

***Blastocystis hominis* infections among patients in Duhok City / Kurdistan Region – IRAQ**

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الخلاصة

فحصت 610 عينة براز للمرضى الوافدين الى مستشفى هيفي العام للاطفال ومستشفى شيلان الخاص في مدينة دهوك / اقليم كردستان العراق والذين يعانون من اعراض التهاب معدي معوي.

جمعت نماذج البراز من 350 نموذجاً للاطفال و 260 نموذجاً للبالغين بين نيسان-تشرين الثاني للعام 2010 ، وقد فحصت النماذج باستخدام تقنية الفحص المباشر للكشف عن طفيلي المتبرعمة الكيسية البشرية والطفيليات المعوية الاخرى في براز الاشخاص الوافدين . اظهرت النتائج ان عدد و نسبة الخمج بطفيلي المتبرعمة الكيسية البشرية ضمن النماذج المفحوصة كانت (5.08%) 31 في كل من البالغين والاطفال ، في حين كانت نسبتا الخمج في الاطفال والبالغين (4%) 14 و (6.5%) 17 بالتعاقب.

كما اظهرت نتائج البحث ان اعلى نسبة الخمج (5.02%) 12 كانت ضمن الفئة العمرية-1 (10) عام، في حين كانت اوطأ نسبة الخمج (1.07) 1 ضمن الفئة العمرية (1) يوم-1 عام، في حين كان عدد ونسبة الخمج ضمن الفئة العمرية (30-40) سنة هي (10.04) 5 و اوطأ نسبة خمج ضمن الفئات العمرية (20-30) سنة و اكبر من 40 سنة كانت (7.01%) 4 و (7.40%) 2 بالتعاقب.

بلغت نسبة الخمج ضمن الذكور الاطفال (4.63%) في حين بلغت نسبة الخمج ضمن الاناث الاطفال (3.19) 3 في حين بلغت نسبة الخمج ضمن الذكور والاناث البالغين 10 (7.29%) ، (5.69%) 7 بالتعاقب لقد سجلت نتائج البحث ان الخمج بالمتبرعمة الكيسية البشرية كان متفجياً ذا فجوات (النوع فقط).

من مجموع 610 نموذج براز اظهرت النتائج بان عدد ونسبة الخمج الموجبة بالطفيليات المعوية الاخرى كانت (27.21) 166 ، في حين بلغت نسبة الخمج (22.69%) 59 ، (30.57%) 107 ضمن البالغين والاطفال بالتعاقب.

اظهرت نتائج البحث بان المتحولة الحالة للنسيج والحيارديا لامبليا هي من اكثر الطفيليات المعوية انتشاراً، في حين ان الاعراض الامراضية الاكثر وضوحاً المصاحبة للخمج بالمتبرعمة الكيسية البشرية هي الم معوي مصحوب بانتفاخ معوي يتبعها اسهال. كلمات مفتاحية: المتبرعمة الكيسية البشرية، التهاب معدي معوي، العراق، كردستان.

Abstract

A total of 610 patients of different age and sex attending the central Laboratory / Shilan Private Hospital and Hevi Pediatric Hospital – Duhok Governorate suffering from gastroenteritis symptoms were investigated by direct stool examination.

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The samples were collected from 350 children and 260 adults during the period from April to November 2010.

All stool samples were examined microscopically by the direct method for identification of *B. hominis* and for the presence of other intestinal parasites.

The number and percent of infection rate with *B. hominis* among the examined samples (610) was 31(5.08%) in both of adults and children groups, while the infection percent among children and adults were 14(4%) and 17(6.5%) respectively.

Regarding to the children, the age group > 1 - 10 year showed the Highest rate of infection 12(5.02%) and the lowest rate was in children up to one year was 1 (1.07%). The number and percent of infection among adults were 5(10.41 %) among age group of > 30 – 40 year and the lowest were 4(7.01 %), 2(7.40 %) among age groups > 20 – 30 year, > 40 year respectively.

The number and percent of the infection among males were 9 (4.63%) while among females were 3 (3.19%) among children. The number and percent of the infection among males were 10 (7.29%) while among females was 7 (5.69%) among adults. The vacuolated type was only recorded from all examined stool samples during this study.

Out of 610 stool samples examined 166 (27.21%) were positive with Other intestinal protozoa. The number and the percent of infection were 59 (22.69%) among adults and 107 (30.57%) among children.

