

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Entamoeba histolytica Infection in Infancy as a Cause of Diarrhea in Baghdad Private Laboratories

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ABSTRACT

The aim this study was to record the prevalence of *Entamoeba histolytica* in infantile diarrhoea among a sample at Baghdad private laboratories, as well as to identify the deficiency of associated factors, such (Gender, Age Groups, weight, Types of Feeding, Mother health status), which may playing negative role in prevalence of studied disease. The present study was conducted from the period of 1 July to 30 November 2014 in a cross sectional design of a random sample of 155 infants suffering from diarrhoea aged between (1-18) months of both gender were examined for *Entamoeba histolytica* by direct smear method of stool samples examination and by a questionnaire survey of each patient. And another 48 stool samples were obtained from the mothers of each positive infant to investigate this parasite.

Prevalence of *Entamoeba histolytica* are accounted 48(31%), distributed between males 20(29.4%), and females 28(32.2%). No significant differences are accounted at $P>0.05$ throughout gender, and age groups, as well as infected infants with *Entamoeba histolytica* are recorded about quarter weight's decay at upper bound limit compared with normal range of weight. Significant different are found at $P<0.05$ among different types of feeding, with utility of breast feeding type. And the study revealed that the mother is plying as an impact factor as a source of infection to her infant. Prevalence of *Entamoeba histolytica* are resulted that among three of infantile diarrhoea children expected that one among had infected with *Entamoeba histolytica*.

Keywords: *Entamoeba histolytica* , Diarrhea , Infants (1-18 months). The type of feeding.

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INTRODUCTION

Amoebiasis is still a big problem of human civilization at the beginning of 21st century, so every study from this field is valuable [1]. Approximately 40 million people , world wide suffered from this disease per year and 40.000 died due to dysentery [2] . Diarrhea is a major cause of childhood morbidity and mortality world wide [3]. In infants , stool volume in excess of 15 g / kg / 24 hr. is considered diarrhea [4]. Diarrhea may be caused by a number of conditions , including bacteria, viral, parasitic infection and an intestinal disease [5]. *Entamoeba histolytica* is a common problem in areas with poor hygiene and transmitted via contaminated water, food and by person to person contact [6]. Amoebic dysentery diarrhea is frequently associated with tenesmus, fever, abdominal pain, emesis, generalized toxicity [7], and diarrhea contains blood and mucus, the incubation period is 2 – 6 weeks and most infected individuals are asymptomatic [6].

MATERIAL AND METHODS

The patients:

Cross sectional design included 155 infants suffering from diarrhoea of both gender, and aged (1-18) months were selected randomly among a sample from Baghdad private laboratories. After that, another 48 stool samples were obtained from the mothers of all positive infants.

General Information:

A simple forma was used to obtain data on gender, age groups, weight, and types of feeding, and that was obtained from the case sheet of the infant.

Laboratory Examination:

1-Stool Samples Collection:

Clean plastic cups were used for stool samples collection avoiding presence of urine or any other substances that may lead to false examination.

2-Microscopic Examination:

For each stool sample, direct smear method was done as described By Gracia and Ash (8).

Statistical analysis :

Suitable statistical methods are used in order to analyze and assess results, and the includes:

- Statistical Tables.
- Graphical presentation.
- Multiple Z-test, for testing equal of several proportions assumed.
- Z-test, for testing equal of two proportions assumed.
- Chi-Square test, Tests the hypothesis that two gender had the same distribution infected
- infantile diarrhoea with *Entamoeba histolytica* along different age groups.

RESULTS

Table no. (1) and figure no. (1) show that total sample of prevalence with *E. histolytica* are accounted 48(31%), distributed between males 20(29.4%), and females 28(32.2%). The same table and figure explain that infected cases are commonly increased in contrast of age groups in more than 6 months.

Table (1): Prevalence of Infection with *Entamoeba histolytica* in relationship with Gender and Age Groups with Comparisons' Significant.

Gender	Male			Female			Total			
	Age Groups	No. Ex.	+ ve	%	No. Ex.	+ ve	%	No. Ex.	+ ve	%
	1 - 6	16	3	18.8	21	4	19.0	37	7	18.9
	7 - 12	27	9	33.3	32	12	37.5	59	21	35.6
	13 - 18	25	8	32.0	34	12	35.3	59	20	33.9
	Total	68	20	29.4	87	28	32.2	155	48	31.0
C.S. P-value	MZ=1.157 P>0.05 (NS)			MZ=2.225 P>0.05 (NS)			MZ=3.340 P>0.05 (NS)			
	$\chi^2 = 0.145 : P = 0.930$ (NS)									
	1 st Age Group: Z=0.023 P>0.05 (NS)									
	2 nd Age Group: Z=0.333 P>0.05 (NS)									
3 rd Age Group: Z=0.264 P>0.05 (NS)										
Total Sample: Z=0.370 P>0.05 (NS)										

