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## The incidence of *Entamoeba histolytica* & *Giardia Lamblia* associated with diarrhea among children in Ibn Al-Balady Hospital in Baghdad.

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### Abstract:

**Background:** The high incidence contradicts convention and wisdom that amebiasis is a very frequent cause of childhood diarrhea or dysentery in developing countries. Giardiasis occur worldwide but is more prevalent in area within adequate sanitary conditions and where water treatment facilities and procedure are subpar. It is considered to be a major cause of diarrheal outbreaks from contaminated water supply, it's affected by much the same socioeconomic factors that influence the distribution of *E. histolytica*.

**Materials and Methods:** A total of 2177 stools specimens were collected from children attending the outpatient clinic of Ibn Al-Balady Hospital in Baghdad suffering from diarrhea, This study carried out during the period from January to June 2009. Samples were collected and examined by the direct wet mount method.

**Results:** Three hundred and seventy seven (17.3%) cases were positive to *Entamoeba histolytica*, the highest rate of infection was in June (21.9%) followed by May (21.4%). The incidence of the female (45.4%) is lower than male (54.6%) while the infection with *Giardia lamblia* was very low (1.1%) and the incidence is higher in March (3.3%), the female show that high infection rate (52%) more than male (48%).

**Conclusions:** *Entamoeba histolytica* is prominent etiology of childhood dysentery in Ibn Al-Balady hospital in Baghdad.

**Key Words:-** *Entamoeba histolytica*, *Giardia lamblia*, enteritis, children.

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### Introduction:-

Amebiasis is defined by the World Health Organization (W.H.O) and Pan American Health Organization (P.A.H.O) as infection with *Entamoeba histolytica* regardless of symptomatology<sup>[1]</sup>. The high incidence contradicts convention and wisdom that amebiasis is a very frequent cause of childhood diarrhea or dysentery in developing countries<sup>[2]</sup>. Giardiasis occur worldwide but is more prevalent in area within adequate sanitary conditions and where water treatment facilities and procedure are subpar<sup>[3]</sup>. *Giardia lamblia* is water born protozoa parasite and common cause of intestinal disease in all part of the world<sup>[4,5]</sup>. It is considered to be a major cause of diarrheal outbreaks from contaminated water supply, it's affected by much the same socioeconomic factors that influence the distribution of *E. histolytica*<sup>[6]</sup>.

It's possible that the high prevalence of protozoa parasite in children independently associated with poor hygiene contaminated water, supply overcrowding and probably other food or water born infection<sup>[7, 8]</sup>

These protozoa parasites has a global distribution and especially high prevalence in countries were poor socioeconomic sanitary conditions predominate<sup>[9]</sup>.

The aim of the present study was to investigate the incidence and prevalence of *Entamoeba histolytica* and *Giardia lamblia* in children according to monthly variation.

### Materials & Methods:

A total of 2177 stool samples were collected from children with primary diagnosis of enteritis. They were attending the outpatient clinical of Ibn Al-Balady hospital during the period from January to March 2009.

Direct stool examination (wet mount). A small quantity of freshly passed stool was taken by the tip of a wooden applicators and a thoroughly mixed with a drop of physiological saline or a drop of lugol's iodine solution on a glass slide and the slide was carefully examined microscopically by the direct smear method for the presence of cyst or trophozoite.

### Results:

A total of 2177 Iraqi children, 377 positive cases (17.3%) of *E. histolytica* and 25 positive cases (1.1%) of *G. lamblia*. **Table (1)** showed the frequency of infection with *E. histolytica* and *G. lamblia* isolates from stool samples.

**Table (2)** showed the distribution of *E. histolytica* and *G. lamblia* infection according to months of the year, the highest rate of infection with *E. histolytica* was during June (21.9%), while infection with *G. lamblia* was in March (3.3%).

**Table (3)** indicated the sex distribution of the study sample showed that the highest rate of infection with *G. lamblia* in female (52%). **Table (4)** appeared that the distribution from (stage) of *E. histolytica* and *G. lamblia*. The percentage of Trophozoite from (66.3%, 61.5%) for the two parasites more than cyst form (33.2%, 38.5%).

