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CHARACTERIZATION OF THE EPIDEMIOLOGICAL PROFILE OF PARASITOSIS IN THE CITY OF SÃO JOÃO DEL REI, MINAS GERAIS, BRAZIL

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Abstract: Enteroparasitoses continue to be a relevant public health issue due to the physical and cognitive impairment they generate in the infected patient, but above all because they are the main causes of outbreaks in developing countries, where there is still a large portion of the population living under low income, conditions inadequate sanitation, limited access to information and poor hygiene habits. Another important aspect in the context of the endemicity of human parasites is the lack of information about these diseases which, in addition to the other factors mentioned above, sustains the epidemiological scenario in question. The scarcity of survey data on the occurrence of intestinal parasites in São João del Rei (SJDR) makes it difficult to understand the current scenario of the occurrence of parasites in the municipality and makes it impossible to carry out effective intervention strategies in the communities. his way, the development of the work aims to carry out an epidemiological survey of parasites in the municipality and to analyze possible factors associated with the occurrence of these parasites. A quantitative study was carried out in which parasitological exams were evaluated in the municipality of SJDR from January 2013 to December 2018. During the analyzed period, the neighborhood that presented the highest number of occurrences of parasites was Bom Pastor. Of the total parasitized individuals, 52.1% were female. The most frequent parasites were Entamoeba sp. and Gardia lamblia. In the evaluated period, 1.4% had biparasitism and 98.6% had monoparasitism. It was possible to conclude that there is a high prevalence of intestinal parasites in the population and that, therefore, there is a need for improvements in hygienic-sanitary conditions, as well as greater access to information about this scenario.

Keywords: 1. Parasites 2. Epidemiology 3. Public health 4. Hygienic-sanitary conditions.

INTRODUCTION

For some time it was strongly believed that factors such as technological evolution, geographic transition and increased life expectancy of the population, would contribute to the gradual reduction of infectious and parasitic diseases. These diseases are of great relevance in the context of public health due to the significant morbidity and mortality rate they entail (PAZ, BERCINI, 2009; PEDROSO, ROCHA, 2009). However, these same indicators, which were believed to lead to the eradication of infectious diseases, are currently understood as determinants that favor the emergence and dissemination of emerging and reemerging diseases (LUNA, 2002; PAZ, BERCINI, 2009; PEDROSO, ROCHA, 2009) that place not only developing countries, but also rich regions of the globe under the imminence of epidemic outbreaks (PEDROSO, ROCHA, 2009; DAVID et al., 2015; EHSAN et al., 2015; MINETTIETAL et al., 2016; CORONATO-NUNES et al., 2016; ROSADO-GARCÍA et al., 2017).

Enteroparasitoses are diseases that affect the intestinal tract of humans from the colonization of this site by protozoa, such as Entamoeba histolytica/dispar complex (E. histolytica/dispar) and Giardia duodenalis (G. duodenalis) and helminths, being those of importance medica, Ascaris lumbricoides (A. lumbricoides), Trichuris trichiura (T. trichiura), hookworms (Ancylostoma duodenale and Necator americanus), Strongyloides stercoralis (S. stercoralis), Enterobius vermicularis (E. vermicularis) and Schistosoma mansoni (S. mansoni) (TANYUKSEL, PETRI, 2003; GABRIE et al., 2014; RAMÍREZ et al., 2015).

The pathogenic process triggered in individuals positive for intestinal parasites is multifactorial and seems to involve, in addition to economic issues, characteristics related to the host, such as age, sex, professional

activity and the parasite, potential for pathogenicity, chain of infection, physiology and mechanism. exhaust (MENEZES, 2013; SILVA et al., 2017). Thus, the development of the disease is dependent on the parasite-host relationships and the environment. The infection in adolescents and adults, in most cases, is asymptomatic or can be characterized by nonspecific but debilitating manifestations, such as diarrhea, abdominal pain, fever, vomiting, nausea, abdominal obstruction and rectal prolapse (DE SILVA et al., 1997). ; THAMIZHMANI et al., 2017; SOUZA et al., 2016). In addition, they can cause small hemorrhages, anemia and damage to cognitive function in schoolchildren (OLNESS, 2003; HUMPHRIES et al., 2017). Complications are usually reported associated with malnutrition, high parasite load, immunocompromise and immunosuppression (MALDONADO et al., 2012; SOUZA et al., 2016).

