International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor (2018): 7.426

The Frequency of Intestinal Parasites among Patients in Zliten and Al-KhumsTraining Hospitals

Basem Rajab[1], Musbah Almabsuot[2], Bayram Kıran[3]

Genetic and Bioengineering Department, Faculty of Science, Kastamonu University, Kastamonu,Turkey

Abstract: ***Intestinal parasites in patients admitted to two hospitals were investigated in this study. In this context, the samples were taken from the patients referred to the laboratory department at the Al- Khums Training Hospital and Zliten Training Hospitals.When the hospital records were examined, there were 200 to 300 cases per month in the Al-Khumshospital laboratory and 250 to 400 cases per month in Zliten Hospital. Using the Richard Geiger equation at 95% confidence level, it was found that the number of representative samples was 150 cases per month. Therefore, we decided to randomly include this number of patients who visited the laboratory each month.***

1. Introduction

Parasitic infections are endemic worldwide and have been identified as the cause of the largest cause ofsickness in the world. These infections are associated with factors such as poor health habits, lack of access to safe water, and inproper hygiene, thus occurring wherever poverty is present (Scrivener et al., 2001; Mohandas et al., 2002). The degree of each factor and the prevalence of infections vary from one region to another. Despite the prevalence of many risk factors in both rural and urban life, making people prone to parasitic agents, there is,unfortunately,limited information about the current state of human parasitic infections in and around the city of Benin. This study was conducted to investigate the prevalence of parasitic intestinal infections.

Parasitic infections continue to be a major cause of morbidity and mortality in the developing world. Poor socio-economic and environmental factors such as poor personal hygiene, lack of access to clean water, theabsence of sanitation, and overcrowding have all been associated with parasitic intestinal infections. Infected individuals may have overall deterioration in survival, growth, nutritional status, cognitive performance, and scholastic success.

Due to the nature of their disease resulting in poor hygiene, psychiatric patients are at a relatively higher risk for parasitic infections. Psychiatric disorders contribute to the burden of global disease. Intestinal parasitic infections are associated with nutritional deficiency and anemia, and the severity of this may be related to existing disease conditions. It is also known that nutritional deficiency increases susceptibility to other infections. Therefore, treatment of parasitic infections may provide a better prognosis for psychiatric patients.

Especially in developing countries, parasitic infections are a major public health problem and the biggest cause of disease worldwide. Current assessments show that at least one-third of the total world population is infected with intestinal parasites. In fact, it is estimated that around 3.5 billion people in the world are infected with intestinal parasites, of which 450 million are symptomatic. Many of these patients live in tropical and subtropical regions of the world. The prevalence of parasitic intestinal infections changes from region to region and depends on the type diagnostic and number of diagnostic methods used. Intestinal parasitic infections caused by protozoa or helminths are among the most common human infections. Most of the world's population is infected with intestinal parasites playing an important role in human morbidity (Katagiri and Oliveira, 2008; Nyarango et al., 2008).

Intestinal schistosomiasis and helminthiasis are among the main public health problems in the resource-poor countries, especially in the sub-Saharan region. Intestinal parasitic infections have always been an important medical and public health concern in tropical areas, especially in developing countries. According to the World Health Organization (WHO), more than one billion of the world's population is chronically infected with parasites.

Parasitic infections cause detrimental effects on the physical growth of the general population and lead to poor cognitive performance in children. The asymptomatic carrier state is characterized by gastrointestinal symptoms or surgical problems. Symptoms presented by patients are usually dependent on the host immune system, malnutrition, and environmental issues.

Parasitic infections caused by intestinal helminths and protozoan parasites are among the most common infections in humans in developing countries. In developed countries, protozoan parasites cause more gastrointestinal infections compared to helminths. Intestinal parasites cause significant morbidity and mortality in endemic countries.

