

## Effect of Infection by Entamoeba Histolytica on Some Blood Parameters in Kufa City

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**Abstract:** This study was carried out to study the effect of Entamoeba histolytica infection and its impact on some blood parameter such as hemoglobin, packed cell volume (p.c.v.), cholesterol and Triglyceride (TG) among 430 patients who attended AL-Furat AL-owset Teaching hospital in Kufa city / Iraq during six month period from March and September2018. Those patients suffered from diarrhea and abdominal discomfort. The frequency of Entamoeba histolytica occurring was (70) infection out of (430, 16.3%). Among those (70) infected there were male n=32/70,45.7%, while females represented n=38/70,54.3%. The result of this study showed no significant affect in cholesterol and Triglyceride but significant decrease in Hb and pcv in comparison with control group of (30) healthy individual which was included in this study.

**Keywords:** Entamoeba histolytica, cholesterol, Iraq, Blood parameter.

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## 1. Introduction

*Entamoeba histolytica* among the most common protozoan parasite which causes Amoebiasis [1]. *E. histolytica* is the most common intestinal parasite of human which affects the large intestinal area causing ulceration and spread dysentery worldwide [2]. It is a unicellular protozoan parasite with mortality rate over 100000 worldwide yearly [3]. About 10% of cases are asymptomatic, although, the parasite can invade the gut wall causing severe ulceration and amoebic dysentery characterized by blood [4].

The parasite transmission through contaminated food and water via fecal–oral route [5]. This parasite causing intestinal colic, diarrhea occasionally diarrhea with bleeding of mucosa and loosen of appetite, vomiting, loss of  $\text{Na}^+$ ,  $\text{K}^+$  which may lead to malnutrition and anemia [6]. This parasite infection could be transmitted to extra intestinal region such as liver and causes abscesses [7].

The aim of this study is to detect the parasite occurrence in this city within certain time of six months and to measure the impact of infection on blood parameter such as Hb, pcv, cholesterol, Triglyceride in compared with control group in order to pay attention on the Health problems as well as the disease, we associated with this parasite.

## 2. Materials and Methods

### 2.1 Defection of the parasite

Stool samples were collected from a total of (430) patients included males and females with different ages (1 years to 65 years old). These patients attended AL-Furat AL Owset teaching hospital within six months period from March September 2018. The stool samples were collected in clean plastic bottles labeled with specific patients data i.e. name, age, sex. These samples were examined under microscope after mixing with normal saline during slide preparation. Out of (430) stool samples only (70) stool samples confirmed cyst *E. histolytica*. Those samples were diagnosed on the base of clinical finding and microscopically stool examination according to standard laboratory procedure.

### 2.2 Measurement of blood parameter

The blood parameters included the measurement of Hb %, by using cyan methemoglobin method according to Salh's method, in this method the Drabkin solution was used for dilution which contains cyanide ferric potassium  $\text{K}_3\text{Fe}(\text{CN})_6$  and potassium cyanide (KCN) these two compound associated forming complex compound of methemoglobin. The color intensity was measured at (540) wavelength by using spectrophotometer. As for pcv measured by using

capillary test tubes, micro centrifuge and hematocrit reader to measure and determine the volume of packed RBCs cells [8].

### 2.3 Estimation of total serum cholesterol

This was done by enzymatic and colorimetric method in which cholesterol esterolysis to cholesterol and fatty acid by cholesterol esterase [9].

## 3. Results and Discussion

The infection with *E. histolytica* was significantly high the frequency of infection was (16.3%). The male represented (45.7%) percentage while it was for female (54.3%). These results showed in Table 1 the distribution according to the gender.

**Table 1: The distribution of *E. histolytica* infections**

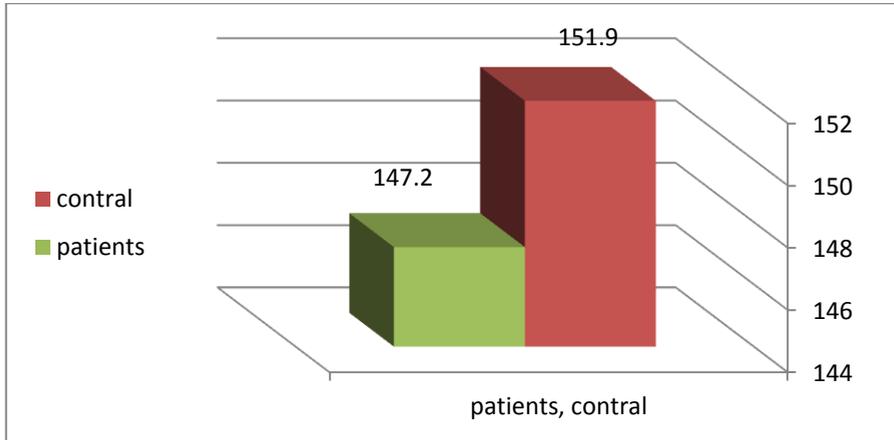
Sex	Number	Percentage
Male	32	45.7%
Female	38	54.3%
Total	70	100%

There was significant difference according to gender  $p > 0.05$ . These results were in agreement with previous study was done by Wassir (2010) [11]. The distribution of infection with *E. histolytica* according to the months of period of this study the highest number was in July ,August both months represented the showed the number test in Iraq. The results in Table 2 decline in number of infections started May, April and March as the temperature started dropped in these three months of this study.

