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RESEARCH ARTICLE

IMPACT OF COVID-19 PANDEMIC ON INTESTINAL PARASITIC INFECTIONS: EXPERIENCE OF PARASITOLOGY AND MYCOLOGY LABORATORY OF AVICENNA MILITARY HOSPITAL IN MARRAKECH

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Abstract

Intestinal parasitic infections (IPIs) are a worldwide public health threat that remains frequent, especially in countries where hygienic conditions are precarious. The Covid-19 pandemic that the world is experiencing since March 2020 was associated with the establishment of a set of hygienic measures. The aim of this study is to highlight a possible impact of those measures on the prevalence of IPIs by evaluating the results of stool specimen's examinations for patients of the Avicenna military hospital in Marrakech for a period extended from 2017 to 2022. The overall prevalence of IPIs was found to be 32%. The prevalence of protozoa infections was much higher than the prevalence of helminthic infections (95% vs. 5%). Amongst the protozoa, blastocystis hominis (BH) was the most common parasite. Our study showed a fall in the overall prevalence of IPIs starting from 2020 and a consequent drop in the prevalence of the most incriminated protozoa in parasitic diarrheas: entamoeba histolytica histolytica and giardia intestinalis. Those findings show the effectiveness of the hygiene measures, implemented during covid-19 pandemic, on the carriage of these parasites. The replacement of Entamoeba histolytica histolytica by blastocystis hominis in terms of pathogenicity could be explained by the reactivation of the carriage of BH due to the imbalance of the intestinal flora caused by the use of alcohol and bleach for sanitization. Therefore the present study highlights the positive impact of hygienic measures, carried out during covid-19 pandemic, on the prevalence of IPIs and leads us to emphasize the need to pursue those measures even outside the pandemic.

Introduction:-

Intestinal parasitic infections (IPIs) are a worldwide public health problem. According to the estimates of the World Health Organization (WHO) for the year 2002, the number of subjects infected by digestive parasites is estimated at 3.5 billion and the number of patients at 450 million [1]. These IPIs remain frequent, especially in countries where the climatic and hygienic conditions are precarious [2,3].

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The covid-19 pandemic that the world has been experiencing since 2019 has been accompanied by the introduction of a set of preventive measures, including physical distancing, wearing a mask and rigorous hand washing [4]. Thus, this study aimed to highlight a possible impact of these barrier measures on the prevalence of IPIs.

Material And Methods:-

This is a retrospective study conducted at the parasitology department of the Avicennamilitary hospital in Marrakech, which studied the results of stool specimen's examinations. These specimens were examined for the presence of the parasite by direct smear and the formol-ether concentration methods. The study extended over a period of 5 years, from 2017 to 2022. It included adult and child patients {military and their families} hospitalized or consultants.

Data were entered using Microsoft Excel 2013 software and analyzed using IBM SPSS version 20 software.

Results:-

During the study period (2017-2020), we included 4940 stool specimens 4496 in adults and 444 in children, these are 3147 stool specimens carried out in adult male patients (70%), and 1349 (30%) women. The sex ratio (M/F) being 2.3. As for the children, 444 stool specimens were examined, 226 girls (51%) and 218 boys (49%). Our study population comes from different age groups, the average age is 33 years. 17% of patients are hospitalized in the medical department and 83% come from the outpatient department.

We found 1582 infected patients in the study population (4940), which corresponds to an overall infection rate of 32%. The years 2020 and 2021 recorded lower rates (30% and 27% respectively) compared to other years when the prevalence of IPIs averaged 35%. From 2017 to 2021, there is a drop in prevalence of IPIs from 42.4% in 2017 to 27% in 2021(fig 1).

During the study period, the number of positive stool parasitological examinations was 1582 patients. These are 1154 men (73%) and 428 women (27%). The prevalence of IPI of male patients (21%) is higher than that of female patients (7%). Our study was dominated by protozoa which represented 99.5% of the isolated parasites, far ahead of helminths (0.5%). They are distributed between Blastocystis hominis 50%, amoebas 46% and flagellates 4%. Blastocystis hominis represents the most common parasite in the study population, with an overall prevalence of 50% (n=775) of infected patients, followed by amoebae at 46% (n=731), flagellates come last with a prevalence of 4% (n=63). Blastocystis hominis represents half of the protozoa listed and 49% of all the parasites found.

The frequency of flagellates is 4% in our study population: 3 species were found: Giardia intestinalis, Chilomastix mesnili and Trichomonas intestinalis. Giardia intestinalis is the most common with a frequency of 2%.

Thus we observed a drop in the prevalence of entamoeba histolytica histolytica and giardia intestinalis in the years 2020 and 2021(fig 2).

There is an increase in the number of patients infected with Blastocystis hominis in the years 2020 and 2021 (fig 3).

Within the helminths, we found two species during the period studied. Enterobius vermicularis comes in 1st place with 70% of helminths found and 0.4% of all parasites found. Taenia saginata comes in 2nd position with 30% of helminths found and 0.1% of all parasites found.