Helminths are multicellular worms. Nematodes (roundworms), cestodes (tapeworms), and trematodes (flatworms) are among the most common helminths living in the human intestine. Generally, helminths do not replicate in the human body. Only unicellular protozoan parasites can replicate in the human body. There are four types of intestinal helminth parasites, also known as geohelminths or soil-transmitted helminths: Ascaris lumbricoides (roundworm), Trichiuristrichiuria (whipworm), Ancylostoma duodenale, and Necatoramericanus (hookworms). These infections are most common in the tropical and subtropical regions of the developing world devoid of adequate water and cleaning facilities. Intestinal helminths rarely cause death. Instead, the burden of disease is associated with chronic and insidious effects on the host's

health and nutritional status. In addition to health effects, infections in the gut also interfere with children's physical and mental development, educational success, and prevent economic development (Crowle and Reed, 1981; Luján et al., 1996).

The most common intestinal protozoan parasites are Giardia intestinalis, Entamoeba histolytica, Cyclosporacayetanenensis, and Cryptosporidium spp. Diseases caused by these intestinal protozoan parasites are known as giardiasis, amebiasis, cyclosporiasis, and cryptosporidiosis, respectively, and are associated with diarrhea. Amoebas are the third cause of death from parasitic diseases worldwide, with the greatest impact on developing countries.

In the last few years, we have seen new approaches in the diagnosis, treatment, and prevention of intestinal protozoan parasites. However, the diagnosis and treatment of intestinal helminth infections have not changed much; they are still diagnosed with conventional microscopic methods. Soil-borne infections are always more common in the poorest areas of the population in the endemic regions of developing countries. The aim is to reduce morbidity from soil-borne infections to the levels at which these infections are no longer a threat to public health. An additional objective is to improve the developmental, functional, and intellectual capacities of the affected children (Baldo et al., 2004; Lim et al., 2008).

Currently available single-dose drugs, such as albendazole that are highly effective and safe can be administered through health interventions, school health programs, and community interventions for vulnerable groups. Since these infections are endemic in poor populations, more permanent control will only be possible if chemotherapy is supported by sanitation training and strengthened water resources. In the long-term, such permanent transmission control will only be possible through economic development and improved living conditions. Since intestinal protozoa proliferate rapidly in their hosts and there are no effective vaccines, chemotherapy has become the only practical way to treat and reduce transmission (Feary et al., 2011; Muehlenbein, 2006; Wördemann et al., 2006).

Current treatment modalities for intestinal protozoan parasites include metronidazole, iodoquinol, diloxanide furoate, paromomycin, chloroquine, and trimethoprim-sulfamethoxazole. The genomes of these three major protozoan parasites have been published, and studies are underway to provide protective immunization against these protozoan parasites.

2. Materials and Methods

Our study was conducted in patients at Al-Khums Training Hospital and Zliten Training Hospital. To investigate intestinal parasites, the Richard Geiger equation was used with a 95% confidence interval. The samples were taken from the patients referred to the laboratory department at the Al- Khums Training Hospital and Zliten Training Hospitals. When the hospital records were examined, there were 200 to 300 cases per month in the Al-Khums hospital laboratory and 250 to 400 cases per month in Zliten Hospital.

3. Results

Table 1: The distribution of parasites according to ageat the Al-Khums Training Hospital

Groups	*n*	*Mean*	*Variance*	*F*	*p*
< 10 Y	12	30.41	46.81	59.168	<0.001
21—11	12	16.41	40.99		
21-30	12	6.33	12.06		
>30	12	5.5	9.54		

The distribution of parasites according to age groupsat the Al-Khums Training Hospital is given in Table 1. In this context, the difference between the groups was statistically significant ($p<0.05$). Additionally, it can be mentioned that more parasites were observed in patients below 10 years of age.

Table 2: Distribution of parasites according to genderat the Al-Khums Training Hospital

Groups	*n*	*Mean*	*Variance*	*F*	*p*
Male	12	25.91	23.71	3.888	0.061
Female	12	32.75	120.38		

Distribution of parasites according to gender at the Al-Khums Training Hospital according to is given in Table 2. In this context, the difference between the groups was not statistically significant ($p> 0.05$).

