

Prevalence of *Entamoeba histolytica* in Diarrheal Patients in Al- Najaf Province\ Iraq

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Abstract

The study was done in Al- Najaf Teaching Hospital. The total number of examined patients were (1061) for both sexes (males and females) in different ages (children's and adults). The infection with *Entamoeba histolytica* was diagnosed in 241 stool samples from the total number examined, percentage Infection with intestinal protozoa according to the months of the year January was relatively high (27%), then it began to gradually to decline in the month of April, reaching (6%).

The highest incidence was recorded in aged (15-44) year (29%) while the lowest was in children aged 1 years (6%). The results showed Distribution according to sex, males (46%) and females (54%) in tested with parasites. The samples were recorded the average percentage in the cyst stages of *E. histolytica* at a higher rate, where it reached (80%) than the trophozoite stage of *E. histolytica*, where it reached (20%) .

Key words: *E. histolytica*, diarrhea, Cyst, Trophozoite, parasite.

INTRODUCTION

Most tropical and subtropical developing nations are endemic for parasitic diseases (1). It is estimated that 3.5 billion individuals worldwide are infected with intestinal parasites. Intestinal protozoa and helminthes parasites, pathogenic bacteria, and viruses are the most common causes of diarrhea in children in underdeveloped countries (2,3).

Entamoeba histolytica, is one of species which parasites the human intestinal tract and this is the only species of amoeba that found to be associated with intestinal disease (4), causes asymptomatic infections in around 90% of infected persons and plays an important role in parasite dissemination. Asymptomatic infection can progress to invasive amoebiasis, which can cause bloody diarrhea, abdominal pain, flatulence, nausea, and vomiting. In some situations, amebae can travel from the gastrointestinal tract to the liver, causing ulcerations and abscesses and ultimately resulting in amoebic liver abscesses (5). Young children are reported to be affected by IPIs (Intestinal parasitic infections) compared to adults due to their increased nutritional and less developed immune systems (6). Some researches concentrated on gender and occupation-related prevalence (7), others concentrated on the link between anemia and parasitic infections of the gastrointestinal tract (8).

MATERIALS & METHODS

Stool Samples Collection

One thousand sixty-one stool samples were collected using clean plastic containers with a cover from diarrheal patients and some other intestinal disorders attending AL- Najaf Teaching Hospital, their ages ranged from less than 1 yr to more than 45 yr. for a period from Jan.2024 to June 2024. Information have been recorded according to a special form prepared for this purpose.

Statistical Analysis

The data in this study were represented by numbers and percentages. Chi-Square Test (χ^2) was used to test the differences (9). The significance was detected at $p < 0.05$. The analysis was performed by SPSS (Version 28), and Microsoft Software Excel 2019 for graphics.

RESULTS & DISCUSSION

Table (1): Distribution of diarrhea cases and percentages of their occurrence according to the study months.

Months	Examined	Infected	%	Statistical value $\chi^2= 35.716$ p-value=0.0001 *
January	254	66	27	
February	198	63	26	
March	125	26	11	
April	172	15	6	
May	138	32	13	
June	174	39	16	
Total	1061	241	100	

***Significant differences at p-value <0.05.**

Table (1) shows that there were significant differences Infection intestinal protozoa according to the months of the year, as the infection rate in January was relatively high (27%), then it began to gradually to decline in the month of April, reaching (6%).

Differences in infection depending on the months of the year may be due to weather fluctuations, where temperatures rise during summer, then gradually decrease with the advent of the fall and winter. Or as a result of the proliferation and spread of disease-carrying insects, such as house flies, which are mechanical carriers of intestinal protozoan cysts and worm eggs, in addition to Frequent consumption of soft drinks and cold juices from street vendors, which can be a suitable medium for the spread Parasites.

Table (2): Distribution of diarrhea cases and percentages of their occurrence according to age.

Age (yr.)	Examined	Infected	%	Statistical value $\chi^2= 9.863$ p-value=0.043 *
Less than 1	98	14	6	
1-4	131	28	12	
5-14	212	62	26	
15-44	305	71	29	
More than 45	315	66	27	
Total	1061	241	100	

*Significant differences at p-value <0.05.

Table (2) shows that there were significant differences infection was prevalent in all age groups that involved in this study. The highest incidence was recorded in aged (15-44) year (29%) while the lowest was in children aged 1 years (6%). Children are more likely to be infected with *E. histolytica* than adults. They are more susceptible to water-borne and foodborne diseases, as their playing and hygiene routines predispose them to infection than older age groups. Furthermore, their immune systems are not fully developed, even their low level of health care, may elevate parasitic infection rates.

