Identifying parasites that prevail in children from 1 to 10 years: An observational study of a single urban center.

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Abstract

Introduction: Intestinal parasitosis mainly affects children and can cause learning deficiency and a lack of development and growth. Intestinal parasitosis constitutes a problem of great importance that public and environmental health institutions face, for which it is necessary to know the epidemiology and the most prevalent parasites at the regional level. This study aimed to identify the intestinal parasites that prevail in children from 1 to 10 years of age who attended a municipal health unit in southern Quito.

Methods: This cross-sectional observational study analyzes a pediatric population treated at the Southern Municipal Health Unit of Quito. Exams are analyzed copro parasitically with descriptive statistics.

Results: A total of 195 patients were examined, 68 of whom (34.87%) presented symptoms of intestinal parasitosis (95% CI 28.% -41.6%). No differences in sex. A total of 42 children (21.54%) had monoparasitism, and 26 (13.33%) had polyparasitism. In the range of 1 to 5 years, 21 children (21%) presented Entamoeba histolytica, 18 children (18%) showed Entamoeba coli, 17 children (17%) presented Blastocystis hominis, and 11 children (11%) gave Endolimax nana. From the range of 6 to 10 years, 11 children (11%) had Entamoeba coli, eight children (8%) had Blastocystis hominis, and five children (5%) had Entamoeba histolytica.

Conclusion: Children under five years of age are the most affected. Entamoeba histolytica and Entamoeba coli are the most prevalent parasites.

Keywords:

MeSH: Intestinal Diseases, Parasitic Diseases, Child, Public Health Surveillance.

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Introduction

Parasitic diseases are a public health problem in developing countries. These infections are often asymptomatic but are a significant morbidity factor when accompanied by malnutrition. These infections mainly affect the child population, who are more susceptible to presenting them, particularly when the infective form of the parasite enters orally [1]. Intestinal parasitosis is also more frequent during childhood because it offers more opportunities for contact with these parasites. The immunological level is low, which favors tolerance to these biological agents. As the immune system develops these changes, the body becomes more accustomed to the invader [1]. Intestinal parasites are considered a marker of sociocultural disadvantage; the environmental sanitation conditions determine these infections, the poor quality of housing, the lack of drinking water, the inadequate disposal of sewers, and the poor hygienic habits of individuals [2]. Protozoa and helminths produce intestinal parasitism, whether nematodes, trematodes, or cestodes. These diseases are significant in tropical and subtropical countries where they are most prevalent. Parasites increase when immunity decreases and when radioactivity rises [3]. Many infants in Latin America require hospitalization for disorders related to parasitic infections. The factors associated with infant parasitic infections are fecal, soil, or water contamination. The health compromise in children with parasitic infections can be severely accompanied by anemia, chronic migraine, chronic abdominal pain, chronic diarrhea, fever of unknown origin, and seizures [4]. Other nonspecific symptoms may include insomnia, perineal pruritus, and changes in the child's behavior [5]. The contagion of parasites occurs almost always through the fecal-oral cycle. For these reasons, prevention measures are similar for all types of parasites, such as taking care that children do not handle objects or play on the floor while they are eating, constant hand washing, cleaning kitchen utensils, adequate cooking of food, and disinfection of vegetables and fruits that are eaten without cooking [6]. This research aims to identify the types of parasites in children from 1 to 10 years of age who attended the Southern Municipal Health Unit of Quito to establish a regional epidemiology.

Materials and methods

Design of the investigation
This research was an observational, descriptive, cross-sectional study. The source is prospective.

Scenery
The study was conducted at Quito, Ecuador's Southern Municipal Health Unit. The study period was from January 1 to March 31, 2016.

Universe
For the present investigation, the 195 patients whose coproparasitic samples were analyzed in the unit's laboratory were taken as references.

Sample
The sample was a nonprobabilistic, census-type of all incident cases in the period.

Inclusion criteria
For this research, patients between the ages of 1 and 10 years who came for a well-child check-up were included. Cases in which it was impossible to complete all the data required for the study were excluded.

Data Management and Analysis
A data collection form was prepared to record the following information: case number, age, gender, and name of the most frequent parasites; then, the data were processed in Excel version 2010 to obtain the results with basic statistical calculations such as frequencies and percentages, which were represented in tables and graphs.

Data sources/measurements

The source was direct; an electronic form was filled out from the data of the institutional clinical history of the patients who entered the period. A laboratory record review was performed. The information was treated confidentially; personal data that would allow the identification of the study subjects were not included.

Biases

The principal investigator kept the data with a guide and records approved in the research protocol to avoid interviewer, information, and memory biases. Observation and selection bias was avoided by applying the participant selection criteria. Two researchers independently analyzed each record in duplicate, and the variables were recorded in the database once their concordance was verified.

Quantitative variables

Descriptive statistics were used. The results are expressed as frequencies and proportions. The variables of age, sex, and type of parasitic infection were recorded.

Statistical analysis

Noninferential statistics are used. For the descriptive analysis, measures of central tendency and dispersion were calculated according to the measurement scale of each variable. Qualitative variables are absolute numbers and percentages; quantitative variables are the mean and standard deviations. A 95% confidence interval is presented for a proportion.

Results

Of the 195 children who attended the South Municipal Health Unit to undergo coproparasitic examination, 68 (34.87%) presented intestinal parasitosis (95% CI 28.5%-41.6%). Within the population of parasitized children, 42 of them, equivalent to 21.54%, gave a single parasite (mono-parasitized), while 26 children presented two or more parasites, representing 13.33%.

