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Original Article

Frequency of Intestinal Parasites in Tehran

L Akhlaghi, J Shamseddin, AR Meamar, E Razmjou, *H Oormazdi

Dept. of Medical Parasitology and Mycology, School of Medicine, Iran University of Medical Sciences,
Tehran, Iran

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Abstract

Background: For a long time, intestinal parasite infections are among the major problems of public health in Iran. Our aim was epidemiological studies on the frequency of intestinal parasites in patients referred to three hospitals in Tehran during 2007-2008.

Methods: During 2007-2008, by simple random selection, 1000 stool samples were collected from Milad, Hazrat-e-Rasoul and Shahid Fahmideh hospitals in Tehran, Iran. We examined the samples using direct smear, formol-ethyl acetate concentration, Agar-plate culture and Ziehl-Neelsen staining technique.

Results: The frequency of intestinal parasites were: *Blastocystis hominis* 12.8%, *Giardia lamblia* 2.5%, *Entamoeba coli* 4.8%, *Iodamoeba butschlii* 0.9%, unknown 4 nuclei cysts 0.4%, *Endolimax nana* 3.2%, *Chilomastix mesnili* 0.4%, *Strongyloides stercoralis* 0.1%, *Hymenolepis nana* 0.2% and *Taenia saginata* 0.2%. Coccidian parasites were not found. Results show that infection with intestinal parasites does not statistically significant according to sex and age.

Conclusion: The intestinal parasites, especially helminthic infections have been decreased during recent years.

Keywords: Frequency, Intestinal parasites, Iran

* Corresponding author: Fax : +98 21 88602219, Email: hoormazdih3000@yahoo.com

Introduction

Intestinal parasitic infections are among the major problems of public health in developing countries. Parasitic infection is associated with stunting of linear growth, physical weakness and low educational achievement in patients, especially children (1). Furthermore, chronic intestinal parasitic infections have become the subject of speculation and investigation in relation to the spreading and severity of other infectious diseases such as viral infection, tuberculosis and malaria (2-5).

In spite of great development in health cares, the parasitic infection diseases remain as an acute problem (6). However, the pathogenesis, morbidity and mortality of the intestinal parasites differ from species to species. The distribution and prevalence of the various intestinal parasites species depend on social, geographical, economical and inhabitant customs (7). Studies on human parasitic infections have demonstrated a common relationship between parasitic infections and lower socioeconomic status of the region (7). In the endemic area, the first necessity to design a control strategy program is to know the epidemiological data of the different infections.

Human intestinal parasites are one of the important health problems in the most communities, especially in tropical and subtropical areas. During a time, parasitic infection patterns in the population may alter due to changes in the human behavior and life styles. So periodic epidemiological studies and transmission dynamics in parasitic infections will provide more accurate understanding.

Recently, in different parts of Iran, several studies have been conducted to reveal the intestinal parasites prevalence. According to literature review, there is a sharp decline in the prevalence of human helminthes infections (8-10).

The aim of this study was to determine the frequency of intestinal parasite in the population referred to three hospitals in Tehran.

Material and Methods

Population study

During 2007-2008, by simple random selection, 1000 stool samples were collected from Milad, Hazrat-e-Rasoul and Shahid Fahmideh hospitals in Tehran. These enrolled patients had various complain of gastrointestinal disorders.

Stool examination

All specimens examined by direct smear and formalin-ethyl acetate concentration. To diagnosis *Cryptosporidium* and other coccidian parasites has performed modified Ziehl-Neelsen staining. In addition, diarrheic stool samples were cultured on the agar plate for detection of *S. stercoralis* (11).

Results

The 1000 studied patients were consisted of 530 (53%) male and 470 (47%) female in the age range of 1-80 years old. 21.2% of studied group was infected with parasites, 21.7% (115/530) male and 20.1% (97/470) female (Table 1). Microscopic examination of stool specimens showed that the frequency of protozoan was more than helminthes parasites (Table 1). *B. hominis* has been isolated from 12.8% of patients in different age and sex. Coccidian parasites were not found. Microscopic examinations revealed that 3.2% of population infected with two to four different parasites. Results showed that infection with intestinal parasites does not statistically significant related to sex and age.

Table 1: The frequency of intestinal parasite according to sex

| Parasites spp. | Male No. (%) | Female No. (%) | Total No. (%) |
|-----------------------|-----------------|-------------------|------------------|
| <i>B. hominis</i> | 72 (13.6) | 56 (11.9) | 128 (12.8) |
| <i>G. lamblia</i> | 12 (2.3) | 13 (2.8) | 25 (2.5) |
| <i>E. coli</i> | 28 (5.3) | 20 (4.3) | 48 (4.8) |
| <i>I. butschlii</i> | 4 (0.7) | 5 (1.1) | 9 (0.9) |
| unknown 4 nuclei cyst | 2 (0.4) | 2 (0.4) | 4 (0.4) |
| <i>E. nana</i> | 17 (3.2) | 15 (3.2) | 32 (3.2) |
| <i>C. mesnili</i> | 2 (0.4) | 2 (0.4) | 4 (0.4) |
| <i>S. stercoralis</i> | 0 (0.0) | 1 (0.2) | 1 (0.1) |
| <i>T. saginata</i> | 1 (0.2) | 1 (0.2) | 2 (0.2) |
| <i>H. nana</i> | 2 (0.4) | 0 (0.0) | 2 (0.2) |
| Total of infections | 140 (26.4) | 115 (24.4) | 255 (25.5) |
| Total of patients* | 115 (21.6) | 97 (20.1) | 212 (21.2) |

* 32 cases co-infected with two, three and four parasites.

Discussion

Many studies have done on prevalence of intestinal parasites in Iran, but we have failed to find new data on the frequency of parasitic infections in Tehran. Consequently, the current study was performed to estimate the frequency of the parasitic infection during 2007-2008 in three hospitals in Tehran. Knowing this issue is necessary to design a prevention and control program.

In 2004, the prevalence of intestinal parasites according to socio-demographic characteristic in a population of the southern Tehran revealed that *B. hominis* and *G. lamblia* were the most frequent parasites that are similar to our study (12).

During 2004-2005, to achieve the profiles of distribution of intestinal protozoan parasites, a study in rural population of Mazandaran Province, northern Iran was carried out and results showed that the *Giardia* (10.2%) and *Blastocystis* (9.8%) were the most frequent. It

was similar to our study with difference in the frequency, higher in *Blastocystis* (12.8%) and lower in *Giardia* (2.5%) (13). Like other reports (14), our results showed that helminth parasites were lower than protozoan parasites. Among protozoan parasites, *B. hominis* was prevalent in both sexes and all age groups.

Hyperinfection syndrome of *S. stercoralis* was seen in a female patient under corticosteroids therapy. However, it is recommended that clinicians should consider this parasitic infection before starting the corticotherapy.

In conclusion, according to our results the frequency of intestinal parasites has decreased in recent years. Scant helminthes infection prevalence in comparison to previous studies (14) was observed. It seems that the decrease of parasitic infection is due to progress in public health sanitation among our society, especially in Tehran City.

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