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Incidence of intestinal parasitic infections among random samples at Al-Aziziyah hospital in Wasit province/Iraq

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Abstract:

The study is designed to identify intestinal parasitic infections examined at Al-Aziziyah Hospital in Wasit Governorate in Iraq. In this study, a total of (460) internal and external patients were monitored for intestinal parasitic infections. All stool samples were analyzed by the direct method (microscopic exam.) to discover the trophozoite stages and cyst stages for intestinal protozoan parasites. The most incidence parasites in different sex, area residence and different age groups. Out of (460) patient sample were infected with 217 at a percentage of (47.17%), 101(46.5%) were for males and 116 (53.5%) were for females. It was found that the numbers and percentages of a single (one type of parasite) and double (two type of parasite) infections were 207(95.4 %), 10 (4.6 %) respectively. Intestinal parasitic infections were found in (95.4 %) of the study population (17.9 % 1-5 age). *E. histolytica* was more common among the positive samples collected from intestinal parasitic species detected in this work. The prevalence of parasitic infection was significantly higher among younger age groups compared with older age groups. The age group 55 years had the highest incidence rate (17.9%) compared with other age groups (7.8%). The distribution of parasitic diseases between rural areas was 66.4% and urban areas was 33.6%. In conclusion, the incidence of intestinal parasitic infection among random sample demands improvement of health education with environmental sanitation and quality of water sources.

Key words: Al Aziziyah Hospital, Histopathology, Infection, Protozoa, Parasitic Infection.

Introduction:

The long suffering of intestinal parasitic infections represents a major health problem around the world. And the extent to which parasitic infections are linked to increase disease and death rates, especially among individuals suffering from malnutrition and immune depression. (1). Parasitic infection is a serious problem in the health of the citizen, causing malnutrition, iron deficiency and anemia, as well as delayed development of children and much of the weakness of physical and mental health. (2,3).

Intestinal parasitic infections are spread at the socio-economic levels, social norms, poor health and environmental conditions, hygiene, poor drinking water supply and climate factors. In poor countries, prevalence rates are between 30-60%. compared to <2% in other countries (4,5). Intestinal parasites spread in Iraq vary from region to region depending on the degree of individual and community hygiene and environmental factors (6). The annual report of the Centers for Disease Control in Iraq (7) indicates that the level of infection with intestinal parasites (1.22%) of stool samples (1028640) have been examined from all regions of Iraq. The prevalence of infection was as follows: (Basrah 59.9%), (Sulaimani 26.28%), (Najaf 24.89%), (Dahuk 20.10%), (Nasiriyah 12.02%) and (Anbar 7.08%).

Intestinal parasitic worms cause parasitic infections, and protozoan parasites (8). There are four types of intestinal parasitic parasites, called geological worms, soil-borne parasites,

roundworms, and worm-like worms (ICUS) intestinal infections caused by intestinal worms and primary parasites (9). Four types of intestinal parasitic parasites, also known as geohelminths, helminths, terrestrial worms and Necator american ICus (10), have the most common intestinal parasites: Giardia intestinalis and Entamoeba histolytica. Cryptosporidium infection is the infection caused by intestinal protozoan. Parasites are known as Giardia, amoebiasis, cyclosporis, and cryptosporidia, respectively, and are associated with diarrhea (11).

Intestinal protozoan and intestinal helminthe cause, weakness, itching, urticaria, dermatitis, amoebic amoebiasis, gastrointestinal ulcers, gastrointestinal ulcers, weakness of the intestines, Cervical inflammation, amoebic colitis, diarrhea, vaginitis, hemorrhoids and cystitis (12). The purpose of this randomized study is to determine the incidence of intestinal parasites among patients attending Al Azizia Hospital in Wasit Governorate, and by type of parasites and their relation to age, gender and housing. Health departments have used the results to improve environmental health throughout the regions, with a view to preventing the spread of intestinal parasitic infection in the Iraqi city of Aziziyah.