The intimate relationship established between economic conditions and the prevalence of intestinal parasites is justified by the dissemination routes of the etiological agents. The prevalence of enteroparasitoses is higher in regions with better living and sanitation conditions that unsatisfactory basic conditions, since contamination by intestinal parasites occurs predominantly through the fecal-oral route, through the ingestion of cysts and eggs, infective forms of the parasites, in contaminated water and food (SOUZA et al., 2016; SILVA et al., 2017).

It is believed that there are about 3.5 billion people infected with intestinal parasites in the world, with higher prevalence directly related to lower socioeconomic levels (G/HIWOT et al., 2014; YIHENEW et al., 2014; SOUZA et al. ., 2016). Brazil, as a developing country, although it has shown a reduction in the general prevalence of parasites, still has regions where these diseases are endemic (PULLAN et al., 2014; ALVES et al., 2017; BACELAR et al, 2018). In these areas, where there is a lack of infrastructure, there is still a great impact of intestinal parasites on patient morbidity (ARAÚJO, 2012; SILVA et al., 2017).

Scarce data regarding the occurrence of parasites in the municipality of São João del Rei (SJDR) are available in the literature. Only one study that relates factors to the occurrence of parasites in schoolchildren in the municipality points to a general prevalence of intestinal parasites of 29%, which is more significant in the rural area of the municipality. A prevalence of 5.5% of giardia infection was reported and associated with precarious sanitary and socioeconomic conditions (BELO et al., 2012). The study also pointed out that the use of a water filter in homes was associated with the prevention of diarrhea in all age groups (BELO et al., 2012), strengthening the hypothesis that prophylactic measures influence the prevalence of intestinal parasites.

The lack of surveys that expose the prevalence of infections by intestinal parasites makes specific control measures difficult and unfeasible for vulnerable populations. The current scenario of the occurrence of parasites in the municipality of São João del Rei is little known since the available published data are quite scarce. In this sense, the development of the work made it possible to carry out an epidemiological survey of intestinal parasites in the municipality, to analyze possible factors associated with the occurrence of these parasites in order to characterize the epidemiological profile of the municipality and provide subsidy for, in a second moment, to elaborate specific and well-targeted actions to the most susceptible populations, in addition to making public the indexes presented by the city's neighborhoods. It is important to point out that the change in habits of the population in recent decades, which culminated, among other issues, in

the increase in cultural exchange, in greater environmental intervention by man and in technological innovations, added to the processes of evolution of microorganisms, expose the world to epidemic outbreaks and highlights the importance of actions prophylactic measures in the process of reducing the spread of infectious agents. An informed and active population is a protected population.

Thus, the study carried out an epidemiological survey of intestinal parasites in the municipality of SJDR, MG, Brazil, from January 2013 to December 2018, with the aim of characterizing the epidemiological profile of these diseases in the municipality and investigating the possible factors associated with the occurrence of these diseases in the municipality.

MATERIAL AND METHODS

The study was carried out over a period of 12 months (01 year) in the city of São João del Rei - MG. The methodology adopted was based on the problematization methodology with the application of the Arch of Maguerez (BORDENAVE, PEREIRA, 1982; BERBEL, 1998). In the development of the work, the student was exposed to a reality, prevalence of enteroparasitoses and scarcity of data in the municipality on the subject in SJDR-MG, after analyzing this reality the student defined the problem (tracking the prevalence of enteroparasitosis in SJDR), raised points key to studying the problem, theorized, pointed out hypotheses for the solution to the chosen problem, in order to collect information to support further intervention activities that can contribute to overcoming the analyzed problem. Thus fulfilling the five stages that complete the Arch of Maguerez initially proposed (BORDENAVE, PEREIRA, 1982) and forming an Action-Reflection-Action chain.

