

Full Length Research Paper

Prevalence of intestinal parasites in the human population of the city Santa Luzia – State of Paraíba, Brazil

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The parasites are classified as one of the greatest evils of collective physical being problems, which can cause a state of high fragility, influencing the number of world inhabitants, as a no standard framework for a healthy quality of life. The objective of this study was to identify and quantify the major intestinal parasites found in result of parasitological tests, from the Municipality of Santa Luzia, Paraíba, Brazil. These parasites were treated at the clinical laboratory of the Hospital and Maternity Sinha Carneiro. The results of parasitological examinations recorded in the hospital were analyzed, the data was for the period from January to December 2013 to 2014, which were separated by positive and negative cases, the parasites found in positive results were analyzed; with a total of 2,021 tests, which were in 1000-CP Santa Lucia, 300 of these were positive, *Endolimax nana* parasite being more frequent in 33% of cases, and among the most frequent helminth was *Enterobius vermicularis* with 1% of cases. Thus it is concluded, then it becomes necessary for awareness measures, such as practices in schools and families, and better standards of sanitation for the population to live better and to decrease infection due to lack of information.

Key words: Survey, parasites, public health.

INTRODUCTION

The parasites are classified as one of the greatest problems of collective physical discomfort, which can cause a state of high fragility, influencing the number of world inhabitants, as no standard structure for a healthy quality of life (Ferreira, 2000). The occurrence

of parasitic diseases in our country varies from region to region according to the structuring of sewage networks, socio-economic status, education, age and personal hygiene habits (Castro et al., 2004; Tashima, 2005). It is observed that this high level of parasites is

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directly linked with the environmental qualities in which the subject undergoes mainly poor nutrition, poor sanitation, poorly treated water without proper disposal to waste (Monteiro, 2000; Cantos, 2002; Marinho, 2002). The parasite has a direct and close affinity between individuals commonly defined: where the host and parasite are living at the expense of one another (Amato, 1982).

It is estimated that intestinal infections caused by helminths and protozoa affect approximately 3.5 billion people, causing illness in approximately 450 million around the world, most of these in children (Ferreira, 2000). The prevalence of infection by intestinal parasites is one of the best indicators of socioeconomic status of a population (WHO, 2008) and may be associated with several determinants such as inadequate sanitation, faecal pollution of water and food consumed, sociocultural factors, contact with animals, lack of basic sanitation, besides the age of the host and the type of parasite infecting (Astal, 2004). For lack of basic sanitation, information and quality education, there are contamination by worms that affect the health of people, bringing them to life complications. Everything is important because an individual well informed improves quality of life, since the parasite can cause death to the patient.

This study aimed to quantify and qualify the parasites found in parasitological examinations of patients, tests recorded in the clinical laboratory of the Hospital and Maternity Sinha Carneiro, located in the city of Santa Luzia-PB. The established methods used to identify intestinal parasites are Hoffman-Pons-Janer (Hoffman, 1934) technique which uses spontaneous faecal sedimentation. In this method, faecal samples are diluted in water and filtered through a gauze strip into a conical sedimentation glass. The Hoffman-Pons-Janer method was used to detect the presence of helminth eggs and larvae and protozoa cysts. This technique is widely used in epidemiological studies, due to its low cost. The Willis (Willis, 1921) technique is a flotation method based on the ability of helminth eggs to float on the surface of a saturated sodium chloride solution with a density of 1.20 g/mL and to adhere to glass. In this technique, a saturated solution with the emulsified faeces is deposited in a round-bottomed flask and a meniscus is formed on the surface. Next, the flask is covered with a slide. After several minutes, the slide is removed and examined under a microscope.

The Baermann-Moraes technique (Moraes, 1948) is used for the detection of nematode larvae in faecal samples and is based on the thermotropism and hydrotropism of the larvae, which exhibit a tendency toward sedimentation. This technique consists of placing the faeces in contact with warm water at 40 to 45°C for 1 h such that the larvae present in the faeces tend to migrate into the warmer, liquid media and settle at the bottom of the flask. Differentiation between

Strongyloides stercoralis and hookworm larvae was achieved by analysing the morphological characteristics of the buccal vestibules and by the presence or absence of the developing genital primordium larvae (Carvalho et al., 2012).