Materials and Methods:

Sampling and examination

Samples were collected in sterile containers. The species were examined macroscopically to detect color, smell, consistency, mucus and blood.

Microscopy Examination

Drag slides were withdrawn for each sample.

Direct wet mountain with regular normal saline

Direct microscopy using saline and iodine was used to detect primary parasites **(12).**

Routing the lugulase-iodine solution swab

Direct iodine tripods have been prepared and used to explore the existence of protozoan trophozoites and cysts. The use of iodine in the mountains determines the internal structures of parasitic forms and is easy to identify. The iodine plates are prepared in the same way that saline plates expect a drop of iodine to be added to the mountains instead of saline

Statistical analysis

The Chi-square test was applied to the relationship between the variables used (individual infection, double infection, sex, age) and intestinal parasitic infections. The SPSS version number. The Chi-square test was applied for verifying the correlation between the variables used (individual infection, sex, age) and intestinal parasitic infections. The SPSS used is version number (13). The natural data collected were used to analyze the questionnaire data and to determine whether the relationship between intestinal protozoa and intestinal variables was statistically significant when P was less than 0.05

Results and Discussion

Sampels for 460 were analyzed from stool sample by direct microscopy.

exam to discover the trophozoite stages and cyst stages for intestinal protozoan parasites. Table 1. Shows the prevalence of intestinal parasitic infection which was 217(47.2%) from the total number which was (460). There is no significant difference between positive and negative sample.

Table 1. Total number of samples examined the positive and negative samples.

Total	No.	Total percentages
Positive	**217**	**47.2%**
Negative	**243**	**52.8%**
Total	**460**	**100%**

Table 1 records the results of the study with a total of infected 217 persons with a percentage of (47.17%) which represents 101(46.5%) for males and 116 (53.5%) for females. It was found that the percentages of single (one type of parasite) and double (two type of parasite) infections were 207(95.4 %), 10 (4.6 %) respectively agree with (14).

Table 2 presents the distribution of intestinal parasitic infection according to age/ year, which includes sex age groups. There is a significant difference in the current results between infection rates in the age group at the highest infection rate in the age group 1-5-23.9%, followed by age group11-20 years 23.4 % while the lowest percentage infection in the age group 31 - 40 , $\geq$ 41 years 9.7% as shows in Figure 1. The reason is that children in this age group did not know the conditions of hygiene, such as eating different foods from a variety of sources outside home which gives a greater chance of diarrhea. Moreover, the lack of parental interest in motivating their self-reliance in addition to the incomplete maturity of the immune system of children have a role in getting infected (15).