A quantitative study was carried out based on the survey of the number of confirmed cases of intestinal parasites in the municipality of SJDR, from January 2013 to December 2018. For data collection, information from the Endemic Diseases sector of the Municipal Health Secretariat of SJDR, where all samples of patients from the Unified Health System (SUS) in the municipality are directed. The sector's employees provided positive data by sex, age and district of the municipality, omitting any information that would allow the identification of patients.

For analysis criteria, the districts of the municipality affected and seven categories per age group were considered, according to the classification adopted by the World Health Organization.

(WHO) for developing countries such as Brazil, which includes babies aged 0 to 9 months, children aged 1 to 9 years; teenagers between 10 and 19 years old, young people from 20 to 44 years old, adults from 45 to 59 years old, seniors from 60 to 74 years old and elderly from 75 to 90 years old or more.

The evaluation of the incidence of parasites was performed using graphs constructed using the sigmaplot 12.0 program.

RESULTS

From the data collected in the Endemic Diseases sector of the Municipal Health Department of SJDR, which receives and performs the analysis of all parasitological tests requested in the municipality, it was possible to trace the occurrence of parasites in the municipality in the period between January 2013 and December of 2018 (Figure 1).

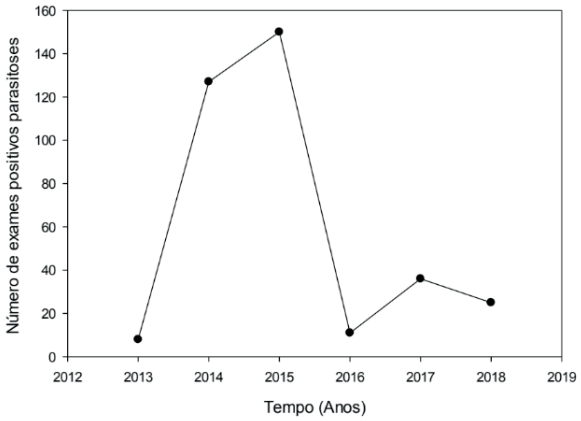

Figure 1 - Parasitological tests of positive feces in the municipality of SJDR in the period between January 2013 and December 2018.

The period between 2014 and 2015 was the most critical, marked by the highest rates of positive patients for enteroparasitosis, this period, followed by a decrease in the number of positive tests in the city.

During the analysis period, three species of protozoa were diagnosed, complex E: histolytica/dispar, Entamoeba coli and G. duodenalis and six helminth species, A. lumbricoides, T. trichiura, Ancilostoma spp., S. stercoralis, E. vermicularis, S. mansoni and Taenia sp. (Figure 2).

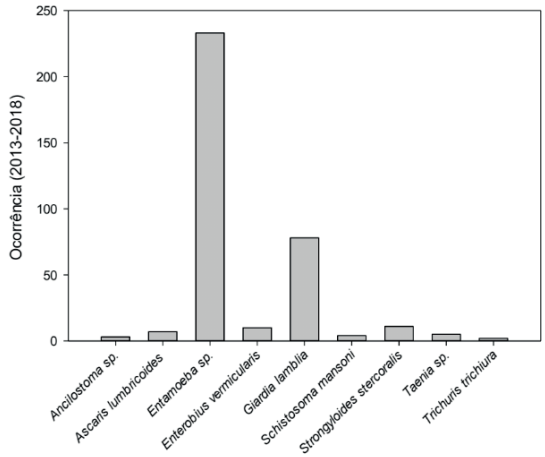

Figure 2 – Etiological agents of intestinal parasites diagnosed in positive patients in the municipality of SJDR in the period between January 2013 and December 2018.

Of the total number of positive patients, 42 were affected by helminths and 311 by protozoa. et al., 2012). Such numbers reflect relevant information regarding the characteristics specifically related to the modes of transmission of the organisms, in addition to corroborating data from the literature that demonstrate that the indiscriminate use of anthelmintics can be closely linked to this result (FREI et al., 2008; GARDNER, HILL, 2001; ESCOBEDO, CIMERMAN, 2007; BELO et al., 2012).

