

Prevalence of intestinal parasitosis at the university hospital of Abomey-Calavi and So-Ava in Benin (West Africa) from 2010 to 2020

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ABSTRACT: In tropical environments, parasitosis is a public health problem. This study aims to describe the evolution of the prevalence of intestinal parasitosis diagnosed at the laboratory of the University Hospital of Abomey-Calavi/So-Ava in the Atlantic Department of southern Benin in West Africa from 2010 to 2020. Each stool sample was examined directly with physiological water and stained with Lugol's stain. From 2010 to 2020, 2348 patients benefited from a parasitological examination of stools at the laboratory of the University Hospital of Abomey-Calavi/So-Ava. 181 samples were positive (8%). 53% of the patients with parasitic disease were female. Children aged 0 to 5 years represent 51% of the parasitized patients. 97.90% of the parasites identified during the parasitological examination of stools belong to the group of protozoa. *Entamoeba histolytica* is the most observed parasite species (64.64%), followed by *Entamoeba coli* (27.76%), *Trichomonas intestinalis* (3.30%), *Giardia lamblia* (2.20%), *Ascaris lumbricoides* (1.6%) and *Trichuris trichiura* (0.5%). An effective control of intestinal parasitosis in Benin will require the eradication of intestinal protozoosis.

KEYWORDS: Prevalence, intestinal parasitosis, Abomey-Calavi/So-Ava, Benin.

1 INTRODUCTION

Parasitology is the science that studies parasites (morphology, biology, systematics...) and their interactions with their hosts [1]. Intestinal parasitosis, diseases caused by various infectious agents ranging in size from a micrometer to several meters, represent a real public health issue in tropical environments where favorable climatic conditions, the absence or inadequacy of hygiene and sanitation measures, and poverty favor their expansion [2]. According to the World Health Organization (WHO), there are an estimated 3.5 billion cases of intestinal parasitosis with a mortality of 155,000 cases per year [3]. In Africa factors such as promiscuity, lack of clean water, food hygiene and inadequate sanitation facilities resulted in the overall prevalence of intestinal parasitosis being 63.3%, the majority of which (53%) was transmitted through dirty water [4]. Population growth, immigration, climatic conditions, low socioeconomic level and poor hygiene are favorable factors for the spread of parasitism in a population [5]. The 2014 statistical yearbook shows that gastrointestinal diseases occupy the third position among the most frequent diseases in the Beninese population behind acute respiratory infections and malaria with a prevalence of 6.60% [6]. To contribute to the fight against intestinal parasitic diseases, the present study was initiated and aims to describe the evolution of the prevalence of intestinal parasitosis diagnosed at the CHUZ from 2010 to 2020 in Benin in order to make an inventory of the parasites in vogue for a targeted and more effective fight.

2 MATERIALS AND METHOD

We conducted a retrospective descriptive study at the laboratory of the University Hospital of Abomey-Calavi/So-Ava. The study population was composed of all patients who had benefited from a parasitological examination of stools from January 01, 2010 to December 31, 2020 at the medical diagnostic laboratory. For the microscopic examination that allowed the identification of the parasitic species, it was realized the direct examination with physiological water between slide and cover slip. Lugol's staining was performed for the differential diagnosis between *Entamoeba histolytica* and *Entamoeba coli* cysts. Patients for whom all information (age, sex, results of the parasitological examination of stools,...) were not mentioned in the registers are excluded from this study. Data were collected from the laboratory registers.

3 RESULTS AND DISCUSSION

The results obtained are presented in the figures below. Out of 2348 patients who benefited from a parasitological examination of stools, 181 were diagnosed as carriers of intestinal parasites, or a prevalence of 8%.

Figure 1 presents the prevalence of intestinal parasitosis from 2010 to 2020 at the CHUZ of Abomey-Calavi/Sô-Ava.