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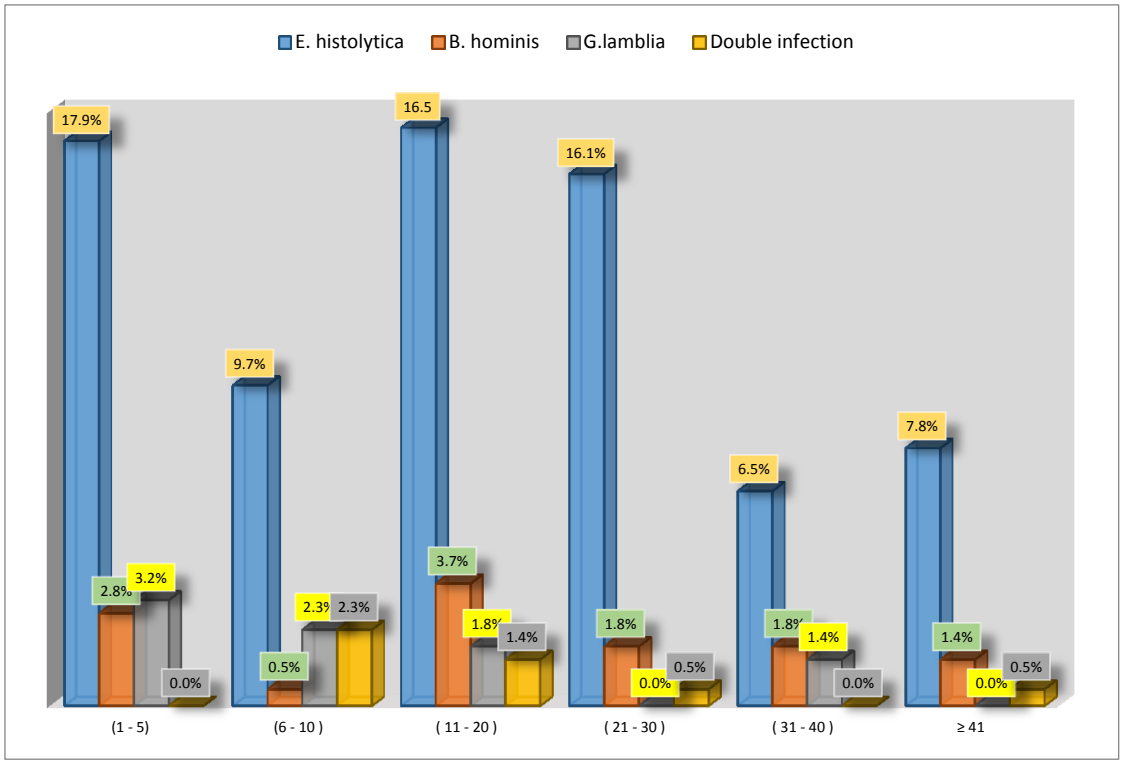

Figure 1. Distribution of Parasitic Infection in different age group/year.

From Table 2, it can be observed the overall gender, parasitic infections for 217 positive samples. The male infaction percentages with *E.histolytica, B.hominis, G.lamblia were* (46.5, 34.6, and 5.5) respectively.While 4(1.8%) of patients suffered from double infection. The female infection percentages with *E.histolytica, B.hominis, G.lamblia* were (5.5, 40.1 and 6.5) respecctively while (2.8%) of patients suffered from double infection.

The results of this work show there were no significant differences in p <0.05 in the prevalence of intestinal parasites by gender as demonstrated in Figuer 2. The incidence of parasites in females was 53.5% which is the highest rate compared with males 46.5%. This shows similarly with a study by (16). Because males and females combined at different ages as shown in Figure 1, they were exposed to the chance of infection because they all lived under the same climate and conditions of disease as discussed in previous studies in (17).

Table 2. Divition of parasitic infection according to gender.

Parasitic infection	Female	%	Male	%	Total	%
E.histolytica	**87**	**40.1%**	**75**	**34.6%**	**162**	**47.7%**
B. hominis	**14**	**6.5%**	**12**	**5.5%**	**26**	**12.0%**
G. lamblia	**9**	**4.1%**	**10**	**4.6 %**	**19**	**8.8%**
Double infection	**6**	**2.8 %**	**4**	**1.8 %**	**10**	**4.6%**
Total	**116**	**53.5%**	**101**	**46.5 %**	**217**	**100%**

No significant differences are shown in p <0.05 in the prevalence of intestinal parasites by gender .