Discussion:-

The first case of Covid-19 was recorded in China in January 2020with a toll of 481 million cases and more than 6 million deaths worldwide [5]. The first case of Covid-19 infection was confirmed in Morocco on March 02, 2020. Morocco has shown great anticipation by implementing very early, compared to other countries, physical distancing measures [6]. These preventive measures were initially materialized by the development of the "National plan for monitoring and responding to infection by Coronavirus 2019-nCoV". The Moroccan authorities accompanied the implementation of these measures with an information and awareness campaign for the population on the hygiene measures and the "barrier" gestures to be adopted [7].

In our study, we noted the maintenance of a similar activity at the level of the parasitology department of the Avicenna military hospital in Marrakech. The fall in the prevalence of parasitic intestinal infections from the year 2020 happened in parallel with the introduction of hygiene measures in the context of the fight against covid. Indeed, diseases related to faecal peril indicate the high level of contamination of water and food by faeces and the lack of hygiene and sanitation measures in these regions [2, 3]. By comparing the protozoa most incriminated in parasitic diarrhea, namely Entamoeba histolytica histolytica and Giardia intestinalis, we noted a very significant drop in their frequency. This also testifies to the effectiveness of the hygiene measures, including hand washing, on the carriage of these parasites. In children, the frequency of giardia intestinalis remains high compared to years, mainly due to non-compliance with hygiene measures in the pediatric population. Finally, our study has shown that Blastocystis hominis has replaced Entamoeba histolytica histolytica in terms of pathogenicity. This could be explained by the intestinal flora imbalance caused by an excessive use of skin disinfectants, leading to the emergence of Blastocystis hominis as the first parasite responsible for abdominal pain.

Figure 1:- Evolution of positive stool samples during the study period.

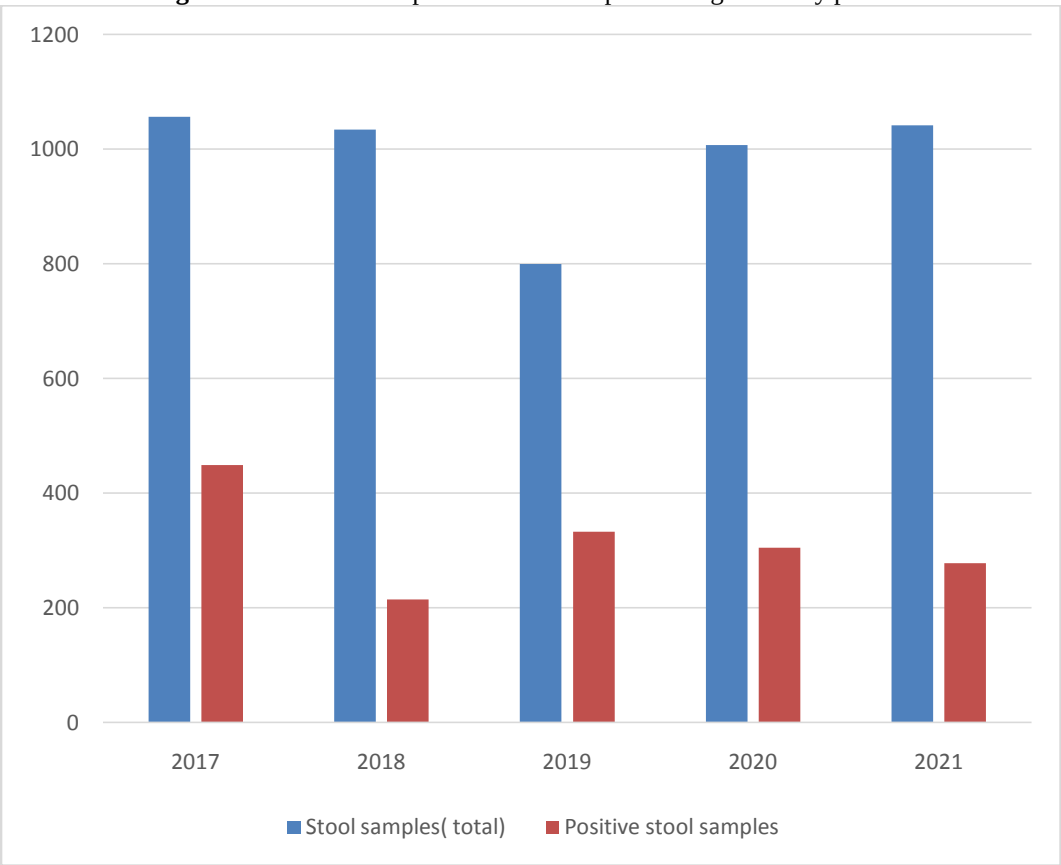


Figure 2:- Curve showing the evolution of Entamoeba histolytica and Giardia intestinalis according to the years.

