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Original Research Article

Intestinal Parasitosis Over a Two-Year Period

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Abstract: ***Introduction:*** Intestinal parasitosis is a global health problem. It is estimated that some 3.5 billion people are infected. ***Aim of the Study*:** To determine the prevalence of intestinal parasitosis based on the results of parasitic coprologies performed at the parasitology laboratory of the Mohammed V Military Hospital (HMIMV) in Rabat and to identify the associated risk factors. ***Materials and Methods*:** This is a descriptive and retrospective cross-sectional survey, carried out over a period of 2 years, from 1st January 2022 to 1st December 2023. The results of stool parasitology examinations were retrieved from the laboratory analysis reports. The data were entered into Microsoft Office Excel 2007 and exported to Jamovi version 2.6.13 for statistical analysis. ***Results*:** During the study period, we included 7,300 stool parasitology examinations: 4,453 men (61%) and 2,847 women (39%). The overall prevalence of intestinal parasites was 26.12%. Blastocystis hominis alone represented 73.45%, *Endolimax nanus 17.77%,* Dientamoeba fragilis 4.44%, Entamoeba coli 1.11%, Giardia intestinalis 0.55%, Entamoeba histolytica 0.25%, Chilomastix mesnili 0.37%, Trichomonas intestinalis 0.18%, Enterobius vermicularis 1.48% and Ascaris lumbricoides 0.37%. ***Conclusion*:** Polyparasitism affects 37% of patients. This indicates a very low level of hygiene, contaminated water and unfavorable living conditions. The prevalence of intestinal parasitism was fairly high in the population examined. Several parasitic species are incriminated. Unhealthy living conditions and poor hygiene encourage endemicity and the perpetuation of transmission. The best way to combat this scourge is through prevention, hygiene and individual and collective awareness-raising.

Keywords: Intestinal Parasites- Prevalence- Parasite Index- Polyparasitism.

INTRODUCTION

Intestinal parasitic infections are a global health problem. It is estimated that some 3.5 billion people are infected, 450 million are ill, the majority being children, and that approximately 155,000 die each year from causes attributable to these parasites [1-3]. The frequency of intestinal parasitic infections is inversely proportional to the degree of development of the countries concerned. Their strong expansion in developing countries can be associated with several determining factors, essentially favorable climatic conditions, poor hygiene and sanitation, and low socioeconomic and sociocultural levels of the populations [3-5]. Intestinal parasites, whether cosmopolitan or tropical, affect different parts of the digestive tract and can present a clinical manifestation or go unnoticed for a long time. They are very frequently responsible for various digestive disorders: abdominal pain, nausea, vomiting, diarrhea, and most often chronic. Also malnutrition, anemia, growth and mental development delays, irritability, increased susceptibility to other infections and acute complications are part of the consequent morbidity, mainly in children [2-7].

Our study aims to determine the prevalence of intestinal parasitosis based on the results of parasitic coprologies carried out at the Parasitology Laboratory of the Mohammed V Military Teaching Hospital (HMIMV) in Rabat and to identify the associated risk factors. The results should facilitate the assessment of the endemic level of different intestinal parasites and determine whether possible public health programs, preventive or curative, to control these parasites are necessary. This study will also constitute a bibliographic reference that

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can be compared with other studies carried out in different regions of Morocco and around the world.

MATERIALS AND METHODS

Type and Location of Study

Retrospective analytical descriptive study carried out in adults and children, analyzed within the parasitology mycology department at the Mohammed V Military Teaching Hospital in Rabat (HMIMV) over a period of 2 years from January 1, 2022 to December 1, 2023.

Patients

These studies include the parasitology examination of stools received either from military structures (barracks, garrison infirmary, military schools and royal gendarmerie schools), or civilian patients entitled to military family (spouse and child) and other addresses from the private sector.

Methods

Data Collection

Demographic data were collected from the laboratory information system (LIS). Data were entered into an Excel spreadsheet to calculate percentages, mean age, sex ratio, and generate graphs and tables.

Statistical Analysis: Statistical analysis was performed using Jamovi software version 2.6.13.

Parasitology Study of Stools

- Macroscopic study: the appearance, consistency, color and possible presence of blood, mucus and adult forms of parasites are noted.
- Microscopic study in the fresh state (0.9% saline solution), after staining (Lugol 2%, Merthiolate Iodine Formol (MIF), modified Ziehl Nelson), and after concentration (Bailenger physicochemical technique and Willis physical technique). To better highlight the eggs, larvae and trophozoa, enrichment or concentration techniques were adopted.