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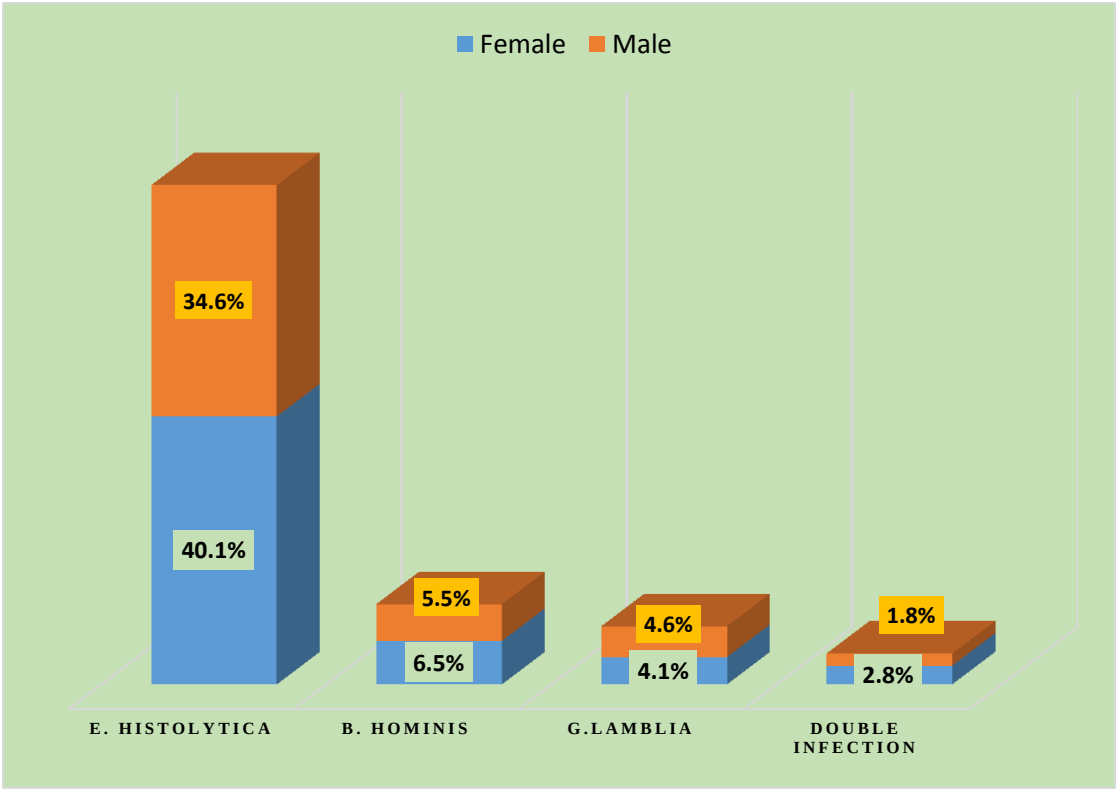

Figure 2. Distribution of parasitic infections according to gender

Table 3 shows that the area of parasitic infection is much higher among the younger age groups than the older age groups, because the age group 5 years showed the highest rate of infection (23.0%) when compared with other age groups (9.2%). Table 4 shows that there are differences statistically significant in parasitic infection rates among rural areas, 66.4% and 33.6% among urban areas. The result in the present study is compatible with (18) who showed the highest percent of infection (55.04%) in (<10) years, age group in Baghdad city. This also agrees with (19) in Baghdad city, which scored an increased percent of infections (4-6) year.

Table 3. Distribution of parasitic infection according to age groups/ years

Parasitic Infection	1-5 years	%	6-10 years	%	11-20 years	%	21-30 years	%	31-40 years	%	≥ 41	%	Total
Single infection	50	23.0	27	12.4	50	23.0	39	18	21	9.7	20	9.2	207/ 95.4%
Double Infection	0	0.0	5	2.3	3	1.4	1	5	0	0.0	1	5	10/ 4.6%
Total	50	23.0	32	14.7	53	24.4	40	18.4	21	9.7	21	9.7	217/ 100.0 %

No significant association between age and parasitic infection ($P < 0.05$).

Distribution of intestinal parasitic infections according to area of residence is shown in Table 4 , Figuer 3. Which manifests that the positive samples were 217, 144 (66.4%) for rural, 106(48.8%) with *E. histolytica*, 18(8.3%) with *B.hominis*, 14(6.5%) with *G.lamblia* and 6(2.8%) with double infection. 73(33.6%) for urban areas, 56(25.8%) with *E.histolytica*, 8(3.7%) with *B.hominis*, 5(2.3%) with *G.lamblia* and 4(1.8%) with double infection with significant differences ($P<0.05$).