**Table (1): The number and percentage of *E. histolytica* and *G. lamblia* isolates from stool specimens.**

No. of examined samples	Positive samples with <i>E. histolytica</i>		Positive samples with <i>G. lamblia</i>	
	No.	(%)	No.	(%)
2177	377	17.3	25	1.1

**Table (2): Distribution of the *E. histolytica* and *G. lamblia* infection according to months.**

Months	No. of examined samples	Positive samples with <i>E. histolytica</i>		Positive samples with <i>G. lamblia</i>	
		No.	(%)	No.	(%)
January	163	20	12.3	4	2.5
February	234	35	14.4	3	1.3
March	269	34	12.6	9	3.3
April	471	73	15.5	3	0.6
May	551	118	21.4	3	0.5
June	366	80	21.9	3	0.8
July	123	17	13.8	-	-
<b>Total</b>	<b>2177</b>	<b>377</b>		<b>25</b>	

**Table (3): Sex distribution of the study samples.**

Sex	Examined samples		Positive samples with <i>E. histolytica</i>		Positive samples with <i>G. lamblia</i>	
	No.	(%)	No.	(%)	No.	(%)
Male	1239	56.9	206	54.6	12	48
Female	938	43.1	171	45.4	13	52
<b>Total</b>	<b>2177</b>		<b>377</b>		<b>25</b>	

**Table (4): The distribution form *E. histolytica* to *G. lamblia* causing diarrhea.**

Sex	Trophozoite		Cyst		Trophozoit + cyst	
	No.	(%)	No.	(%)	No.	(%)
<i>E. histolytica</i>	250	66.3	125	33.2	2	0.5
<i>G. lamblia</i>	15	61.5	10	38.5	-	-

## Discussion:

Enteritis is common in our locality and infection is responsible for the majority of cases. From 2177 cases of diarrhea during the period of study, 377 cases are presented with *E. histolytica* infection (17.3%), this is prevalence of infection recorded are generally close to these reported in Baghdad<sup>[10]</sup>, Babylon<sup>[11]</sup>, but they are less than which are reported from Baghdad<sup>[12]</sup>, Najaf<sup>[13]</sup>, Tikreet<sup>[14]</sup>. Al-Mamori *et.al.*<sup>[12]</sup> and Abbas *et.al.*<sup>[15]</sup> found that *G. lamblia* infection more than *E. histolytica*, whoever the high incidence with Parasite causing diarrhea related to the differences in the socio-cultural and hygienic levels of the pupils, family size, educational levels<sup>[15]</sup>, pupils who had animals likes (cats, dogs, cattle, mice or birds<sup>[16]</sup>, lake of immunity in younger ages<sup>[17]</sup>, method of examination<sup>[10]</sup>

found that concentration stool examination technique (CSE) is much better than general stool examination (GSE) and study design patient selection<sup>[14]</sup>.

The association of diarrhea illness with season is a well established among Native Americans living in reservations in the southwestern part of the united state<sup>[18]</sup>. This present study agreement with Al-Mamori *et.al.*<sup>[12]</sup> Who found slight increase infection during spring, summer, early autumns, and these differences mainly due to the abundance of house flies as well as other insects which act as mechanical vectors for most of the recorded parasites?

No high differences were noted between male and female, these result agreement with<sup>[11,12,13,16]</sup>, while<sup>[19, 20]</sup> reported that males were highly than females. No differences between

them because that both sex have the same chance of infection with contaminated food and water.

