

## **Intestinal Parasites in Children under Five Years with Diarrhea in Kerbala, Iraq**

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### **Abstract :**

A total of 277 diarrhea cases in children less than five years old were examined. The cases were divided into two groups, less than two years and 2-4 years ,to determine the types of parasites and prevalence of infections that is may be attachment with factions of age . Total prevalence of infection was 11.6%. Age group 2-4 years recorded highest prevalence of infection (38.5%). There were no significant differences between males and females in infection. Four types of protozoa were demonstrated *Entamoeba histolytica*(4.0%) *Giardia lamblia*(6.5%) ,*Chilomistix mesnili* (0.7%), *Trichomonas hominis* (1.1%) and only one type of helminths *Hymenolepis nana* at prevalence (0.4%) .Villages and quarters recorded highest prevalence of infection (13.2% , 11.5%) respectively . Bottle – feeding was seen a highest prevalence of infection ( 8.2 % ) .

### **الخلاصة :**

شملت هذه الدراسة 277 حالة إسهال عند الأطفال الذين كانت أعمارهم أقل من خمس سنوات قُسمت الحالات الى مجموعتين أقل من سنتين و2-4 سنة ,وذلك لتحديد أنواع الطفيليات ونسب الإصابة والتي ربما تكون لها علاقة بالفئات العمرية . كانت نسبة الإصابة الكلية بالطفيليات 11.6% . سجلت الفئة العمرية 2-4 سنة أعلى نسبة للإصابة ( 38.5% ) . لم تسجل فروق معنوية في نسب الإصابة بين الذكور والإناث . تم تشخيص أربعة أنواع من الحيوانات الأبتدائية المترافقة مع حالات الإسهال هي أميبا الزحار *Entamoeba histolytica* (4%) , الجيارديا اللامبلية *Giardia lamblia* (6.5%) , شفوي السياط المسنلي *Chilomistix mesnili* (0.7%) , المشعرات البشرية *Trichomonas hominis* (1.1%) , ونوع واحد من الديدان هي الدودة الشريطية القزمية *Hymenolepis nana* (0.4%) . سجلت القرى والأحياء أعلى نسبة للإصابة (13.2% , 11.5%) على التوالي . أظهرت الرضاعة الصناعية نسبة أعلى بالإصابة (8.2%).

### **Introduction :**

Diarrhea defined as excessive and frequent evacuation of watery feces, usually indicating gastrointestinal distress or disorder of 3-7 days duration<sup>(1, 2)</sup>. According to the World Health Organization, each year there are an estimated 4 billion cases of diarrhea. In 2007, 1.8 million people died worldwide from diarrheal diseases (including cholera), with 88% of these diarrheas being attributable to unsafe water supply, inadequate sanitation and hygiene<sup>(3)</sup>. Diarrheas are an imminent threat to public health, particularly in the developing countries where it is one of the main causes of morbidity and mortality in children under 5 years of age (90%). In those countries, the average number of episodes of diarrhea per year within this age group is 3.2, and 21% of childhood mortality in children is associated with diarrhea, resulting in nearly two million deaths per year<sup>(4)</sup>. Intestinal parasitic infections have always been an important public health problem in the tropics, particularly in developing countries, where the unsanitary environment and poor socioeconomic conditions contribute to the problem. Chronic infections impair physical and mental growth and development of children in general. Furthermore intestinal parasites may increase susceptibility to infections with other intestinal pathogens. It is therefore important to identify the problem and tackle it in the interest of public health<sup>(5)</sup>.

There are many studies discuss diarrhea disease that causes by parasites for different ranges of age in most provinces in Iraq<sup>(6, 7, 8, 9)</sup>. In Kerbala governorate there are some studies deals with parasitic diarrhea<sup>(10, 11, 12)</sup>. The aim of this study is making a comparing between the results of

this study and the results that found in previous studies, because of exchanging the socioeconomic and location conditions after events of 2003.

**Materials and Methods:**

The study was part of the routine diagnostic work carried out in Kerbala hospital for children from March to June 2009 . Two hundred and seventy seven children aged less than five years with complaints of diarrhea were included in the study. A single stool sample was collected from each patient before the institution of treatment and examined by a direct smear . Stool samples were inspected for the presence of parasitic forms, all information about age; location and suckling were collected from patients.

**Results :**

A total of 277 stool samples examined, the total percent of infection was 11.6%. The highest number of cases were seen in the 2-4 years age group ( 38.5% ) there were no significant differences between males and females infections (table 1).