(polyparasitized). The distribution in girls was 38 cases (55.9%), and in boys, it was 30 cases (44.1%) (Chi-square 1.88 P=0.17).

Prevalence of intestinal parasites in children

The prevalence in children with monoparasitism is 1.3 per 10 thousand inhabitants; polyparasitism is 0.8 per 10 thousand inhabitants; and in nonparasitized children, it is 3.9 per 10,000 inhabitants. In the 1 to 5 years range, 71 children presented parasites, equivalent to 71%, and from the 6 to 10 years range, 29 children showed parasites, corresponding to 29% **(Figure 1).**

Figure 1. Distribution of parasitism by age.

- 71.00% 1 to 5 years
- 29.00% 6 to 10 years

Total=100
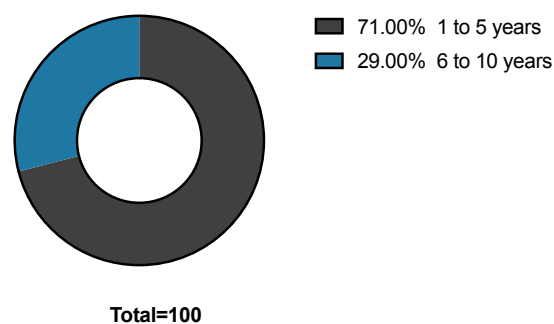
Distribution by type of parasites found in children.

It was found that in the range of 1 to 5 years, 21 children presented Entamoeba histolytica, which represents 21%; 17 children had Blastocystis hominis, which is equivalent to 17%; 4 children presented Giardia lamblia cyst, which means 4%; 11 children presented Endolimax nana with 11%; and 18 children had Entamoeba coli, which is equivalent to 18%. From the range of 6 to 10 years, five children had Entamoeba histolytica, which represents 5%; 8 children presented Blastocystis hominis, which corresponds to 8%; 1 child presented Giardia lamblia cyst, which is equivalent to 1%; 4 children presented Endolimax nana, which represents 4%; and 11 children had Entamoeba coli, which corresponds to 11% (Figure 2).

Figure 2. Distribution of parasites in the study group.
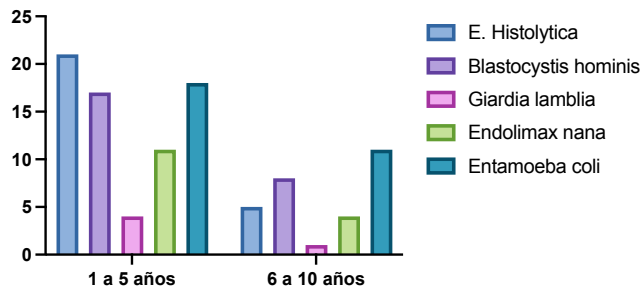
Discussion

Parasitic diseases occupy a significant place in third-world countries. The most affected population continues to be children due to the lack of hygienic habits and immunological immaturity development. Parasites cause debilitating, acute, and chronic diseases, and their presence contributes to a decrease in the physical and mental capacity of the individual, compromising their productivity. It is essential to consider that the primary transmission mechanism occurs through anus-hand-mouth contamination, mishandling, or contamination of food or water [7].

In the present study, the frequency of intestinal parasitism in children was 34.87% of this value; 21.54% presented a single type of parasite, and 13.33% showed more than one parasite. While in the study carried out in 2014 by Serpa Andrade in the José María Astudillo School of the Sinincay parish located in Cuenca, a total of 57.3% of this value was sampled, 35.9% corresponded to monoparasitized children, and 21.4% presented more of an intestinal parasite. Compared with the present study, these data indicate fewer parasites in the South Municipal Health Unit. Still, similar to the two studies, children contract parasites due to mishandling or contamination of food or water.

Regarding the frequency of parasitism according to gender, the results indicate that 44.1% correspond to boys and 55.9% are girls. In the study carried out in 2014 by Serpa Andrade, girls presented 30.1% and 27.2% of children, indicating that in the two studies, they agree that girls have a higher level of parasites than boys. It is worth mentioning that both girls and boys run the same risk of contracting parasites if they do not take the proper precautions.

In the types of parasites found in the present study, the parasites that were most frequently identified were Entamoeba coli (29%), followed by Entamoeba histolytica (26%), and Blastocystis hominis (25%); the cysts of Giardia lamblia had the lowest frequency (5%). In the study carried out in 2014 by Serpa Andrade in the parish of Sinincay, the parasite with the highest frequency was Entamoeba histolytica (24.3%), and the parasite with the lowest frequency was Entamoeba coli (1%). In another 2015 study by Peña Barragán in Ambato, 82 children were sampled, and 32% presented parasites. According to gender, the children showed more parasites, 52%. It was established that the parasites most frequently were Entamoeba histolytica with 26%, Entamoeba coli with 16%, which are related to our study, and Giardia lamblia cysts with 2%, similar to our research, which are parasites with less frequency. When comparing these data, they indicate that the South Municipal Health Unit presents a more or less similar health panorama concerning the other studies because the environment offers the exact characteristics of unhealthiness, contamination, and, therefore parasites that affect it.

The results of the present investigation are about studies carried out in other cities. It was determined that the percentage of children who do not present parasites is increasing; that is, that parasitism is decreasing. However, it still affects boys and girls, whose most frequent parasites were Entamoeba coli and Entamoeba histolytica.

Conclusion

Children under five years of age are the most affected. Entamoeba histolytica and Entamoeba coli are the most prevalent parasites.

Abbreviations

CI: confidence interval.

Statements

Reference

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DOI: Digital Object Identifier. PMID: PubMeD Identifier. SU: Short URL.

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