# References:

- 1-WHO/ PAHO, UNICCO report: - a consultation with expression amoebiasis. Mexico City, Epidemiol. Bull. 1997; 18(1):13-14.
- 2-Mehdi, N.K. and Jassim, A.A. Intestinal Parasitic infections of primary school children in their region of southern Iraq. Medical Journal of Basrah University.1987, 6:55-61.
- 3-Adam, R.D. Biology of *Giardia lamblia*. Clin. Micro. Rev. 2000, 4:447-475.
- 4-Al-Waili, N.S.D. and Hasan, N.N. Mebendazole in *Giardia* infection. A Comparative study with metronidazole. J. Infect. Dis. 1992; 165:1170-1171.
- 5-Rakhshunda Baga. Incidence, Pathogenesis and serodiagnosis of *Giardia lamblia* infection in Karachi. Pakistan. Thesis the University of Karachi.2007:76 pp.
- 6-Ortega,V.R. and Adam, R.D. *Giardia* review and update. Infect. Dis. 1997, 25(3):545-549.
- 7-Mehdi, N.K.; Strack, S.K. and Shiwaish, S.M.A. frequency distribution of intestinal parasite in Southern Iraq with special emphasis on *Blastocystis hominis*. Journal of the Islamic Medicine Association. 1994; 26:18-23.
- 8-Yaan, L.A. and Saif, L.J. Short immunoglobulin AB-cell memory resides in intestinal lymphoid tissues but not in bone marrow of gnotobiotic pigs inoculated with human rota virus. Immunology. 2001; 103: 188-198.
- 9-WHO, Division of diarrhea and acute RD control. Integrated management of the sick child. Bul. World. Health. Org. 1995, 73:735-740.
- 10-Al-Tae, A-R.A.; Risan, F.A. and Merza, Y.M. Prevalence of intestinal Parasites in children attending saddam midical city. Fac. Med. Baghdad. 1998; 40(4):441-446.
- 11-Al-Khfaji, A.H.A.; Mhaisen, F.T. and Ajam, I.K. prevalence of intestinal parasites among pupils of some primary schools in AL-Hashimiya Distract, Babylin province. Pure & Appl. Sci. 2002; 7(3):519-528.
- 12-Al-Mamori, T.K.; Mhaisen, F.T., and Al-tae, A.A. the intestinal protozoans of outpatients in two teaching hospitals in Baghdad city. Ibn Al-Haitham J. for Pure & Appl. Sci. 1999; 12(1):41-51.
- 13-Hilal, S.M.; Salih, H.A.L.M. and Altif, K.I. Some aspects of the epidemiology of intestinal parasites among people in Al-Najaf province. Pure & Appl. Sci. 2001; 6(3):547-553.
- 14-Thamer, M.J. Bloody diarrhea among children under five years of age in Tikreet teaching hospital. Alkindey Coll. Med. J. 2009, 5(1):78-82.
- 15-Abbas, E.M.; Mhaisen, F.T. and Al-Tae, A.A. Incidence of intestinal parasites among pupils of ten primary schools in Baghdad city. Ibn Al-Haitham J. for Pure & Appl.Sci.2000; 13(20):11-19.
- 16-Al-Bayati, N.Y. and Mhaisen, F.T. Intestinal parasites among pupils of some primary schools in Al-Khalis town center, Diyala province. Al-Mustansiriya J. Sci. 2001.12(8):973-981.
- 17-Jonse, A.W. "Introduction to parasitology" addison-Wesley Publ., Massachusetts.1967:458pp.
- 18-Santosham, M.; sack, R.B.; Reid, R.; black, R.; Grotly; Yolkem, R.; Anrelinn, L.; Wolff, M.; Chan, E.; Garretts, S. and froch, B. Diarrhea diseases in the white mountain : Approach, Epidemiologic studies. J. Diarrhea. Dis. Res. 1995, 13:18-28.
- 19-Addis, D.G.; Davis, J.p.; Ropert, J.M. and Mast, E.F. Epidemiology of Giardiasis in wisconsin: Increasing incidence of reported cases and unexplained seasonal tread. Am. J. Trop. Med. Hyg. 1992, 47:13-19.
- 20-Brkhcad, G. and Vogt, R.L. Epidemiologic surveillance for endemic *Giardia lamblia* infection in Vermont. The roles of waterborne and person to person transmission. Au. J. Epidemiol. 1989; 129:762-768.

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