

Epidemiological and diagnosis study of *Entamoeba histolytica* in diabetic patients at Kut city

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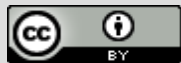
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ABSTRACT:

The current study was conducted on patients with diabetes mellitus and those infected with *Entamoeba histolytica* who were attended to Al-karamah Teaching Hospital and some private laboratories in the city of Kut-Iraq for the period from August to September, 2023 at the ages ranging from 20-70 years. A total of 50 feces samples were collected; 30 male and 20 female. Only 15 samples (30%) were given positive results to *E.histolytica*; male 9 (18%) and female 6(12%). Samples were examined microscopically by direct smear then stained with iodine. The prevalence of *E.histolytica* infection in patients from urban areas was more than rural areas and in male more than female.

Key words: Diabetic patients, *Entamoeba histolytica*, Feces, Iodine necessary



1. INTRODUCTION

Diabetes mellitus (DM) is a group of metabolic diseases in which a person has high blood glucose, either because the body does not produce enough insulin or because cells do not respond to the insulin that is produced (1, 2). This high blood sugar produces the classical symptoms of polyuria, polydipsia, and polyphagia. Diabetes is widely distributed in various populations. Its prevalence appears to be increasing rapidly (3). The cause of diabetes depends on the type, as type-1DM is partly inherited, and then triggered by certain infections with some evidence pointing at Coxsackie B4 virus(4). A genetic element in individuals susceptible to some of these triggers has been traced to particular human leukocyte antigen genotypes. However, even in those who have inherited the susceptibility, type 1 DM seems to require an environmental trigger (4). Type-2 DM is due primarily to lifestyle factors and genetics (4). Sub-Saharan Africa faces the world's highest increase in type 2 DM occasioned by adaptation to western lifestyles and genetic predispositions (5). The diabetic patients are considered as the immunocompromised group of patients (6). *E. histolytica* is one of the intestinal protozoan parasites that cause what is known as amoebiasis, and it is the third leading cause of death after malaria and Schistosomiasis(7). The transmission of the parasite depends mainly on the contamination of water and food with the cyst, which is one of the most important means that contribute to its transmission, and therefore prevention depends on the cleanliness of food, boiling drinking water, and sterilization with iodine is one of the means that contribute to the elimination of the cysts in endemic areas (8). The infection is spread all over the world and poses a serious threat to health in tropical and subtropical developing regions as well as in developed countries (9). Diarrhea can be defined as the expulsion of loose stool or liquid three times or more per day, and it is one of the most common health problems (10).Diabetes mellitus is a group of metabolic disorders characterized by elevated blood sugar levels resulting from

defects in insulin secretion, insulin action, or both Diabetes (11). The infection is spread all over the world and poses a serious threat to health in tropical and subtropical developing regions as well as in developed countries (12). The intestinal parasites infection among diabetic patients were studied by several authors in many countries such as Egypt (13), Turkey (14), Iran (15) and Nigeria (16). Others investigated intestinal parasites infection in immuno-compromised patients (17, 18, 19).The aim of study is to diagnosis of *E. histolytica* in diabetic patient.

2-MATERIALS AND METHODS

2-1 Materials

Normal saline, iodine stain, glass slide, cover slide, microscope, stick wood, plastic container

2-2 Methods:

2-3 Samples collection

This study was carried out in Al-karamah Teaching Hospital in the Kut city of Wasit province. This study included the collection of 50 feces samples, which were obtained from various areas in Wasit province during the period from the August to September, 2023. The stool samples were collected from diarrheal patients who attended AL-karamah Teaching Hospital and some private laboratories in clean, airtight plastic bottles and examined directly. The following information was recorded on each sample, such as: name, age, sex, as well as the residence of patients. Identification of *E. histolytica* in all stool specimens were examined under microscope after taking small amount on glass slide with normal saline and iodine stain covered with cover slide to examine under 40X.

3- RESULTS AND DISCUSSION:

A total 50 feces samples were collected from people who attended AL-Karamah Teaching Hospital in Wasit province. The results appeared that 15 (30%) of feces samples were positive for *E. histolytica* examined by microscope 40X who showed trophozoite and cyst forms as shown in figure 1.