MATERIALS AND METHODS

Data collection

This study was conducted by collecting data results of parasitological examinations from results reported by the clinical laboratory at Hospital Sinha Carneiro, in Santa Luzia, Paraíba. This hospital serves the population of the city and surrounding towns. The data records were written by exploratory descriptive type, with a quantitative approach, which conducted the analysis, in order to describe a parasitic epidemiological profile of the city. The analysis was by descriptive statistics using Microsoft Excel® software, version 2010. The tests performed in this study were the methods of Hoffman-Lutz-Pons-Janes (the spontaneous sedimentation method). The necessary materials were cup decanting, Sieve, Gauze folded into 4, flowing or distilled water, wood Spatula (step-down type of language), blade and cover slip. About 4 g of newly issued stool was taken after dissolving them in a collection container (standard bottle for sample collection) using a little water, and then transferred into a glass of decanting making filter in sieve containing gauze in 4 to make up $\frac{3}{4}$ of the water volume, standing on a firm surface free of vibrations for at least 2 h (Carvalho et al., 2012).

Study area

This research was conducted in the city of Santa Luzia-PB. Located in the region of Western Serido Paraibano and member of the metropolitan area of Patos. The Brazilian city (Figure 1) comprises a population of 15,213 hab. With area of 455,717 km² and Biome Caatinga. Data was gotten from the Brazilian Institute of Geography and Statistics (Gamboia et al., 2003). The city of Santa Luzia – Paraíba has a Maternity Hospital "Sinha Carneiro" (Figure 2), located in the clinical laboratory, the hospital serves the entire population of the city and surrounding towns.

RESULTS AND DISCUSSIONS

The records were in the period from January to December in the years 2013 to 2014, with a total of 2,021 parasitological stool where these 1,000 are from the city of Santa Luzia-PB. Of this total, 700 (70%) are negative, 300 (30%) are positive the results as shown in Figure 3. Despite scientific and technological advances over the years, intestinal parasitism remains a serious public health problem (IBGE, 2016). This situation is characteristic, especially in underdeveloped countries, where the actions for the control of intestinal parasites are more difficult as a result of the cost of detection techniques, poor infrastructure and lack of educational projects directed to the population (Ludwig, 2000). The educational practices, when properly applied, lead people to acquire knowledge for the prevention and reduction of intestinal parasites (Ferreira, 2000).



Figure 1. Map of the State of Paraíba, highlighting in red, the city of Santa Luzia, host city of this research (Source: IBGE, Location, 2010).

These positive results cases of protozoa are similar to the study of Oliveira et al. (2003). High occurrence of *Endolimax nana* and *Entamoeba coli* can be noted in this study. Although these organisms are not considered as pathogens, these figures are alarming mainly because it is a high risk of transmission groups, due to the food handling activities carried out (Oliveira, 2003). The parasitism by *E. nana* is second in the percentage of most common parasites, one of the factors contributing to this percentage is its mode of transmission and despite not being a pathogenic parasite while *Iodamoeba bütschlii* and *E. coli* presence reflects hygiene conditions both personal and environmental (Pessoa, 1982).

A study in Colombia, with 423 patients showed significantly higher prevalence (*Entamoeba coli*, 27.9% and *Endolimax nana*, 20.3%) (De La Ossa Merlano, 2007). It has been shown that the improvement of nutritional status, along with improved sanitation and adequate immunization practices may promote an increase in life expectancy in developing countries (Lincoln, 2000). This is an important information to the population on how to prevent and how to remedy if you have the positivity of the parasite. The development of public policies for prevention and awareness of the importance of making the stool test is at least once a year.

The socio-demographic survey was drawn from male and female, among the results for females the presence of parasites was 60% and 40% for men, as shown in Figure 4. From this data, there is a greater

number of parasitized females (Prado, 2001). Figure 5 indicated the ages of patients who had the parasitological stool, with distribution of ages of 0 to 51 years. As can be seen, there is high incidence of parasites between the ages of 0 to 15 years.

This age group most often can be compared to the study of Macedo (2005), Saturnino et al. (2005), Ludwig et al. (2000) and Santos et al. (1993). The most parasitized age range was from 6 to 9 years, which is consistent with other data in the literature (Macedo, 2005; Saturnino, 2005). In this range, children are more exposed to contamination due to the ignorance of the basic principles of hygiene and more contact with the ground, which acts as a playful reference (Santos, 1993).

According to the analysis, we can highlight the parasite with more occurrences which is *E. nana*. This protozoan is considered simple; it does not cause serious risks to the health of the host. Although it was observed a higher prevalence of non-pathogenic intestinal amoebae as *E. nana* (53.5%) and *E. coli* (43.5%), as seen in Table 1, it is important to note that these species have the same transmission mechanisms as other pathogenic protozoa such as *Entamoeba histolytica* / *E. dispar* and *Giardia duodenale* and can serve as good indicators of the health conditions to which individuals are exposed.