RESULTS

The descriptive analysis of the study population showed that according to 7300 stool parasitology examinations (SPE) processed, 2037 patients were aged 22 to 32 years (27.90%), 1709 patients were aged 33 to 43 years (23.41%), 1323 patients were aged 55 to 65 years (18.12%), 254 patients were aged 11 to 21 years (3.47%), 30 patients were aged 5 to 10 years (0.41%) and 7 patients were aged 66 to 76 years, or 0.09% (Figure 1).

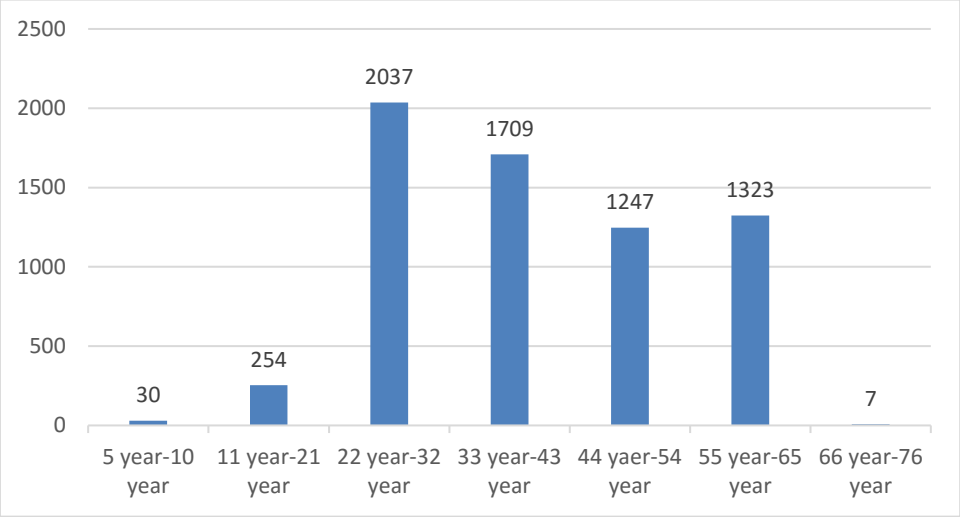

Figure 1: Distribution of patients by age

The study involved 4,453 men (61%) and 2,847 women (39%), divided between civilian and military consultants, with a sex ratio (M/F) of 1.56 (Figure 2).

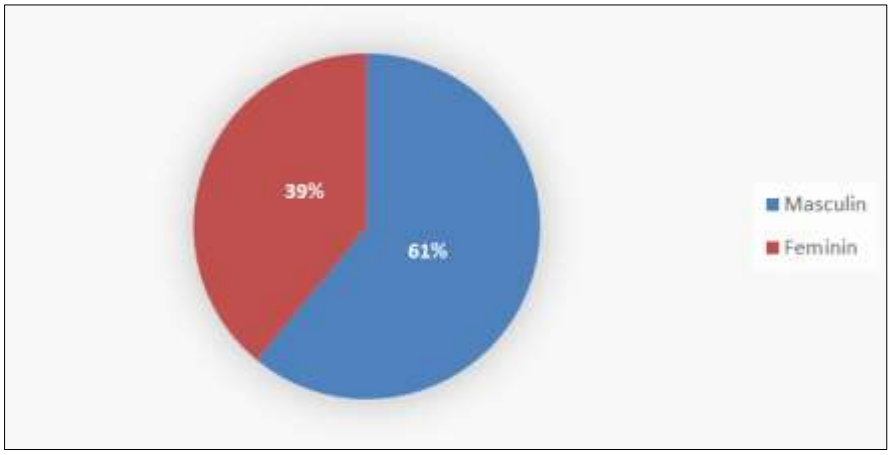

Figure 2: Distribution of patients by sex

- **Study of the Population Hosting Parasites**

The simple parasite index (SPI) is the percentage of parasitized subjects compared to the total number of subjects examined. We found 2701 infected patients in the study population, which corresponds to an overall infection rate of 37% (Figure 3).