The results showed that the incidence of intestinal parasites in rural areas was 66.4% higher than that of intestinal parasitic infection in urban areas (33.6%) with significant differences ($P<0.05$) in the spread of intestinal parasites. Prevalence rates for parasites were higher in rural than in urban areas due to food and water contamination, which is the most common in rural areas due to lack of good hygiene and healthy lifestyle.

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Table 4. Distribution of parasitic infection according to area of residence

Parasitic infection	Rural No	%	Urban No	%	Total	%
E.histolytica	106	48.8	56	25.8	162	47.7
B. hominis	18	8.3	8	3.7	26	12.0
G. lamblia	14	6.5	5	2.3	19	8.8
Double infection	6	2.8	4	1.8	10	4.6
Total	144	66.4	73	33.6	217	100.0

No significant differences (P<0.05).

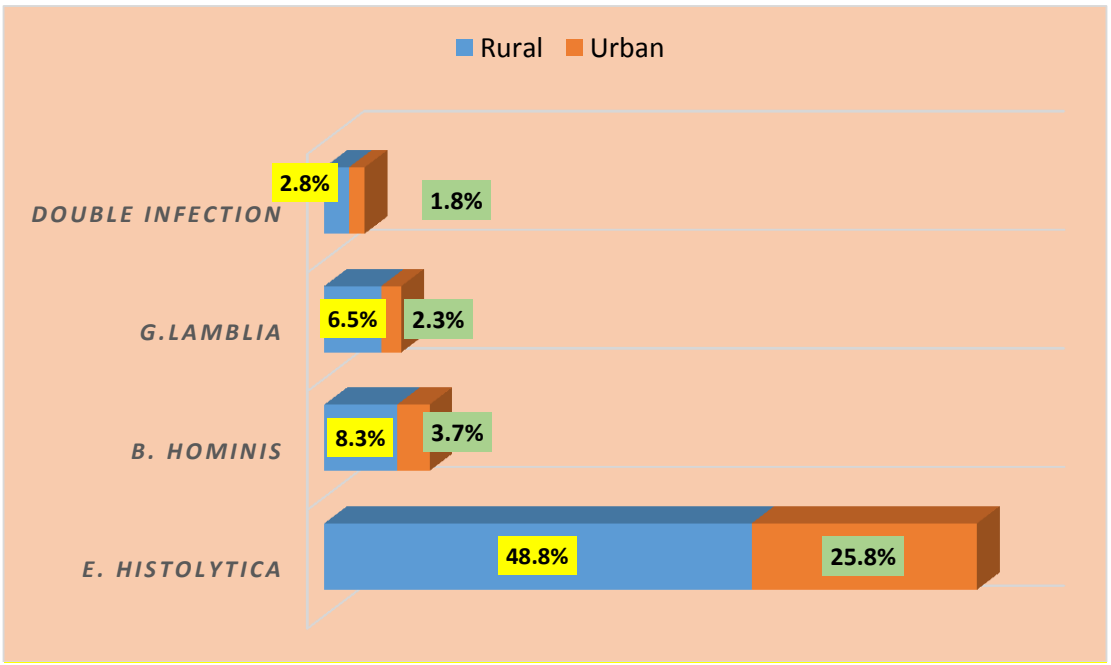

Figure 3. Distribution of parasitic infections according to residence

Nevertheless, primary infection can be broadly associated with a simple life cycle completed in a single host, as well as a simple transmission of these intestinal parasites through oral stool, either directly from person to person or indirectly through eating or drinking, food and water contaminated stool. At the same time, carriers of these parasites that do not carry symptoms have a permanent risk of transmission in the community. Furthermore, some of these intestinal parasites normally inhabit the human intestine and become pathogenic due to least immune system (17, 18).