It was possible to observe a variation in the occurrence of etiological agents over the years analyzed (Figure 3). In 2013, 8 positive tests for enteroparasitosis showed positive diagnoses for S. mansoni (Figure 3 A). In 2014, of the 127 positive tests, 90 diagnosed infection by Entamoeba sp. and 33 by G. duodenalis, in addition to these etiological agents, E. vermicularis, S. stercoralis, Taenia sp., S. mansoni and Ancilostoma sp. (Figure 3B). Of these, four patients had polyparasitism. In 2015, of the 150 positive tests, 94 diagnosed infection by Entamoeba sp., 31 by G. duodenalis,

A. lumbricoides, S. stercoralis, E. vermicularis, Taenia sp., S. mansoni, Ancilostoma sp. and T. trichuris, have also been reported (Figure 3C). Of these, one patient had polyparasitism. In 2016, of the 11 positive tests, 5 diagnosed infection by Entamoeba sp., 3 by G. duodenalis and E. vermicularis and S. stercoralis, were also notified (Figure 3 D). In 2017, of the 36 positive tests, 25 diagnosed infection by Entamoeba sp. and 7 by G. duodenalis, S. stercoralis and A. lumbricoides, have also been reported (Figure 3 E). In 2018, of the 25 positive tests, 19 diagnosed infection by Entamoeba sp. and 4 by G. duodenalis, also occurring E. vermicularis (Figure 3 F).

The dissemination of the most commonly found etiologic agents, Entamoeba sp. and G. duodenalis is related to water transmission,

demonstrating aspects about the quality of water for consumption in the municipality. Contamination occurs by ingestion of its cystic forms of resistance through contaminated water and food.

Regarding the age group, it was possible to observe that young people, that is, patients between 20 and 44 years old, are the most affected (Figure 4 A). The distribution of positive cases is quite heterogeneous, as several neighborhoods in the municipality were positive for parasites, with the neighborhood of Bom Pastor having the highest number of positive results (Figure 4 B).