The incidence of intestinal parasites did not differ by age group. This study is agreeing with (10) who reported a prevalence of (36.7%), In this investigation, *E. histolytica* was found to be strongly linked with diarrheal situations. Children with diarrhea had a substantially higher incidence (63.92%) than those without (17.58%).

These results coincide with (11) who found the prevalence for children with diarrhea (47.3%) and without diarrhea (31.5%). Diarrhea is often regarded as leading cause of childhood mortality and morbidity in underdeveloped countries. Mortality due to diarrhea estimates 2.5 million people each year (12).

Table (3): Distribution of *E. histolytica* according to sex.

Sex	Male	Female	Total
Examined	330	731	1061
+ ve No.	112	129	241
%	46	54	100
Statistical value $\chi^2 = 34.37$ p-value = 0.0004 *			

*Significant differences at p-value <0.05.

Table (3) shows that there were significant differences in the patients with *E. histolytica* parasites concerning gender distribution for both males and females. The highest incidence was recorded in female (54%) while the lowest was in male (46%). This result may be due to social customs or related to the abundance of male activity, which increases their chance of being exposed to sources of infection more than females, and this result agrees with the findings of (13).

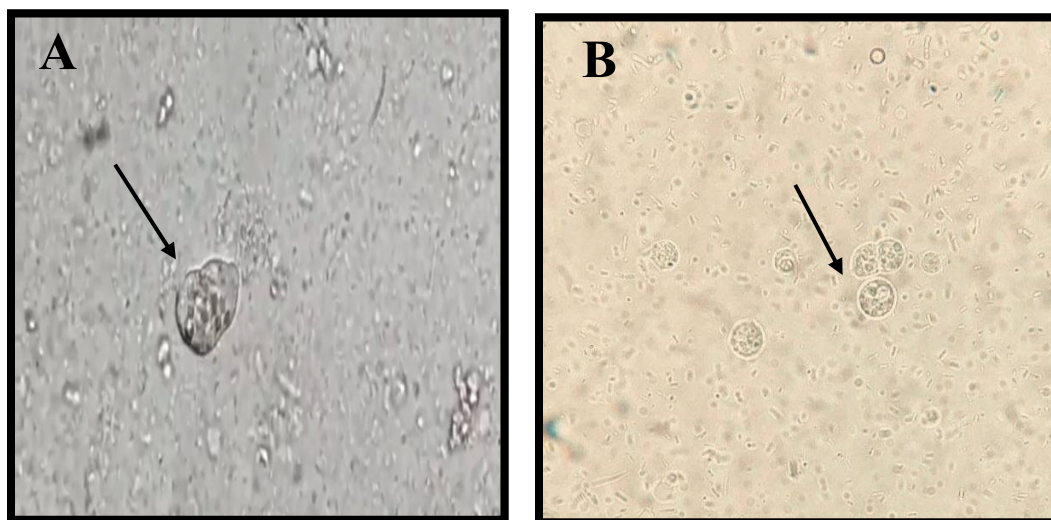


Figure (1) : (A) *E. histolytica* trophozoite (B) *E. histolytica* cyst examined by light microscope (40X).

Table (4): Distribution of *E. histolytica* stages.

Stages	Trophozoite	Cyst	Total
+ ve No.	49	192	241
%	20	80	100
Statistical value $\chi^2= 84.85$ p-value=0.0003 *			

*Significant differences at p-value <0.05.

Table (4) shows that there were significant differences between the cyst and trophozoite stages; the highest percentage was reported in the cyst stage, reaching around (80%) While in the trophozoite stage, it reached about (20%), were observed trophozoite stage and cyst stage as in Figure (1).

The study found that the cyst stage of *E. histolytica* parasite had the highest prevalence of parasitic infection compared to the trophozoite stage. This could be owing to the parasite's motility, as *Entamoeba* is immobile in cyst stage but can tolerate extreme circumstances such stomach acidity. *Entamoeba* which can live outside the body, can spread infections between individuals. The source of the high infection may be owing to the use of river water or liquefied water, which may not be sufficiently sanitized, or due to chlorine supplementation results, according to various research. (14,15,16).

RECOMMENDATIONS

1. More public health awareness programs should be pushed to improve understanding of the source of amoebiasis, especially in children.
2. Improve sanitation, provide safe drinking water, and promote good toiletry habits.
3. Proper and effective diagnostic techniques, such as using sensitive and specific assays like ELISA and PCR.

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