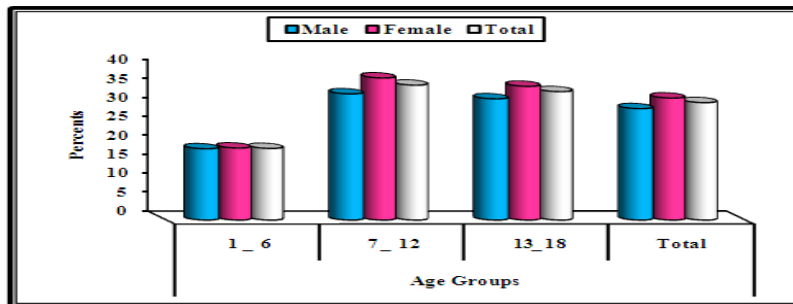


Figure (1): Distribution of Infection with *Entamoeba histolytica* in relationship with Gender and Age Groups.

Table (2) shows highly decreasing of infected infants with *E. histolytica* according to their weight factor, in light of upper bound range of weight compared with normal ranged weight, since they are accounted about quarter weight's decay, and that were illustrated graphically in figure (2).

Table (2): Ranges of weights for the infants infected with *Entamoeba histolytica* in relation to Age Groups.

Age Groups	Inf., & Normal weight	Exam. no.	Infected Range of weight	Normal Range of weight	Weight's Decay %
1 - 6		7	3.5 – 7.0	3.0 – 8.0	25%
7 - 12		21	6.0 – 9.0	6.0 – 10.5	
13 - 18		20	8.0 – 9.5	8.0 – 11.5	
C.S. P-value	MZ=3.340 : P>0.05 (NS)				

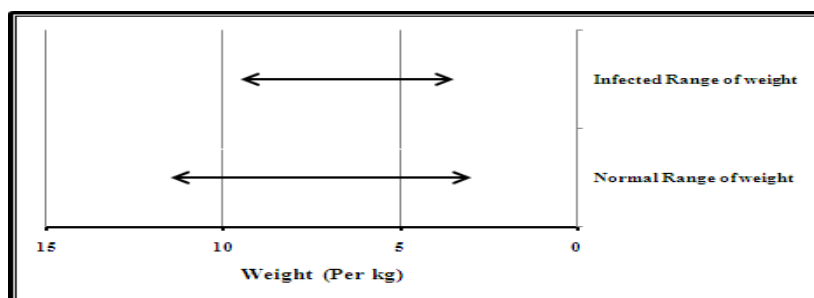


Figure (2): Infected with *Entamoeba histolytica* weight's range relationships with Normal (per kg)

Table (3) shows the vast majority of infected infantile having diarrhoea with *E. histolytica* who had Bottle type of feeding only, and they are accounted 18(37.5%), then followed with who had mixed type of feeding, and they are accounted 15(31.3%), then followed with who had adult feeding type, and they are accounted 10(20.8%), then finally, who had breast feeding type are recorded the leftover, and accounted only 5(10.4%) , and that were represented graphically in figure (3).

Table (3): Prevalence of Infection with *Entamoeba histolytica* in relationship to types of Feeding.

Type of Feeding \ Infection	Exam. no.	+ ve	%
Breast Feed	48	5	10.4
Bottle Feed	48	18	37.5
Mixed Feed	48	15	31.3
Adult Feed	48	10	20.8
C.S. P-value	MZ=10.889 P<0.05 (S)		

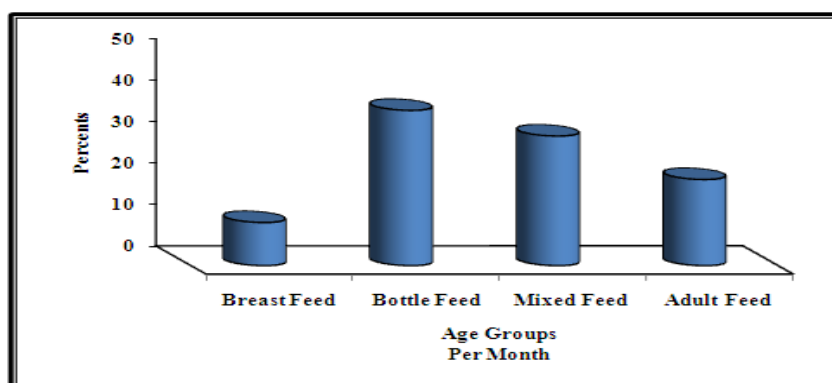


Figure (3): Distribution of Infection in *Entamoeba histolytica* in relationships with types of Feeding.

