
Total	228	100

Discussion:

The current study showed that the total infection rate of intestinal parasites *E. histolytica* and *G. lamblia* in the area of Gharraf was 46.72% ,this high percentage of infection may be due to contamination of drinking water, which is the main source of parasite transmission. majority of the region's population suffers from water scarcity and pollution, particularly in the summer, which necessitates them to be kept in large open containers for a long time, increasing the chances of infection and the problems of sanitation. Lack of sewage networks, resulting in a number of marshes and ponds, which are the source of many pathogens, in addition to the presence of waste, which helps the spread of home insects such as

flies, which plays a mechanical role in the transfer of parasite (Lechratilliar *et al*,.1999).

This study agreed with AL-Aboody (2010),which noting that the infection rate of *E. histolytica* and *G. lamblia* was high 48% in Al Gharraf compared to Al Batha 11.4%. The incidence of *E. histolytica* was higher than that of *G. lamblia* It was 88.5% and 8.7%, respectively. This may be due to our belief that the first was endemic to the Gharraf area and found the suitable environment in addition to its simple life cycle , its rapid reproduction and ease of transmission through food and drink (Huston et al., 1999). This study agreed with the results of AL-Aboody (2010) in the Gharraf area and Ibrahim's (2012) in Baghdad and disagreed the study of Ftohe *et al.* (2008) in the province of Nineva (2.63%). This indicates that different parasites have a common source of infection such as water pollution and wastewater. This is consistent with what Kumar and Singh (2016) and Sharma et al. (2004) have recorded .depending to gender, there were no significant differences in the incidence of males and females. We suggest that both sex have the same chances and conditions of infection. This relationship is consistent with the findings of Al-Janabi (2002), Al-Aboudi (2010) and Ibrahim (2012).

The rate of infection by age groups was the highest age group (15 years) with 49.12% compared with the age group (5-7 years) and (1-6) years, which reached 28.54% and 22.36%, respectively .This study is consistent with the study of Kumar and Singh (2016) where they noted that the incidence of *E. histolytica* Was higher in the age group older than 15 years and the study differed with AL-Aboody *et al*. (2015); Ibrahim (2012). As for the relationship between the spread of parasites and inhabitant , it was observed that the incidence of both parasites was higher among the urban population In rural areas, we believe that the reason is not to spread health awareness in the rural areas and therefore not to review the health centers at the time of the disease to know the causes of the disease.

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