- **Prevalence of Intestinal Parasitism According to Study Period**

The year 2022 recorded the highest IPS (23.01%) compared to the other year of the study where parasitism rates varied. In 2023, there was a significant decrease in parasitism to 13.11% (Figure 4).

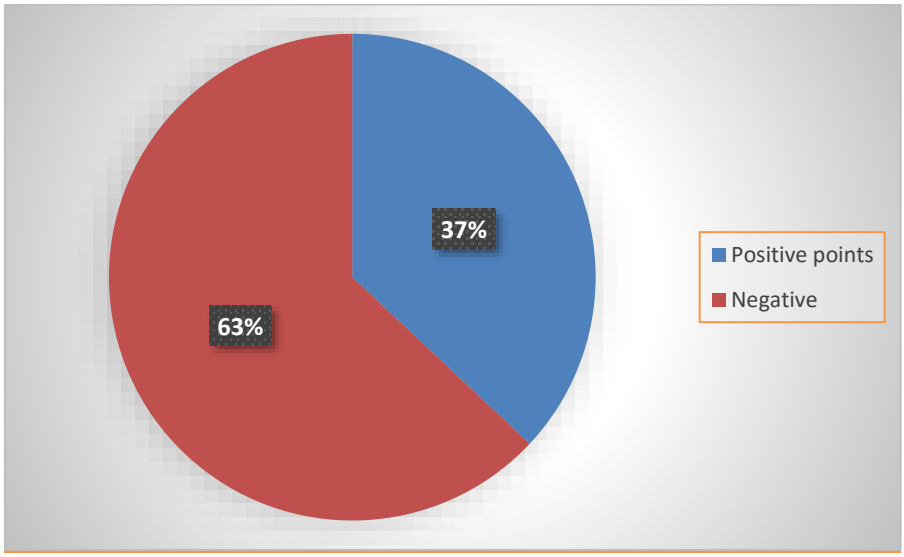

Figure 3: Hint simple parasitic

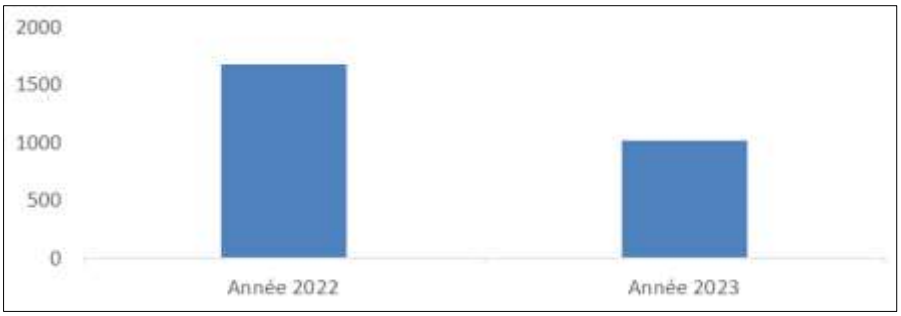

Figure 4: Hint parasitic

- **Study of Collected Parasitoses**

Distribution of protozoa: It appears that intestinal parasitism in our study is dominated by

protozoa which represent 98.14% of the total parasites isolated (2651 cases), distributed between amoebae, flagellates, coccidia and Blastocystis hominis. While helminths represent only 1.85% (50) of the total cases (Figure 5).