Table 3: Parasitic distribution of the patientsin Zliten Training Hospital according to age

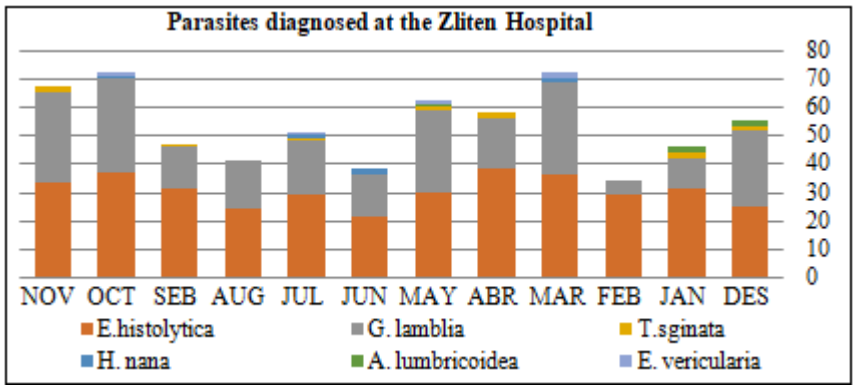
Groups	*n*	*Mean*	*Variance*	*F*	*p*
< 10 Y	12	28.66	27.87	70.17476	<0.001
21--11	12	13.83	37.60		
21-30	12	7.00	12.18		
>30	12	3.50	7.18		

Parasitic distribution of the patients in Zliten Training Hospital according to age is given in Table 3. In this context, the difference between the groups was statistically significant ($p<0.05$). Additionally, it can be mentioned that there is a higher parasite frequency in patients below 10 years of age.

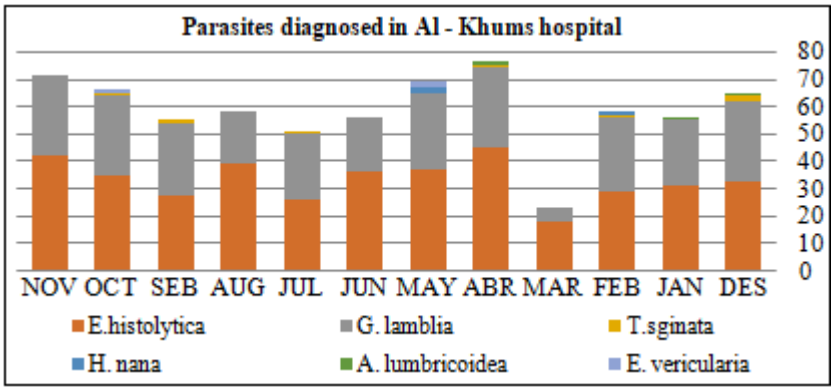
Table 4: Parasitic distribution of the patients in Zliten Training Hospital according to gender

Groups	*n*	*Mean*	*Variance*	*F*	*p*
Male	12	22.50	79.18	6.018	0.022
Female	12	31.08	67.71		

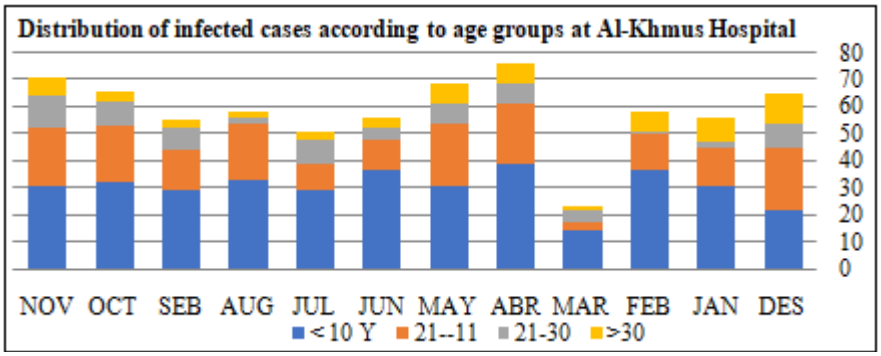
Parasitic distribution of the patients in Zliten Training Hospital according to genderis given in Table 4. In this context, the difference between the groups was statistically significant ($p <0.05$). Accordingly, the rate of parasitic exposure was higher among females compared to males.