Even though the commensal do not cause any damage to its host, the infection by these species has important implications in the epidemiology of parasitic diseases, since they reflect the basic sanitation conditions, the presence or absence of sewage, water

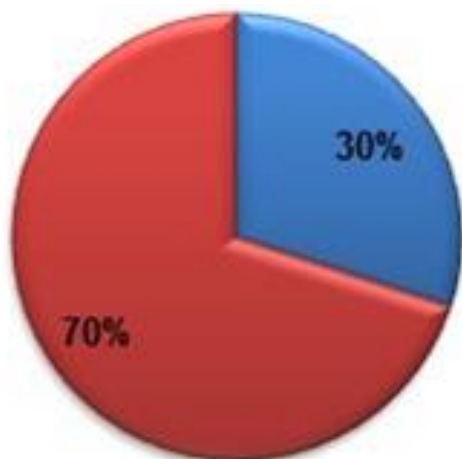


Figure 2. Hospital and Maternity Sinhá Carneiro located in the city of Santa Luzia, Paraíba (Source: Mayara, T. Santos).

quality consumed and hygiene habits that the students are exposed. Other studies have also demonstrated high frequency of parasites commensal, as in the coastal region of Piauí and the city of Paracatu-MG (Alves, 2003;

Macedo, 2005).

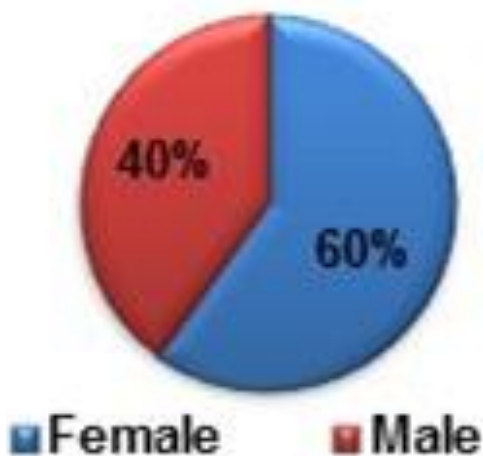
The *E. histolytica* has worldwide distribution and represents a health risk in the countries where sanitary barriers are inadequate (84). The overall prevalence



■ Positive ■ Negative

Figure 3. Tests with positive and negative cases.

rate of intestinal parasites was 19.7%, and *G.lambli*a (34.9%), *E. coli* (22.9%), *E. nana* (9.6%) and *A. lumbricoides* (4.8%) are the most common parasites (Castro, 2004).



■ Female ■ Male

Figure 4. Results of examinations made in relation to sex.

CONCLUSIONS

From the analyzed data, it can be seen that the most common agent in the population of the city of Santa Luzia, Paraíba, Brazil was *E. nana* distributed in all genders and ages. This study shows that the prevalence

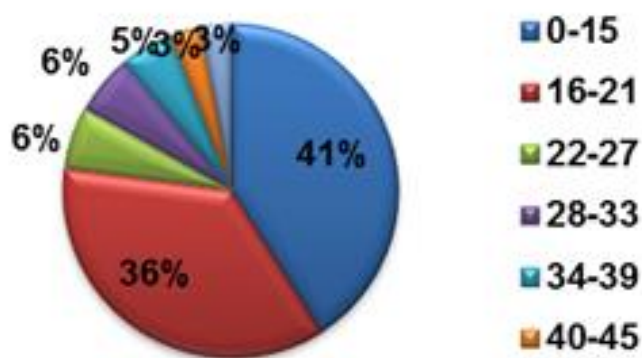


Figure 5. The prevalence of positive cases according to age.

Table 1. Intensity of parasites.

Parasite	Case amount	Frequency (%)
<i>Endolimax nana</i>	100	33
<i>Entamoeba coli</i>	97	33
<i>Entamoeba hystolitica</i>	80	27
<i>Giardia lamblia</i>	10	3
<i>Iodamoeba butchlii</i>	07	2
<i>Enterobius vermicularis</i>	04	1
<i>Ascaris lumbricoides</i>	02	1

of intestinal parasitosis is caused by poor hygiene and guidance. That these data are examples of what is missing to form a well- informed population, didactic and pedagogical activities are made for children in schools.

Conflict of interests

The authors have not declared any conflict of interests.

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