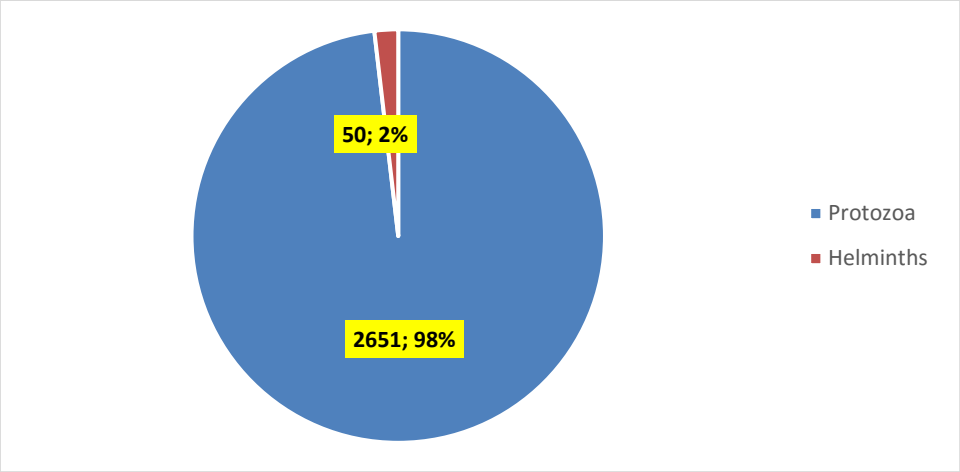

Figure 5: Distribution of parasites found

Blastocystis hominis comes first and represents the most frequent parasite in the population studied, with an overall prevalence of 73.45% (n = 1984) of infected patients, followed by amoebae 23.84% (n = 637) and flagellates 1.11% (n = 30) (Figure 6).

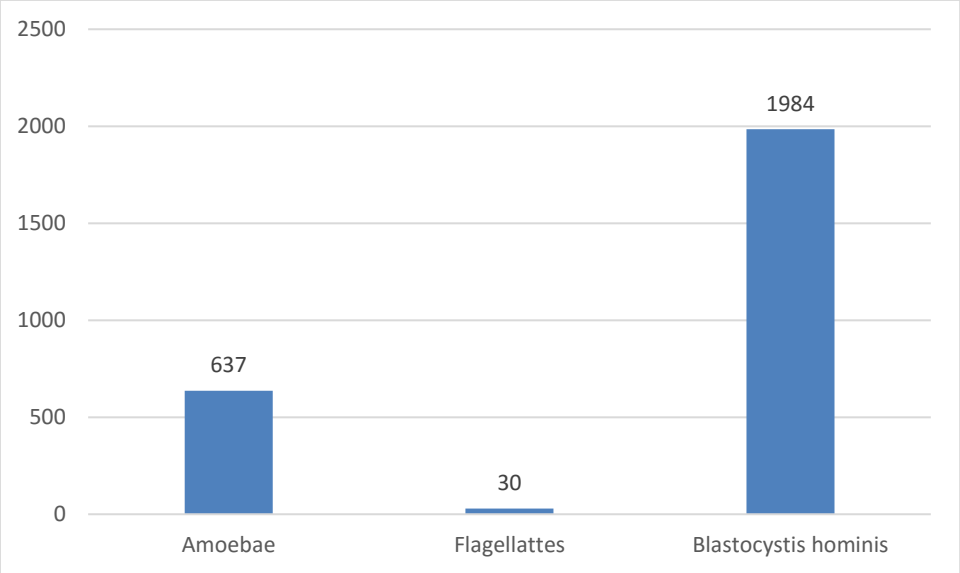

Figure 6: Prevalence of protozoa

DISCUSSION

Comparing our study with other Moroccan studies but also in neighboring countries, we note that the IPS of 37% that we found is higher than those reported in Kenitra [8], and in Algeria [9], and which are respectively 14.15% and 19.96%. On the other hand, even lower prevalences were observed in Tunisia with a rate of 26.6% [10]. It should be noted that parasitism is dominated by protozoa and that helminths are rare.

Table 1: Comparison of Protozoa

	Algérie Benouis 2013	Tunis Ayadi 2006	Maroc El guamri 2005	Marrakech Notre etude 2013
amibes	E coli 18,85 %	D fragilis 30,3%	E histolytica/ E.dispar 26,4%	E H/E dispar 28,9%
flagellés	Giardia intestinalis 15,32%	Giardia intestinalis 17%	Giardia intestinalis 22,7%	Giardia intestinalis 4,1%
helminthes	Enterobius vermicularis 2,82%	Enterobius vermicularis 3%	Ascaris lumbricoides 11,87%	Enterobius vermicularis 0,9%

Our series showed an overall prevalence of 26.12% of intestinal parasite carriage, these values being lower than the data from the national literature close to the international literature [11-13]. These low values given that it is an urban population, with easy access to care, this can only confirm the association between intestinal parasitism, poor hygiene conditions and low socio-economic level. Therefore, the fight against intestinal parasites is essential.

CONCLUSION

We recommend screening and treating asymptomatic carriers, particularly kitchen staff and community workers. However, the success of any measure depends on preventing reinfection. These prophylactic measures require multidisciplinary intervention to reconcile healthy living conditions with community accountability and active and meaningful participation. This requires promotion and awareness-raising regarding general and individual hygiene.

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