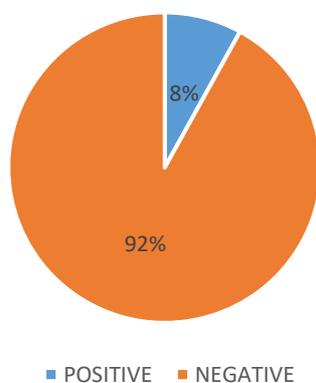


Fig. 1. Prevalence of intestinal parasitosis

Analysis of this figure reveals that the prevalence of intestinal parasitosis is 8%. This positivity rate is very low compared to the rates obtained by Sissinto-Savi de Tové *et al.*, (2003-2015) at the Centre National Hospitalier Universitaire de Cotonou (Benin) (17.6%) [7], Ouermi *et al.*, (1991-2010) at the Centre Medical Saint-Camille de Ouagadougou (Burkina-Faso) (60.82%) [8], Sangaré *et al.*, (1998-2008) in Muraz Bobo Dioulasso (Burkina-Faso) (23.80%) [9], Yaro *et al.*, (2010-2015) in the parasitology department of the Institut National de Recherche en Santé Publique in Bamako (Mali) (48.04%) [2]. This relatively low rate obtained in the present study could be explained by the fact that on the one hand the data were not obtained in the same population nor during the same period and on the other hand in Benin there are deworming campaigns coupled with the extended vaccination program among children.

EVOLUTION OF REQUESTS FOR PARASITOLOGICAL EXAMINATION OF STOOLS AND PREVALENCES ACCORDING TO THE YEAR

The figure below presents the number of parasitological examinations performed per year.

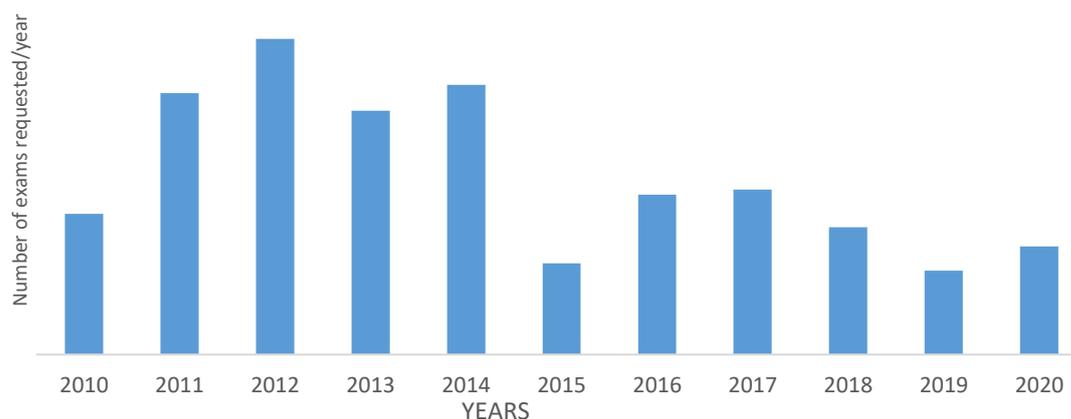


Fig. 2. Evolution of stool parasitology requests from 2010 to 2020

From this figure, it can be seen that the highest demand for stool parasitology examination was made in 2012, 377 stool parasitology examinations compared to 100 stool parasitology examinations performed in 2019 (lowest demand).

The figure 3 shows the prevalence of intestinal parasitosis by year.

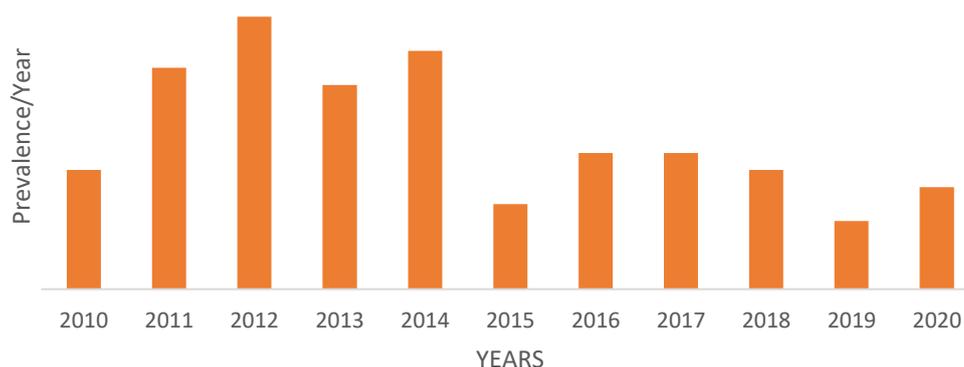


Fig. 3. Evolution of prevalences according to the year

From figure 3, we observe that the highest prevalence was observed in 2012 while the lowest is 4% obtained in 2019.

The figure 4 shows the correlation between the number of examinations requested and the prevalence.