Table (4) shows that the initial manifestation was diarrhea in all cases associated with fever 60.42%, vomiting 39.6%, and dehydration 33.33%. Stool examination disclosed blood and mucus from the onset in 58.33% and mucus only 41.7%. The stool frequency ranged from 6-10 times per day in 68.8% of all patients .

Table (4): The frequency of symptoms associated with *Entamoeba histolytica* infection.

Sympyoms	No. of +ve	% of infection
Fever	29	60.42
Vomiting	19	39.6
Dehydration	16	33.33
Bloody mucus diarrhea	28	58.33
Mucus diarrhea	20	41.7
6-10 times / day	33	68.8

And finally 31 (64.6%) of the positive infants mothers were revealed infected with *E. histolytica* .

DISCUSSION

In the present study, the percentage of infants with positive *E. histolytica* infection was (31.0 %). Similar findings have been obtained by Hawezy [9], who found that *E. histilytica* at a rate of (31.4 %) among children in Erbil district. Moreover, [10] found that *E. histolytica* identified at a rate of (39.7 %) in patients of maternity and pediatric hospital in Erbil too. While [11] reported that amoebiasis was found in (26.7 %) of stool samples of children suffering from diarrhea in Mosul .

The transmission of this parasite depends heavily on contaminated food and water. Filth flies, particularly *Musca domestica*, and cockroaches also are important mechanical vectors of cysts [12]. This also may be due to sewage contaminated wells from which was consumed without treatment, or insufficiency of chlorination of well water since the chlorine level sufficient to kill bacteria do not affect the cyst of *E. histolytica* because protozoa cysts are highly resistant to chlorine. These organisms must be removed with coagulation, flocculation, sedimentation and filtration [13].

The prevalence with *E. histolytica* distributed between males 20(29.4%), and females 28(32.2%). In addition to that, multiple Z-test for testing equal percentages assumed represents no significant different at $P>0.05$ among different gender's age groups, rather than infected cases are commonly increased in contrast of age groups in more than 6 months. From preceding results, it could be conclude that among three of infantile diarrhoea morbidity, expected that one among had infected with *E. histolytica*, [14] were recorded similar results among preschool children in Baghdad city, and [15] found that infants less than two years old already suffered from amoebic dysentery in 28 cases 33% out of a total of 85 below 15 years of age. While [16] was related the incidence is highest in the age group (6-11 months), when weaning often occurs.

In the present results, they are accounted about quarter weight's decay. From preceding result, it could be says that, weight factor are playing negatively role for infected children with *E. histolytica*. The risk of dying from an episode of persistent diarrhea or dysentery is considerably increased when a child is already malnourished. In general, these effects are proportional to the degree of malnutrition being greatest when malnutrition is severe [17].

The vast majority of infected infantile having diarrhoea with *E. histolytica* who had Bottle type of feeding only, and they are accounted 18(37.5%), then followed with who had mixed type of feeding, and they are accounted 15(31.3%), then followed with who had adult feeding type, and they are accounted 10(20.8%), then finally, who had breast feeding type are recorded the leftover, and accounted only 5(10.4%). as well as significant different are found at $P<0.05$ among different types of feeding. From preceding results, it could be conclude that among ten infantile of having diarrhoea caused by *E. histolytica* expected that extremely with not more than one who had breast feeding type, and the leftover cases related to others types of feeding, such that (Bottle Feed, Mixed Feed, and Adult Feed). From preceding results, it could be says that breast feeding type playing positive role for prevented infant who had diarrhoea caused by *E. histolytica* disease. And that is agreed with [16 and 18]

In the present study the initial manifestation was diarrhea in all cases associated with fever 60.42%, vomiting 39.6%, and dehydration 33.33%. Stool examination disclosed blood and mucus from the onset in 58.33% and mucus only 41.7%. The stool frequency ranged from 6-10 times per day in 68.8% of all patients, and that is resemble to the findings of [15].

And finally, in the present study, 31 (64.6%) of the positive infants mothers were revealed infected with *E. histolytica*. While in Korea [19], when he visited 62 houses in which infants were positive for *E. histolytica*, he found that the parasite positive were 46.2% among mothers. We believe that the prevalence rates varied according to reporter, examination method and area [20].

CONCLUSIONS

1. Prevalence of *E. histolytica* are resulted that among three of infantile diarrhoea children expected that one among had infected with *E. histolytica*.
2. infected infants with *E. histolytica* are recorded about quarter weight's decay at upper bound limit compared with normal range of weight.
3. Breast feeding type playing positive role for prevented infant who had diarrhoea caused by *E. histolytica* disease.

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