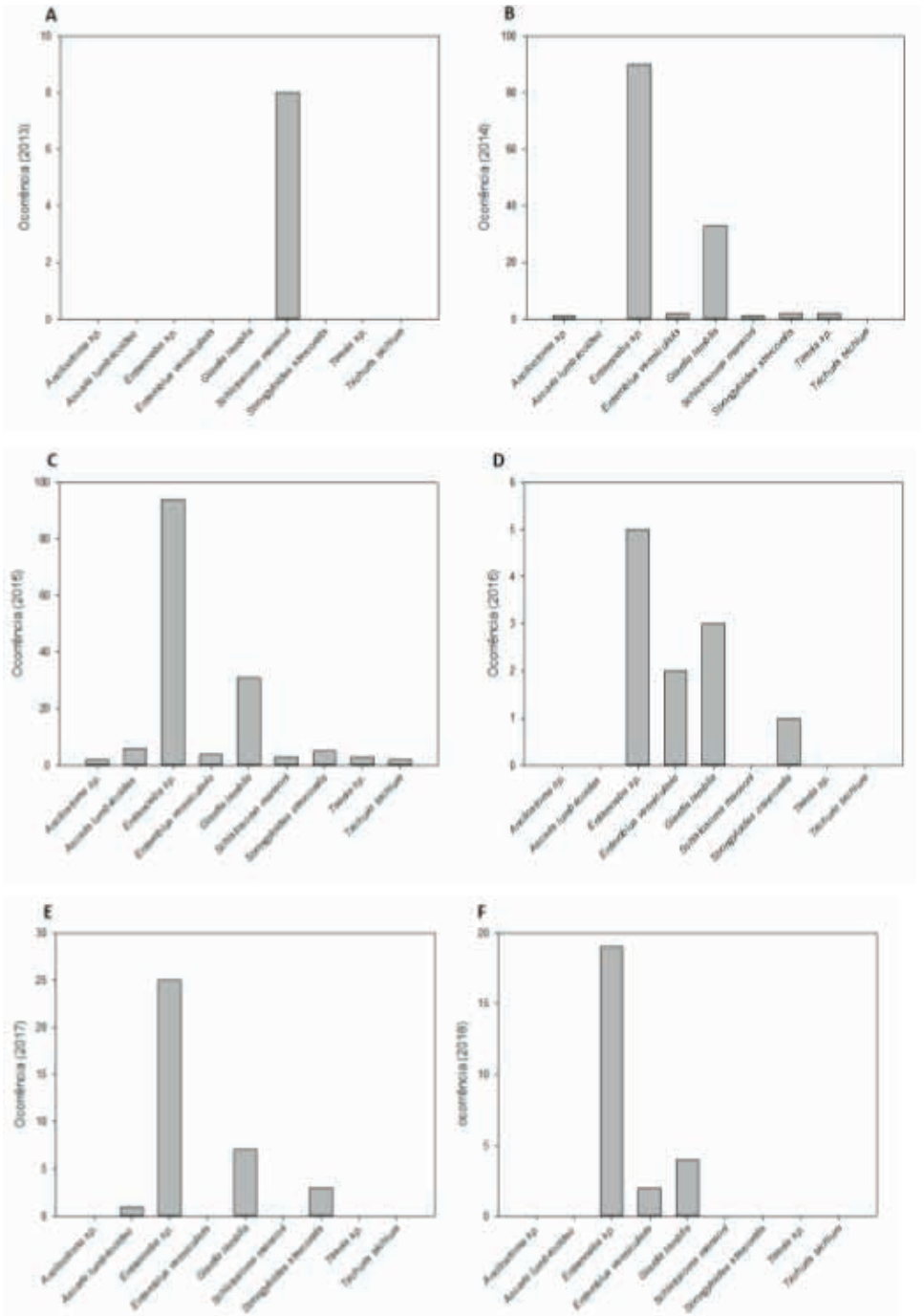

Figure 3 – Variation of the etiological agents of intestinal parasites diagnosed in positive patients in the municipality of SJDR over the years (2013 – 2018).

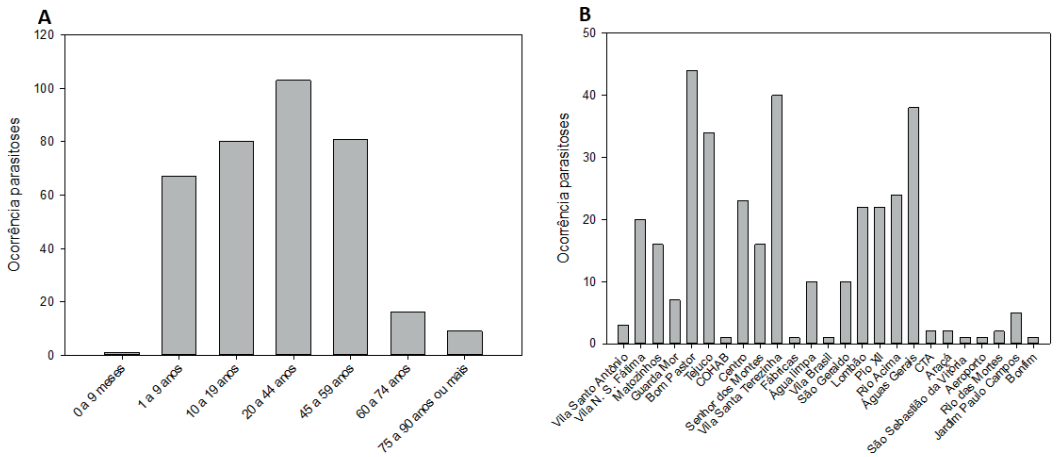

Figure 4 – Distribution of intestinal parasites by age group, according to the WHO (A) and by districts of the municipality (B, over the years (2013 – 2018).

CONCLUSION

The accomplishment of the work allowed to conclude that the city, even presenting a high index of human development, presents areas with occurrence of parasites, mainly those related to the consumption of water of unsatisfactory quality. The numbers raised show the need to implement more efficient control measures and reinforce the importance of educational actions throughout the municipality, since enteroparasitoses can be frequent due to the lack of knowledge of the basic principles of personal hygiene and care in food preparation.

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