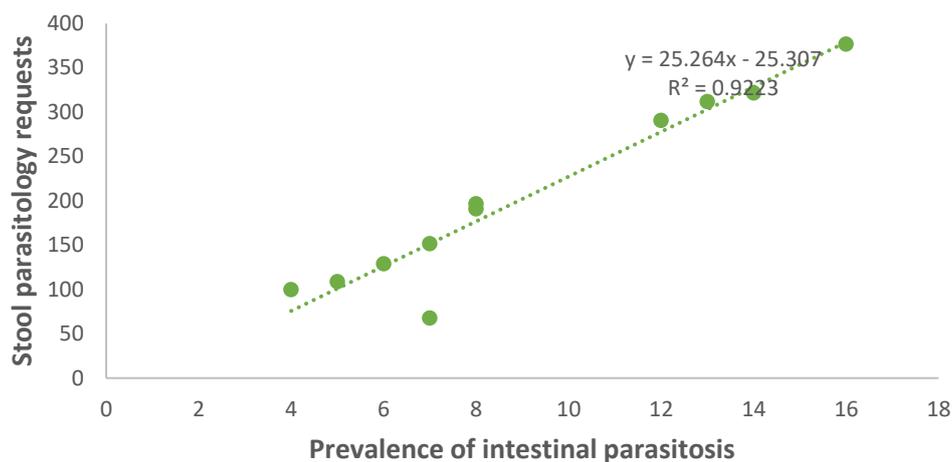


Fig. 4. Correlation between the number of examinations requested and the prevalence

The figure above shows the correlation between the number of examinations requested and the prevalence obtained each year. There is a very strong positive relationship between these two variables.

DISTRIBUTION OF PARASITIZED PATIENTS ACCORDING TO GENDER

The figure below shows the distribution of parasitized patients according to gender.

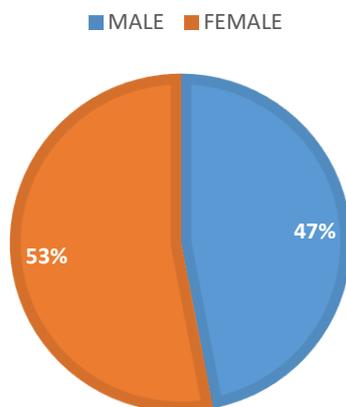


Fig. 5. Distribution of parasitized patients according to sex.

This figure reveals that among the 181 positive cases, 47% are male versus 53% female. This could be due to a predominance of females among patients who benefited from a parasitological examination of stools from 2010 to 2020 at the CHUZ Abomey-Calavi/Sô-Ava. However, the Beninese population is predominantly female (51%) [10].

AGE DISTRIBUTION OF PARASITIZED PATIENTS

The distribution of parasitized patients according to age is presented in figure 6.

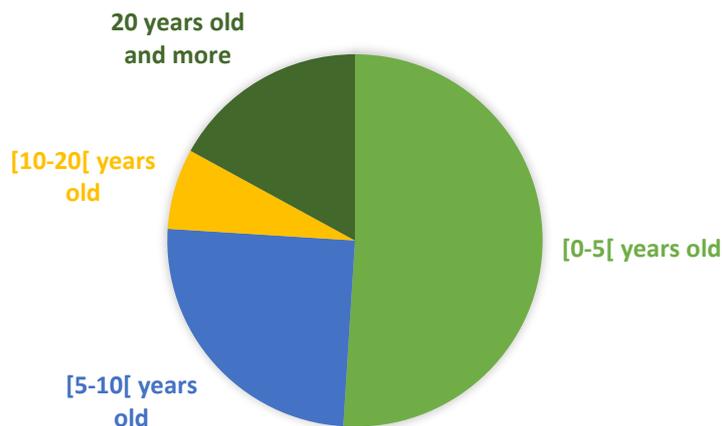


Fig. 6. Distribution of intestinal parasitosis according to age

From this figure we can see that patients under 5 years of age are the most parasitized with a frequency of 51%. They are followed by those aged [5-10 [years (25%). This could be due to the fact that young children are naturally exposed through their daily activities such as playing, contact with contaminated objects, and not following hygiene measures [2]. In sub-Saharan Africa, children, particularly school-aged children, are disproportionately affected by geohelminthiasis infections [11-13].

FREQUENCY OF PARASITE GROUPS FOUND

The frequency of parasite groups found during parasitological examination of stools from 2010 to 2020 at the CHUZ of Abomey-Calavi/Sô-Ava is presented in figure 7.