Types of intestinal parasitic infection distribution are presented in Table 5. Out of 217 positive samples, single infection was 207 (95.4%), which was the most common of other species and was dual infection 10 (4.6%) are shown in Figuer 4. There are high differences between the types of intestinal parasitic infection recorded as P<0.01. These results are equivalent with those recorded by (19, 20) in Baghdad and Mosul respectively which reported a higher ratio of total single infection than double and infections.

Table 5. Distribution of parasitic infections according to type of infection.

Parasitic Infection	**No.**	**%**
Single Infection	207	95.4 %
Double Infection	10	4.6 %
Total	217	100 %

High differences (P<0.01).

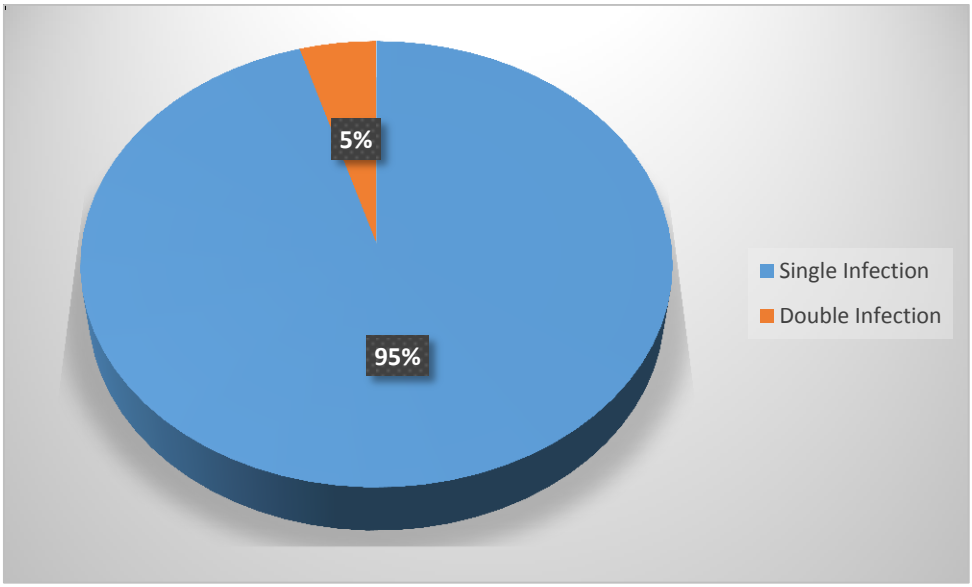

Figure 4. Distribution of parasitic infections according to type of infection

In general, the incidence of intestinal parasites between studies can be explained on the basis of similarities or differences in the climatic conditions of the site and different ages of patients studied, nutritional status and immunity, health habits, health supplies and socio-economic conditions in the study area. Also, some sampling methods and different research methodologies, in addition to the different seasons of the study, include some non-pathological studies in the calculation of reported disease ratios or parasitism and neglect of other common infections, which may explain factors that may explain the causes of differences in rates of parasitic infection in different studies (21,22).

Also, the difference of parasitic infection rate could be due to the type of patients included. In this research, patients of a hospital with signs and symptoms of diarrhea were used only. Other studies used either subjects from general population (23,24).

Conclusions:

In this study, the high incidence of intestinal parasites in the rural areas of the city of Aziziyah is attributed to the low socio-economic status of families in the villages,indicating an increase in intestinal parasites. This hospital-generated manual may provide invaluable statistics needed to plan a meaningful public control program aimed at reducing infections and parasitic infections.

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Authors' declaration:

- Conflicts of Interest: None.
- We hereby confirm that all the Figures and Tables in the manuscript are mine ours. Besides, the Figures and images, which are not mine ours, have been given the permission for re-publication attached with the manuscript.
- The author has signed an animal welfare statement.
- Ethical Clearance: The project was approved by the local ethical committee in Middle Technical University.