**Table 2: The distribution of *E. histolytica* infections according to months of study**

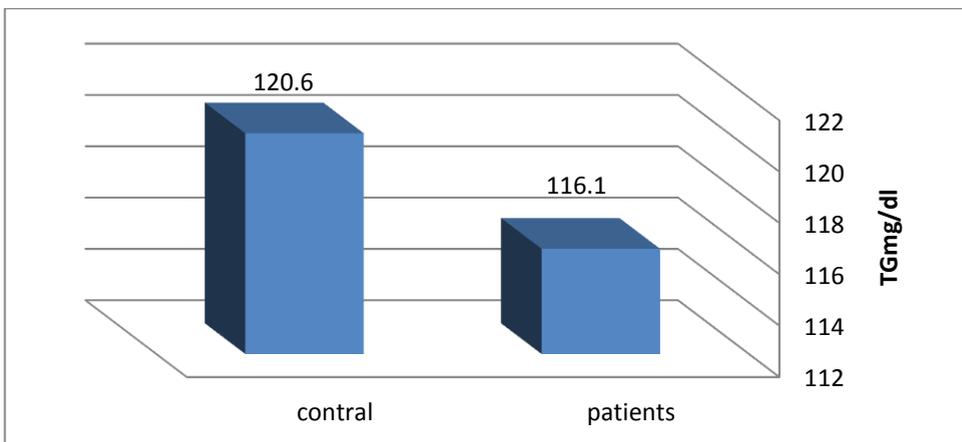
Months	No. of samples	Number of positive infections	Percentage %	Male	Female
August	94	16	17	5	11
July	102	18	17.6	11	7
June	98	15	15.3	7	8
May	58	13	46.5	4	9
April	43	6	2.3	3	3
March	35	2	1.3	2	0
Total	430	70	100	32	38

The result showed in table (2) was in agreement with previous study was done by [12].The result for serum cholesterol estimation as shown in figure (1) showed significant decrease  $p < 0.05$  in cholesterol concentration among patients which was  $147.2 \mu\text{g/dl}$  in comparison with control group which as  $151.9 \mu\text{g/d}$ . Figure (1)



**Figure 1: Cholesterol concentration among patients and control group**

There were significant differences among control group and patients ( $P < 0.05$ ) The results in Figure 2 showed there were significant decrease ( $p < 0.05$ ) for serum Triglyceride concentration which in patients  $116.1 \text{ mg/dl}$  while its concentration for control groups  $120.6 \text{ mg/dl}$ .



## Figure 2: Serum Triglyceride concentration among patients and control group

The results in Figure 1 and Figure 2 showed significant decline in cholesterol and Triglyceride respectively among infected patients with *E. histolytica* and control group. This may be due to the virulence and pathogenicity of adhesive on the epithelial cells [11]. This parasite which causes amoebiasis which effect by reducing the cholesterol absorption in related to liver abscess this causes the cholesterol and triglyceride to be depicted from serum [12].

The previous studies [13, 14] showed that this parasite become more virulent in the presence of cholesterol .Also *E. histolytica* utilized cholesterol for their growth [15], as well as the using of cholesterol with host factor such as normal flora may be needed in encystations of *E. histolytica* [16].

The measurement of Hb% and PCV showed reduction only in (No. 56) which represented (56/430, 13%). The results of this study showed increased of incidence of *E. histolytica* infection during August ,July, June in comparison with May , April and March as the Temperature decline this may be in related for encystation of *E. histolytica* as well as decrease food hygiene during summer months . These results were in agreement with pervious study [17, 18, 19].

The results of this study showed increased of infection among females more than in males this may be related to physiological behavioral as well as other difference [20]. The results in related to Hb% and Triglyceride deficiency may be to loss of blood which associated with bleeding through amoebiasis dysentery and ulceration [21].

## 4. Conclusion

This study showed that there is a need for more study and investigation of *E. histolytica* occurrence for other places of the country and apply notional medical health strategy for limitation for *E. histolytica* infection among population.

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## تأثير الاصابة بالاميبا الحالة للنسيج على بعض معايير الدم في مدينة الكوفة

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**المستخلص:** أجريت هذه الدراسة لمعرفة تأثير الاصابة بطفيلي *Entamoeba histolytica* وتأثير هذه الاصابة على بعض معايير الدم مثل الهيموكلوبين ، p.c.v الكولستيرول والدهون الثلاثية بين 430 مريض وفدوا الى مستشفى الفرات الاوسط التعليمي في مدينة الكوفة في العراق . لفترة ستة أشهر من شهر آذار ولغاية شهر ايلول 2018 . هؤلاء المرضى كانوا يعانون من حالات اسهال والالام البطنية. كانت نسبة الاصابة 16.3% حيث بلغ عدد المصابين (70) مصاب حيث اصابة الرجال 45.7%(70/32) ونسبة الاناث 54.3% (70/38) أظهرت الدراسة نقص معنوي في مستوى الهيموكلوبين و pcv مقارنة بمجموعة السيطرة البالغة 30 فرد من الاصحاء .

**الكلمات المفتاحية:** الاميبا الحالة للنسيج، الكولستيرول، العراق، معايير الدم

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