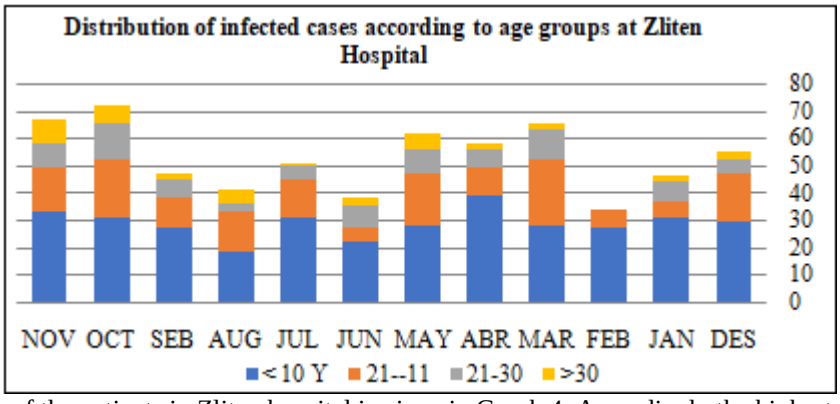
Graph 1: Shows the distribution of parasites in the Zliten hospital. According to this, T.Saginata and G.lamblia have the highest frequency, followed by E.histolytica.



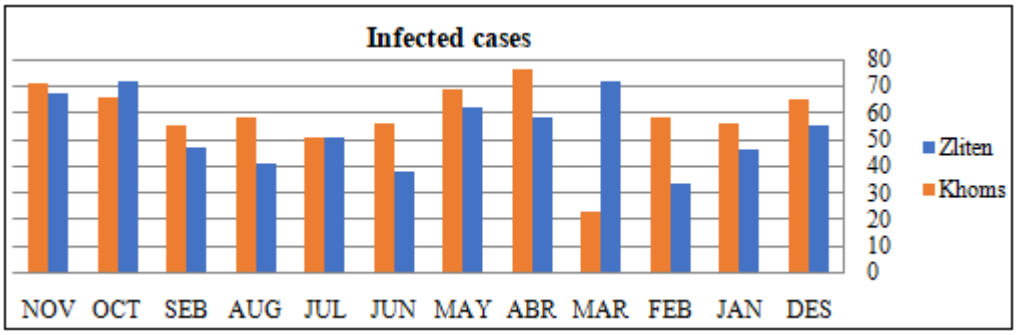
Graph 2: Shows the distribution of parasites in the Al-Khums hospital. According to this, T.Saginata and G.lamblia have the highest frequency, followed by E.histolytica.



Graph 3: Shows the age range of the patients in the Al-Khmus hospital. The highest frequency was observed over the age of 30 years



Graph 4: The agerange of the patients in Zliten hospital is given in Graph 4. Accordingly,the highest number of patients was observed over the age of 30 years.



Graph 5: The distribution of infected cases is given in Graph 5. Accordingly, it can be said that thesimilar number of cases were observed each month in the two hospitals

4. Discussion

Parasites are organisms that live in other organisms at the expense of the host, sometimes leading to harm and disease. Many parasites have complex life cycles at different stages, some of which include intermediate hosts besides final hosts, where the mature or adult form of the parasite is lodged.

The human body may be the definitive, interim, or accidental host of several different parasites, including among otherprotozoa, helminths, arthropods, and insects. Some human parasites create a severe health problem in endemic areas, which often affects less developed regions of the world. Although it is relatively rare in the daily practice in Europe, some of these parasitic diseases are increasing in frequency due to migration from endemic areas and threatening tourists traveling to these areas. Besides, some parasitic infections are still rampant in some European regions. Immunosuppressed patients are also at risk of being affected by parasitic diseases and may develop more virulent forms of these conditions.