References:

1. Daniel G,Yeshi M, Abdurahaman S, Genet M F, and Alemu G. Prevalence of intestinal parasitic infection among children under 5 years of age at Dessie Referral Hospital: cross sectional study. *BMC Research Notes*. 2018; 11: 771.
2. Chien W L, Chung J F, Cheng Y K. Prevalence of intestinal parasitic infections among school children in capital areas of the Democratic Republic of São Tomé and Príncipe. AJHS. 2016; 16(3): 690–697.
3. Adekunle L. Intestinal Parasites and Nutritional Status of Nigerian Children. AJBR. 2015; 4(5):115–119
4. World Health Organization. The Use and Interpretation of Anthropometry. Report of a WHO Expert Committee. Geneva, Switzerland: World Health Organization; 2012: 2–5.
5. Shubair ME, Yassin MM, AL-Hindi AL, AL-Wahaidi AA, Jaddallah SY, and Abu Shaaban ND. Intestinal parasites in relation to hemoglobin level and nutritional status of school children in Gaza. J. Egypt. Soc. Parasitol. 2000; 30: 365-375.
6. Brito LL, Barreto ML, Silva R C, Assis AM, et al. Risk factors for iron- deficiency anemia in children

and adolescents with intestinal helminthic infection. Rev. Panam Sal. Publ 2003; 14: 122-131.
7. Jeevitha D, Pradeep PS, Kanchana M. Comparative Study of the Prevalence of Intestinal Parasites in Low Socioeconomic Areas from South Chennai, India. 2014, 7p.
8. Ruankham W, Bunchu N, Koychusakun P. Prevalence of helminthic infections and risk factors in villagers of Nanglae Sub-District, Chiang Rai province, Thailand. J Med Assoc Thai. 2014; 97(4):29–35.
9. Molouk B, Esmat P, Abdollah R. Status of intestinal parasitic infections among rural and urban populations, southwestern Iran. Asian Pac J Trop Med. 2019; 12(3):130-136.
10. Pisit S, and Amornrat D. Prevalence of Intestinal Parasites and Associated Risk Factors for Infection among Rural Communities of Chachoengsao Province, Thailand. Korean J Parasitol. 2018; 56(1): 33–39.
11. Davis AN, Haque R, Petri WA. Update on protozoan parasites of the intestine. Curr. Opin. Gastroenterol. 2002; 18:10-4.
12. Scolari C, Torti C, Beltrame A, Matteelli A, et al. Prevalence and distribution of soiltransmitted helminth (STH) infections in urban and indigenous schoolchildren in Ortigueira, State of Parana, Brasil: implications for control. Journal of Tropical. Medicin and International Health 2000; 5: 302-307.
13. Gurrant RL, Walker DH,& Weller PF. Tropical infectious disease: Principles, pathogens, and practice. Philadephia .Elsevier . 2nd 2005, 1760 PP.
14. Farah Amer Abed. Prevalence and Lab. Diagnosis of Intestinal Protozoa in Children under 10 years (Amoebiasis and Giardiasis) in AL- Mansour General Hospital for Pediatics / Bahdad 2008. Thesis for degrec of Higher Diploma/ college and Medical Technology Chap2.P2.
15. Azmeraw A, Moges W, and Alemayehu R. Prevalence and Associated Factors of Intestinal Parasitic Infections among Food Handlers at Prison, East and West Gojjam, Ethiopia. Journal of advance in medicine.2019; 2101089.
16. Hala A, Dalia A, Abeer A. *Giardia* diagnostic methods in human fecal samples: A comparative study. Cytometry Part B 2013; 44–49.
17. Omar SO, Esam SA, Mohamed IW, Abdulaziz Ag, Mahmoud YL. Prevalence of Intestinal Parasitic Infections among Patients of King Fahd Medical City in Riyadh Region, Saudi Arabia: A 5-Year Retrospective Study. Journal of Parasitology Research. 2018;8 pages.
18. Marawan A, Abu M, Behnke, A, and Sonia B. Assessing the burden of intestinal parasites affecting newly arrived immigrants in Qatar. Journal of Paediatr Child Health. Journal of Parasites and Vectors. 2016; 9:619.
19. Peterson KM. Strategies for combating waterborne diarrheal diseases in the developing world: 2008 Investigating current appropriate technologies and communication methods in environmental public health. Peterson paper.
20. Zemene T, and Shiferaw MB. Prevalence of intestinal parasitic infections in children under the age of 5 years attending the Debre Birhan referral hospital, North Shoa, Ethiopia. Journal of Biomedicine. 2018; 22:11(1):58.
21. Gyanendra G, Dipendra P, Binita A. Intestinal Parasitic infections among School children. Medical Journal of Shree Birendra Hospital 2014; 13(1).
22. Yahya T, Daoud KM. Dakhil HD, Khalaf AM. Study the infection with intestinal parasites (Entamoeba histolytica) and its effect on the blood nature in children from Thi-Qar province. Journal of Thi Qar science. 2014; 2 (6), 43-46.
23. Mezeid N, Shaldoum F, Al-Hindi AI, Mohamed FS. Prevalence of intestinal parasites among the population of the Gaza Strip, Palestine. Journal of Annals of Parasitology. 2014; 60:281–9.
24. Omar SO, Amer S, Al-Malki, I, et al. Prevalence of Intestinal Parasitic Infections among Patients of King Fahd Medical City in Riyadh Region, Saudi Arabia: A 5-Year Retrospective Study in Qatar. Journal of Parasitology Research. 2018; 8:4-8.