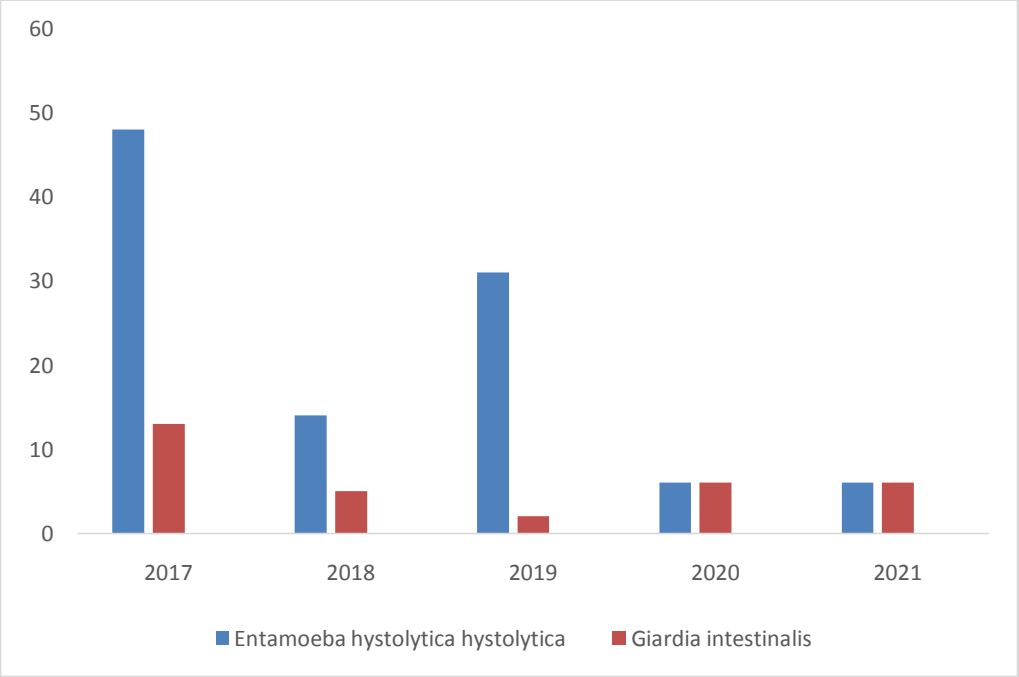
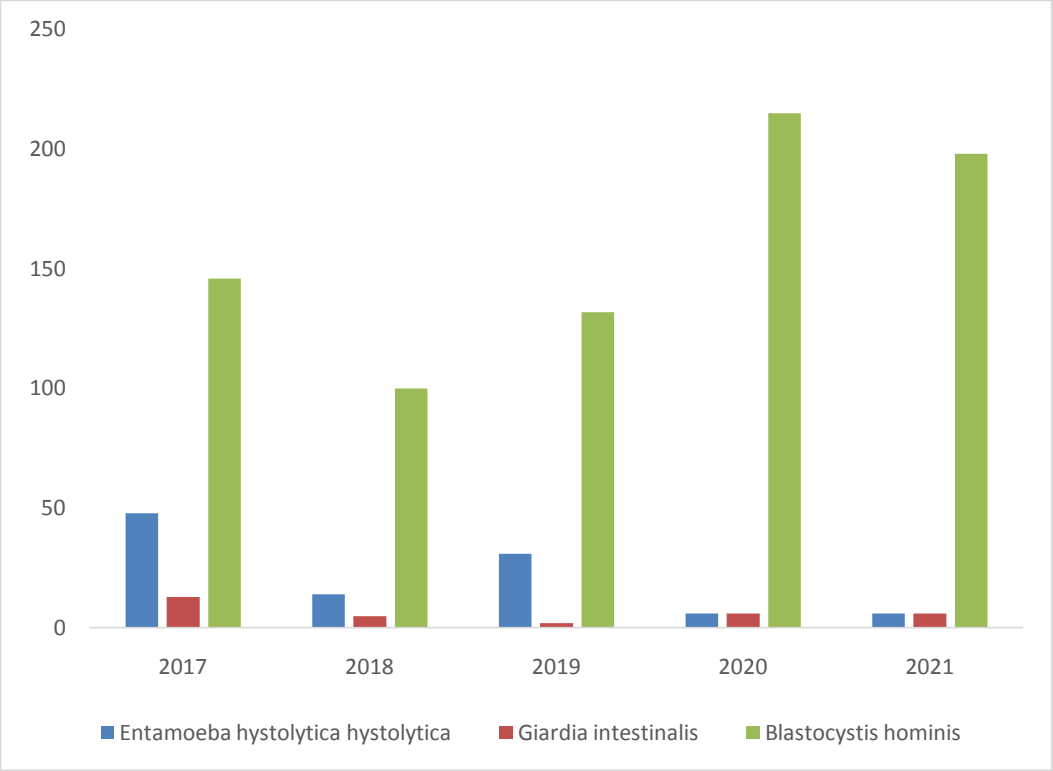


Figure 3:- Curve showing the evolution of Entamoeba histolytica histolytica, Giardia intestinalis and Blastocystis hominis according to the years.



Conclusion:-

Intestinal parasitic infections, due to their frequency and potential severity, are a real public health issue in our context. Hygiene measures, on an individual and collective scale, are an essential player in the fight against this

pathology. Our study has thus made it possible to highlight the impact of these measures taken in the context of the fight against Covid-19 on the overall prevalence of IPIs as well as on the nature of the parasites found. These conclusions emphasize the importance of continuing to comply with these measures even outside of the covid-19 pandemic.

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