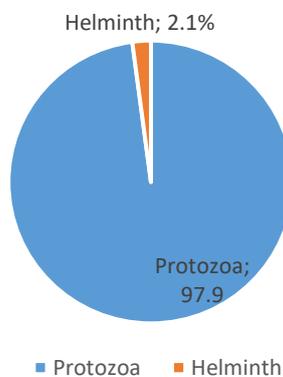


Fig. 7. Frequency of parasite groups found

The most identified parasitic group is protozoa with a frequency of 97.90% against 2.1% for helminths. This percentage is higher than that of Ouermi *et al.*, (1991-2010) at the Saint-Camille Medical Center in Ouagadougou (Burkina-Faso) [8] which recorded a rate of 90.53%. It is slightly lower than the result of Sissinto-Savi de Tové *et al.*, (2003-2015) at the Centre National Hospitalier Universitaire de Cotonou (Benin) who found a rate of 98.10% [7]. This result could be explained by systematic deworming campaigns organized in Benin during which antihelminthic molecules are distributed [7].

FREQUENCY OF PARASITIC SPECIES IDENTIFIED

Figure 8 presents the frequency of parasitic species identified from 2010 to 2020 at CHUZ Abomey-Calavi/Sô-Ava.

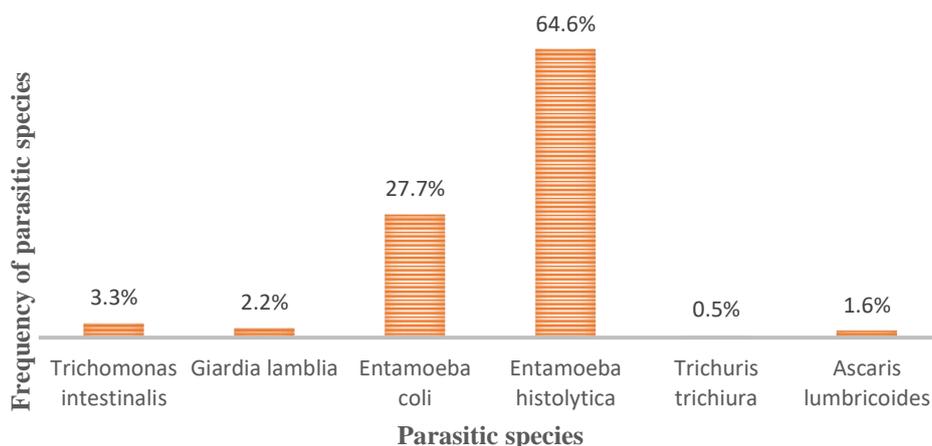


Fig. 8. Frequency of parasitic species identified

The most incriminated parasitic species in digestive parasitosis from 2010 to 2020 is *Entamoeba histolytica* (64.64%), followed by *Entamoeba coli* (27.76%). Amoebiasis represents 92.40% of diagnosed parasitoses. *Trichomonas intestinalis* (3.30%), *Giardia lamblia* (2.20%), *Ascaris lumbricoides* (1.6%) and *Trichuris trichiura* (0.5%) are among the parasites identified. The percentage of patients parasitized by *E. histolytica* in the present study is higher than those obtained by Ouermi *et al.*, (1991-2010) at the Saint-Camille Medical Center of Ouagadougou (Burkina-Faso) (39.88%) [8] and Sissinto-Savi de Tové *et al.*, (2003-2015) at the Centre National Hospitalier Universitaire de Cotonou (Benin) (32.50%) [7] but lower than the result of Yaro *et al.*, (2010-2015) at the parasitology department of the Institut National de Recherche en Santé Publique in Bamako (Mali) (72%) [2].

4 CONCLUSION

Parasitosis is a public health problem favored by environmental conditions, defective hygiene and lack of appropriate health education. This was observed through a retrospective study conducted at the CHUZ of Abomey Calavi/So-Ava. At the end of this study, it is important to note that children under the age of 5 years are the most infected with a predominance of the female sex. Protozoa is the most common parasite group. Amoebiasis is the most diagnosed parasitosis. The dissemination of parasites depends not only on the level of community hygiene (food, faecal and water), but also on the personal and general hygiene conditions of individuals. The prevalence of parasitosis recorded at the CHUZ of Abomey Calavi/So-Ava is not negligible. The eradication of human parasitosis in Benin will require an effective fight against digestive protozosis in general and amoebae in particular.

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