The most prevalent pathogenic intestinal parasites were *Entameba histolytica* and *Giardia lamblia*. The abdominal pain and distention were the most frequent symptoms associated with *B. hominis* infection followed by diarrhea.

Key Words: *Blastocystis hominis*, gastroenteritis, Iraq, Kurdistan.

Introduction

Blastocystis hominis is a unicellular intestinal protozoa found in stool specimens of infected human and animals (1). *Blastocystis hominis* is discovered in 1870 by the Russian physician, (2). The organism is transmitted by fecal-oral route (3).

Several studies from developed countries mentioned approximately a 1.5-10% overall prevalence of *B. hominis* (4,5). *Blastocystis hominis* was considered to be a member of normal intestinal flora in the past, but in recent years it has been accepted as a very controversial pathogenic protozoan (6).

Blastocystis hominis infection caused gastrointestinal symptoms such as diarrhea, abdominal pain and bloating.(7,8). Blastocystosis is commonly found in immunocompromised and immunocompetent individuals (9,10).

Three distinct morphological forms, Vacuolar, granular and amoeboid, were distinguished in stools and in vitro culture, but recent studies have revealed several additional forms such as cystic, a vacuolar multivacuolar (11,12).

Also five modes of reproductive, namely, binary fission, endodyogeny, plasmotomy, budding and schizogony were observed (13).

Few studies of intestinal parasites in Iraq including Kurdistan region have shown evidence of *B. hominis* in children and adults with different infection rates (14, 15,16).

Because of a little knowledge about *B. hominis* in Kurdistan region -North of Iraq, the present study was carried out to determine the infection rate of *B. hominis* infection in patients with a primary diagnosis of gastroenteritis.

Objectives: To determine the percent of infection of *B. hominis* in patients suffering of gastroenteritis symptoms.

Patients and Methods

A total of 610 patients of different age and sex attending the central laboratory/ Shilan Private Hospital and Hevi Pediatric Hospital – Duhok Governorate suffering from gastroenteritis was

investigated by direct stool examination. The clinical information and data of each patient were recorded on the special form.

The samples were collected from (350) children and 260 adults during Six months from the period from the beginning of April to the end of the November 2010. Approximately 0.2 gram of stool samples was obtained and stool smears were processed immediately without any preservation.

All stool samples were examined microscopically by the direct method using low power objective lens (10 X); suspected parasites were examined using the high objective lens (40 X) for identification of *B. hominis* and for the presence of other intestinal parasites. Two types of direct stool wet smears were done for each specimen at the same time, one with normal saline (0.85 %) and the second with Lugol's iodine (5%).

The detected oocysts of *B. hominis* were identified according to their Morphological descriptions (17). Statistical analysis of the results was performed by using Chi-square test (18).

Results

The number and percent infection with *B. hominis* among the examined samples (610) were 31(5.08%) in both groups of adults and children.

The frequency distribution of *B. hominis* according to the two groups was mentioned in (Table 1). The number and percent of infection among children and adults were 14(4%) and 17(6.5%) respectively. The number and percent of infection according to the age groups of children and adults were shown in (Table 2).

Regarding to the children, the age group > 1 - 10 year showed the highest rate of infection 12(5.02%) and the lowest rate was in children up

to one year was 1 (1.07%). The infection rate was 5(10.41 %) among age group of > 30 – 40 year and the lowest rate 4(7.01 %), 2(7.40 %) among age groups > 20 – 30 year, > 40 year respectively.

The distribution of *B. hominis* infection according to the sex was shown in (Table 3), the results showed that *B. hominis* infection was more frequent among males than females in both groups.

The number and percent of infection among males were 9 (4.63%) while in females were 5 (3.19%) among children.

The number and percent infection rate among males were 10 (7.29%), while among females were 7 (5.69%) among adults.

The vacuolated type was only recorded from all examined stool samples during this study. *B. hominis* appears under microscope as a spherical shape with central large vacuole and thin compressed cytoplasm at the periphery of parasite and presence of 3-5 small shiny nuclei.

One hundred and sixty six patients (27.21%) were positive with other intestinal protozoa. These results were divided into 59 (22.69%) in adults and 107 (30.57%) in children (Table 4).

These mixed protozoal parasites were classified to *Entamoeba histolytica* and *Giardia lamblia*, while the only non pathogenic protozoa was *Entamoeba coli*. While no any species of the helminths infection was recorded.

The abdominal pain and distention were the most frequent symptoms Associated with *B. hominis* infection followed by diarrhea. Other symptoms were recorded such as nausea, vomiting and fever.