In table 2 the parasites that recorded in this study were *Entamoeba histolytica* , *Giardia lamblia* these two parasites have the highest prevalence of infection (4.0% ,6.5%) , *Chilomistix mesnili* (0.7%) , *Trichomonas hominas* (1.1%) and only one type of helminths *Hymenolepis nana* prevalence (6.5%) from all types of parasites at prevalence (0.4%) . *Giardia lamblia* has the highest parasites.

Table 3 was consisted relationship between location of patient and percent of infection. Highest prevalence of infection found in villages (13.2%) and quarters (11.5%). There were no significant differences among types of location.

In side of the relationship between types of suckling and prevalence of infection (table 4) the highest prevalence of infection was found in bottle-feed (8.2%), while breast-feed showed less percent of infection (5.3%).

**Table (1) : Percents of infection with parasites for sex and age groups**

Sex	Less than 2 year	Frequency	Percent %	The parasites	(2-4) year	Frequency	Percent %	The parasites	Total (%)
<b>Males</b>	136	8	5.9	<i>Chilomastix mesnili</i> <i>Entamoeba histolytica</i> <i>Giardia lamblia</i> <i>Trichomonas hominis</i>	16	8	50	<i>Entamoeba histolytica</i> <i>Giardia lamblia</i>	16 (10.5)
<b>Females</b>	102	9	8.8	<i>Entamoeba histolytica</i> <i>Giardia lamblia</i> <i>Trichomonas hominis</i>	23	7	30.4	<i>Entamoeba histolytica</i> <i>Giardia lamblia</i> <i>Hymenolepis nana</i> <i>Trichomonas hominis</i>	16 (12.8)
<b>Total</b>	238	17	7.14		39	15	38.5		32 (11.6)

**For sex :**

X<sup>2</sup> calculated                      0.373

X<sup>2</sup> (0.05) tabulated              5.9

**For age :**

X<sup>2</sup> calculated                      32.2\*

X<sup>2</sup> (0.005) tabulated              10.5

\* Signification differences



**Discussion:**

The total rate of infection for children in this study is 11.6% this rate is less than those obtained from Al-Musaway<sup>(10)</sup>, Al-Musaway *et al.*<sup>(11)</sup>, Al-Kubassi<sup>(12)</sup>(76.0% , 39.5% , 36.4%) respectively . Important point that these previous studies carried out between the years 2000- 2004 .The lowest rate of infection for this study may be return to improvement in sanitary environment and socioeconomic conditions after events of year 2003 and may be return to the differences in age groups .

The highest rate of infection was seen in 2-4 years age group, this result is similar to the result that found in Al-Musaway *et al.*<sup>(11)</sup>, Gharavi, *et al.*<sup>(13)</sup>, Kaur, *et al.*<sup>(5)</sup> and Gascon, *et al.*<sup>(14)</sup>. These result returns that this age group (2-4 years) became freer and less dependent on the parents take care. There were no significant differences between males and females infections. This result also found in Al-Musaway<sup>(10)</sup> and Kaur *et al.*<sup>(5)</sup>. (Table 1).

In table 2 the parasites that recorded in this study were *Entamoeba histolytica* , *Giardia lamblia* these two parasites have the highest prevalence of infection (4.0% ,6.5%) , *Chilomistix mesnili* (0.7%) , *Trichomonas hominis* (1.1%) and only one type of helminths *Hymenolepis nana* at prevalence (0.4%) . *Giardia lamblia* has the highest prevalence (6.5%) from all types of parasites, Al-Kubassi<sup>(12)</sup> also get the highest prevalence for this parasite. *Trichomonas hominis* appeared at first time synchronous with diarrhea cases in Kerbala governorate .This parasite was documented as a cause of diarrhea in Cameroon<sup>(15)</sup> . Table 3 shows highest prevalence of infection found in villages (13.2%) and quarters (11.5%), while the lowest prevalence of infection found in city center (6.2%) there were no significant differences among types of location. Generally these results are approached to results that recorded from Al-Musaway<sup>(10)</sup> in spite of declining the prevalence of infection in this study .

In side of the relationship between types of suckling and prevalence of infection (table 4) the highest prevalence of infection was found in bottle-feed, while breast-feed showed less percent of infection , the same results were found in Al-Musaway *et al.*<sup>(11)</sup> , these results give an important rule to breast-feed for protect from infected pathogenic , while Gascón, *et al.*<sup>(14)</sup> study was unable to show that breast-feeding was a protective factor.

Generally this study recorded two points the first was the percent of infection less than recorded by other previous studies in Kerbala city, second point was appearance the parasite *Trichomonas hominis* synchronous with diarrhea cases for the first time .

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