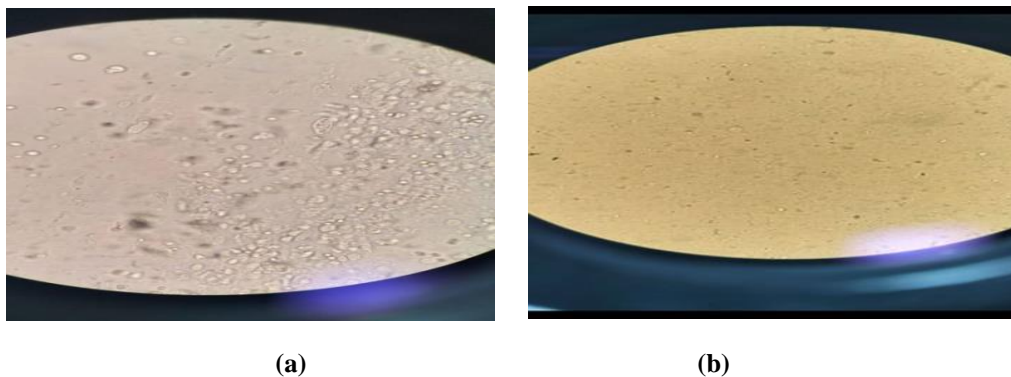


Figure (1): (a) Trophozoite of *E. histolytica* , (b) Cyst of *E. histolytica*

Table (1): Distribution of *E. histolytica* infection according to age groups

Age group (year)	No. of examined sample	Positive samples No.(%)
20 – 30	2	1(2%)
31 - 40	10	3(6%)
41 – 50	13	4(8%)
< 50	25	7(14%)
Total	50	15(30%)

Table (1) shows the total number of people examined and the infection rates for parasite according to the age groups under study. The total infection rate with *E.histolytica* was 30%. It was found that the highest rate of infection with *E.histolytica* was within the age group (<50) years, it reach 14%, and the lowest infection rate was within the age group (20-30) years with a rate of 2 %, the study agreed with (20) who showed a difference in the infection rate, as the percentage of tissue type amoeba infection was recorded at 24.85% in the city of Kirkuk, but it disagreed with (21) who showed that the total infection rate with intestinal parasites was 13.64%. The incidence of infection in the current study is high compared to results of previous studies. The reason for the difference may be attributed to many reasons, the most important of which are the service and environmental situation, as well as public hygiene, attention to personal culture, and the difference in the standard of living and social.

Table (2): Distribution of *E.histolytica* infection according to age group and residency

Age group (year)	Positive %	Rural %	Urban %
20 – 30	1(7%)	0(0%)	1(7%)
31 - 40	3(20%)	1(7%)	2(13%)
41 – 50	4(27%)	2(13%)	2(13%)
< 50	7(46%)	3(20%)	4(27%)
Total	15 (100%)	6(40%)	9(60%)

The highest prevalence of *E.histolytica* infection (46 %) was among the age group (<50) years old followed by (41-50) years (27%), then (31-40)years (20%) and finally (20-30) years old (7%).Our information was incompatible to (22,23). It was recorded a high rate of amoebic dysentery infection in some villages of Baghdad, Wasit respectively, and²⁴ who mentioned the same outcomes. These results of urban and rural areas may be because urban people eat a lot of ready-made food.

Table (3): Distribution of *E.histolytica* infection according to age group and sex.

Age group (year)	Male (%)	Female (%)	Positive	
			Male (%)	Female (%)
20 - 30	1(2%)	1(2%)	1(2%)	0(0%)
31 - 40	6(12%)	4(8%)	2(4%)	1(2%)
41 – 50	8(16%)	5(10%)	2(4%)	2(4%)
< 50	15(30%)	10(20%)	4(8%)	3(6%)
Total (50)	30(60%)	20(40%)	9(18%)	6(12%)

The current study was compatible with (25) in Wasit province, Iraq showed that the infection rate was higher in males as it is in females. And with (26) in the city of Kirkuk, where the rate of infection with *Entamoeba histolytica* among males was 61.26%, and in females it was 37.74%. But these did not agreed with the study of (27) and (28), as each of them recorded a higher prevalence of intestinal parasites in females than males. Also (29) showed that the rate of infection with stomach germs was higher in females compared to males, also, the study (30) showed that the infection rate of parasite was higher in females compared to the infection rate in males. These results may be because the male more movement from female.

4 -CONCLUSIONS:

It was found in this study that the percentage of male is greater than the female, and also that the percentage of urban people is greater than rural people, and also that ages of <50 years are more affected than other age.

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