

# The Prevalence and Infectivity of *Entamoebahistolytica* in Baghdad Province

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## Abstract

The present study aimed to explore the *Entamoebahistolytica* in 500 patients (human stool) selected from a private laboratory in Baghdad/Iraq during the period from 1<sup>st</sup> of April 2018 till the 31<sup>th</sup> of August, by using the iodine stain to detect the stages of parasite in all samples, evaluate the prevalence of the parasite between males and females and to evaluate the relationship of the parasite in selected months of this study. This study showed that the total number of infected patients is 394 from 500 taken sample. The high incidence (81.13%) is occurred in August and the low incidence (76.84%) is occurred in April. This result showed no significant differences appeared between the chosen months of the study ( $P < 0.01$ ). The result of this study showed no significant differences ( $p < 0.01$ ) appeared between the males and females of the study, the number of infected patients are (192 males out of 240 and 202 females out of 260).

**Keywords:** Prevalence, infectivity, *Entamoebahistolytica*, Baghdad province.

## Introduction

*Entamoebahistolytica* is considered one of the intestinal parasites of the protozoa family which causes severe diarrhea (dysentery) in man.<sup>(1,2)</sup> *Entamoebahistolytica* is considered one of the pathogenic parasites and leads to amoebiasis and considered one of the main causes of diarrhea in developing countries, the parasites have two stages to complete their life cycle, an active phase inside the host and an inactive phase there is outside a host.<sup>(2)</sup>

The World Health Organization has indicated that 3.5 billion people have intestinal parasites and about 450 million suffer from these parasites.<sup>(3)</sup>

The encapsulated phase (cyst stage) is the infected phase that exits with the droppings of the affected human and contains four nuclei and average 20  $\mu\text{m}$  in diameter. As for the active phase with a size ranging from 10 to 60  $\mu\text{m}$ , it is the one present in the large intestine of the host that causes damage to the intestinal wall and the appearance of blood with diarrhea.<sup>(4,5)</sup>

This parasite is transmitted in several ways, the most important of which is taking the cysts through contamination of water and food, through contact with

two people, one of which is infected and the other is intact, contact with affected areas and finally swimming in water contaminated with the cysts of the parasite, clinical symptoms differ from one person to another, that is, the appearance of signs depends on the number of parasites present in the host, in simple cases, no symptoms appear, but in severe cases there is pain in the abdomen and bloody diarrhea.<sup>(6,7)</sup>

There are few reports of confirmed cases of amoebiasis in the dog and even less information on amebicides, their dosages and side effects pertaining to animals.<sup>(8)</sup>

## Material and Method

The samples were taken from a private laboratory in Baghdad governorate/Iraq during the 1<sup>st</sup> of April 2018 till the 31<sup>th</sup> of August. The number of Stool samples were 500, collected from (males and females) and added inside clean plastic bottles and then detected the stages of parasite by Lugol's Iodine stain.

The preparation of Lugol's Iodine is by Diluted 1:5 with sterile de-ionized water. (This working solution should be prepared fresh approximately every 3 weeks), Prepare a direct smear of the specimen, Place a coverslip over the sample and examine the wet mount preparation

for the presence of motile protozoa. The organisms are very pale and transparent and are more easily observed under low light intensity, once the wet mount has been thoroughly examined, a drop of Lugol's Iodine (working solution) can be placed at the edge of the coverslip, or a new mount can be prepared using iodine alone; examine the slide for the presence of brown parasitic structures.<sup>(9,10,11)</sup>

### Result and Discussion

This study showed that the total number of infected patients were (394) from 500 samples that had been taken and percentage was (78.8%).

The high incidence was (81.13%) that appeared in August and the low incidence was (76.84%) that appeared in April as shown in the Table (1), this result showed a prevalence of parasite in Baghdad and no significant differences between the months during period of this study .

**Table 1: Show infection with *Entamoebahistolytica* according months of study.**

Months	Total number of examined patients	Number of positive (+) patients	Percentage %
April	95	73	76.84%
May	103	80	77.66%
June	97	77	79.38%
July	99	78	78.78%
August	106	86	81.13%
<b>Total</b>	<b>500</b>	<b>394</b>	<b>78.8%</b>

This study showed that the total number of infected patients were (192 males and 202 females) from 500 samples that had been taken and percentage was (78.8%).

The incidence was (80%)in males and (77.69%) in females, that appeared in the Table (2), this result revealed no significant differences between the gender during period of this study (p < 0.01).

**Table (2): Show the percentage of males and females infected person**

Number of total examined	Samples infected				Total	
	Male	Female	Male	Female	Male	Female
Method of examination						
Iodine stain	240	260	192	202	80%	77.69%
					78.8%	

The reason of the absence of significant differences (p < 0.01) between months in this results it's due to exposure the patients to the bad environment and low hygiene as well as food and water contamination with cyst of *Entamoebahistolytica*.

This research appeared that *Entamoebahistolytica* increased of incidence in hot months (from April to August), that agreed with.<sup>(12,13,14,15,16)</sup>

The cyst stage of *Entamoebahistolytica* was more active during hot months; our results agreed with.<sup>(17,18)</sup>

The incidence of this disease in hot months (from April to August) was without any significant variation as a result of the infected stage (cyst) of *Entamoebahistolytica* staying for weeks and resistance of the bad environment without destroyed the cyst besides the sample taken from symptomatic patients within the high temperature

months and this condition considered good environment to survive the cyst, this study agreed with.<sup>(5, 6,13)</sup>

The reason of the absence of significant differences ( $p < 0.01$ ) between gender in this results it's due to exposure both the gender to the same bad environment and low hygiene as well as food and water contamination with cyst of *Entamoebahistolytica*.

This study was disagree with other studies that recorded not important higher differences in proportions of infection between females and males in Baghdad<sup>(19)</sup> and Mosul city<sup>(20)</sup>.

The reason for the different incidence of infection between males and females is attributed to the difference between body structure, immunity and addition to the physiology of the body for both genders, e.g. endocrine activity as male bodies are more tolerant than those of females<sup>(21)</sup>.

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**Conflict of Interest:** None to declare.

**Ethical Clearance:** All experimental protocols were approved under the College of Pathological Analysis Techniques and all experiments were carried out in accordance with approved guidelines.

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