Parasitic infections can be a diagnostic challenge and may sometimes not be included in the first differential diagnosis. They may simulate other conditions, such as non-infectious inflammatory disorders or neoplastic processes. Anexcellent clinical setting is required to suspect parasitic diseases. Specific and advanced imaging techniques such as magnetic resonance imaging (e.g., perfusion and diffusion-weighted images), spectroscopy, cholangiography sequences, hepatobiliary contrast agents, or combined radiology-nuclear medicine tests such as positron emission tomography-computed tomography (PET-CT), may be useful in differentiating parasitic disease when they mimic malignant neoplasms.

Radiologists may unexpectedly face some of these parasitic diseases in their practice. Thus, it is essential to be familiar with some of the typical imaging findings. It is also vital to recall the main clinical clues that lead to the rapid and appropriate treatment of these patients and understand the underlying pathophysiology of the leading human parasitic diseases to establish a correct diagnosis with a good clinical and radiological correlation.

References

[1] Baldo, E. T., Belizario, V. Y., De Leon, W. U., Kong, H. H., & Chung, D. I. (2004). Infection status of intestinal parasites in children living in residential institutions in Metro Manila, the Philippines. *The Korean Journal of Parasitology*, *42*(2), 67.

[2] Crowle, P. K., & Reed, N. D. (1981). Rejection of the intestinal parasite Nippostrongylusbrasiliensis by mast cell-deficient W/Wv anemic mice. *Infection and Immunity*, *33*(1), 54-58.

[3] Feary, J., Britton, J., & Leonardi-Bee, J. (2011). Atopy and current intestinal parasite infection: a systematic review and meta-analysis. *Allergy*, *66*(4), 569-578.

[4] Katagiri, S., & Oliveira-Sequeira, T. C. G. (2008). Prevalence of dog intestinal parasites and risk perception of zoonotic infection by dog owners in Sao Paulo State, Brazil. *Zoonoses and public health*, *55*(8-10), 406-413.

[5] Lim, Y. A. L., Ngui, R., Shukri, J., Rohela, M., &Naim, H. M. (2008). Intestinal parasites in various animals at a zoo in Malaysia. *Veterinary parasitology*, *157*(1-2), 154-159.

[6] Luján, H. D., Mowatt, M. R., Byrd, L. G., & Nash, T. E. (1996). Cholesterol starvation induces differentiation of the intestinal parasite Giardia lamblia. *Proceedings of the National Academy of Sciences*, *93*(15), 7628-7633.

[7] Mohandas, K., Sehgal, R., Sud, A., &Malla, N. (2002). Prevalence of intestinal parasitic pathogens in HIV-seropositive individuals in Northern India. *Japanese journal of infectious diseases*, *55*(3), 83-84.

[8] Muehlenbein, M. P. (2006). Intestinal parasite infections and fecal steroid levels in wild chimpanzees. *American Journal of Physical Anthropology: The Official Publication of the American Association of Physical Anthropologists*, *130*(4), 546-550.

[9] Nyarango, R. M., Aloo, P. A., Kabiru, E. W., &Nyanchongi, B. O. (2008). The risk of pathogenic intestinal parasite infections in Kisii Municipality, Kenya. *BMC public health*, *8*(1), 237.

[10] Scrivener, S., Yemaneberhan, H., Zebenigus, M., Tilahun, D., Girma, S., Ali, S., ... & Venn, A. (2001). Independent effects of intestinal parasite infection and domestic allergen exposure on risk of wheeze in Ethiopia: a nested case-control study. *The Lancet*, *358*(9292), 1493-1499.

[11] Wördemann, M., Polman, K., Menocal Heredia, L. T., Junco Diaz, R., ColladoMadurga, A. M., Núñez Fernández, F. A., ... & Rojas Rivero, L. (2006). Prevalence and risk factors of intestinal parasites in Cuban children. *Tropical medicine & international health*, *11*(12), 1813-1820