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انتشار الاصابه بالطفيليات المعوية في عينة عشوائية في مستشفى العزيزية في محافظة واسط / العراق

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الخلاصة:

صممت هذه الدراسه لتقدير معدل الاصابة بأوالي الطفيليات المعوية في مستشفى العزيزية في محافظة واسط في العراق. في هذه الدراسة ،جمعت عينات البراز (460)عينة من أشخاص في العيادات الخارجية والداخلية للعدوى الطفيلية المعوية. تم تحليل جميع عينات البراز من خلال الفحص المباشر(الفحص المجهري) لاكتشاف الاطوارالخضرية والاطوار المتكيسة لاوالى الطفيليات المعوية. اخذت حالات الإصابة بالطفيليات المعويه من مختلف الجنس ، التواجد في المنطقة والفئات العمرية المختلفة. من أصل (460) عينة مريض أصيبوا بـ 217 بنسبة (47.17٪) ، 101 (46.5٪) للذكور و 116 (53.5٪) للإناث. تم العثور على أعداد ونسب الاصابات لنوع الاصابة المنفردة (نوع واحد من الطفيليات) والاصابة المزدوجة (نوعان من الطفيليات) هو 207 (95.4 ٪) ، 10 (4.6 ٪) على التوالي. كان الزحار الاميبي أكثر شيوعا بين العينات الإيجابية التي تم جمعها من الأنواع الطفيلية المعوية المكتشفة في هذه الدراسة. زيادة نسبة الاصابة بالطفيليات المعوية بشكل ملحوظ عند الاطفال كان اكبرلدى الكبار حيث نسبة الاصابة لدى الاعمار الاقل من خمسة سنوات تقريبا (9. 23%) مقارنة مع نسبة الاصابة لدى الاعمار الاكبر (14.7 ٪) و(23.4٪) و(18.4٪) واظهرت النتائج الحالية فروق معنوية بين نسبة الاصابه في المنطقة الريفيه حيث بلغت (66.4٪) ونسبه الاصابه قي منطقة المدينة حيث بلغت (33.4٪). ٪). الاستنتاجات ، إن حدوث العدوى الطفيلية المعوية بين عينة عشوائية يتطلب تحسين التثقيف الصحي مع الصرف الصحي البيئي ونوعية مصادر المياه.

الكلمات المفتاحية: مستشفى العزيزية، الزحار الاميبي ، الإصابة ، الأوالى ، العدوى الطفيلية.