Discussion

The present study was concentrated on the recording the infection rate of *B. hominis* among patients in Duhok city / Kurdistan Region of Iraq. Most of the studies on identification of *B. hominis* were based on microscopical examination of stool (17). The number and percent of infection with *B. hominis* of the present study were 31 / 610 (5.08 %) among children and adults in this city. It was shown that all age groups and both sexes were infected. This low rate of infection when compared with the previous studies reflects that there were several factors influencing the decreasing rate of infection such as drinking of bottled water, high education of health hygiene and improvement socioeconomic

status. The results of the current study indicate that the number and percent of infection with *B. hominis* among children in Duhok city were 14 / 350 (4%), this rate was lower than the rate recorded by (19) in Duhok city in 2003 which was 39.3% among children. The reason may be due to that the researcher examined stool samples were obtained from several care centers, kindergartens, orphan care centers and primary school children. There were different infection rates reported by many researchers in Iraqi patients such as the study was conducted in Baghdad which was found that 21.3% of children infected with *B. hominis* (20). The infection rates was low (1.7%, 1.4%) among patients in Erbil and Duhok regions respectively (21,16). Frequency distribution of intestinal parasites in Southern Iraq with special emphasis on the *B. hominis* was done by (22). They found that the infection rate was 44.1% when examined 463 stool samples by direct smear method. This percentage was high when compared with the present study; the reason was that Iraq suffering from economic sanction, low socioeconomic and poor medical services at 1994. Also higher than the infection rate was recorded in children in Basrah governorate by (23) in which they found that the total infection rate among children under five years old was 16.7%. The observation that infection by *B. hominis* was most frequent among the age group > 30 – 40 year (10.41%). This result was disagree with the study that conducted by (24) which they found that infection more frequent among age of 10 years, this difference is, as we think, due to the positive (+) stools samples are higher among this age group in relative to the total number of examined samples. The review carried out by (1) on blastocystosis indicated high prevalence in adults than in children. Regarding to the sex factor, the current study was found that the highest rate of infection among males than in females. This agree with the review study when observed that there is no gender bias, although some studies have shown a slight increase in incidence among females in relation to males but no statistically significant difference was found between the sexes (1).



The clinical findings were recorded in the present study do not help the diagnosis the infection with *B. hominis*, the reason is that the symptoms are similar to that of infection with other intestinal parasites. In addition to that, asymptomatic infection with *B. hominis* appears to be common in many cases (25a,24b).

Table 1: Distribution of infection rate with *B. hominis* according to children and adults groups

Patients	No. examined	No. % +ve <i>B. hominis</i>	No. % -ve <i>B. hominis</i>
Adult	260	17 (6.53 %)	243 (93.46 %)
Children	350	14 (4%)	336 (96 %)
Total	610	31(5.08 %)	579 (94.91 %)

X² = 1.5 P < 0.221 Not significant

Table 2: Distribution of infection rate with *B. hominis* according to age groups

Age groups / year	No. examined	No. % +ve <i>B. hominis</i>	No. % -ve <i>B. hominis</i>
Up to 1	93	1 (1.07 %)	92(98.92 %)
> 1 – 10	239	12(5.02 %)	227 (94.97 %)
> 10 – 20	146	7 (4.97 %)	139 (95.20 %)
> 20 – 30	57	4 (7.01 %)	53 (92.98 %)
> 30 – 40	48	5 (10.41 %)	43 (89.58 %)
> 40	27	2 (7.40 %)	25 (92.59 %)
Total	610	31 (5.08 %)	559 (94.91 %)

X² = 6.7 P < 0.244 Not significant

Table 3: Distribution of infection rate with *B. hominis* according to sex

Patients sex	Children		Adults	
	No. Examined	No % +ve <i>B. hominis</i>	No. Examined	No. % +ve <i>B. hominis</i>
Males	193	9 (4.63%)	137	10(7.29%)
Females	157	5 (3.19%)	123	7(5.691%)
Total	350	14 (4%)	260	17(6.538%)

X² = 0.183 P < 0.669 X² = 0.074 P < 0.785
Not significant Not significant

Table 4: Distribution of other intestinal parasites among total examined samples

Other intestinal protozoa			
No. examined	No.	% +ve	No. % -ve
Adult (260)	59	(22.69 %)	201 (77.30 %)
Children(350)	107	(30.57 %)	243 (69.42 %)
Total (610)	166	(27.21 %)	444 (72.78 %)

X² = 4.286 P > 0.038 Significant

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