Original Article

Journal of Brahmanbaria Medical College
Volume 4 Issue 2 July 2022 ; 30-32

Prevalence of Intestinal Parasitic Infestations among Patients Coming at Tairunnessa Memorial Medical College Hospital, Gazipur

Maiz-ul Ahad Suman[1*] S M Shamsuzzaman[2] Muhammad Enamul Haque[3]
Nasrin Akter[4] Farjana Majid[5] Tashmin Afroz Binte Islam[1] Md. Mizanur Rahman[6] Md. Zakiur Rahman[7]

ABSTRACT

Background: Intestinal parasitic infestation are important public health issue in resource-poor countries including Bangladesh. However, social and economic development and antiparasitic measures are also taking place in this country. The aim of the study to evaluate prevalence of intestional parasitic infestation among patients attending TMMC Hospital.

Materials and methods: A cross sectional study was conducted in Tairunnessa Memorial Medical College Hospital, Gazipur to determine prevalence of intestinal parasitic infestation by microscopic examination and Harada-Mori filter paper strip culture of stool samples.

Results: A total 500 samples were collected from patients attending at the hospital and only 2% were positive for intestinal parasites with Giardia lamblia being the commonest (1%) followed by Ascaris lumbricoides (0.8%) and Trichuris trichiura (0.2%). No hookworm infestation was detected by microscopy and culture.

Conclusion: Findings of this study will help physicians to take decision while diagnosing intestinal parasitic infections and other diseases.

KEY WORD
Helminths; Intestinal parasites; Stool culture.

INTRODUCTION

Intestinal parasitic infestations are caused by protozoa and helminths. Soil-Transmitted Helminthic infestation (STH) are among the most common infestation worldwide and affect the poorest and most deprived communities. They are transmitted by eggs present in human faces which in turn contaminate soil in areas where sanitation is poor. The main species that infect people are the round worm (Ascaris lumbricoides) the whip worm (Trichuris trichiura) and hook worms (Necator americanus and Ancylostoma duodenale). [1] In 2010, an estimated 438.9, 819.0 and 464.6 million people worldwide were infected with hookworm, Ascaris lumbricoides and Trichuris trichiura respectively. About 5 million Years Lived with Disability (YLDs) due to STH and 65% of this is due to hook worms, 22% due to round worm and 13% due to whip worm.[2]

Intestinal protozoal infestation, particularly Entamoeba histolytica and Giardia lamblia are also responsible for significant morbidity and mortality in developing countries.[3] In 2010, about 179 million people were infected by Giardia lamblia.[4] Similarly Entamoeba histolytica affected 50 million people with 100000 deaths in the same year.[5]

In 2005, the prevalence of STH in three districts of Bangladesh among school children was 80%.[6] Since then Ministry of Health and Family Welfare (MOH&FW) Bangladesh implements Mass Drug Administration (MDA) with mebendazole among school children. In addition, pre-school children are targeted for deworming through the Expanded Program on Immunization (EPI).[7] Along with economic development, more than 90% people of Bangladesh are using improved water sources.[8] In that altered situation, status of parasitic infection in Bangladesh should be different than decades ago.

This study is designed to evaluate prevalence of intestinal parasites among patients attending Tairunnessa Memorial Medical College Hospital, Gazipur and to help physicians diagnosing diseases.

1. Assistant Professor of Microbiology
Tairunnessa Memorial Medical College, Gazipur.
2. Professor of Microbiology
Dhaka Medical College
3. Assistant Professor of Medicine
Tairunnessa Memorial Medical College, Gazipur.
4. Assistant Professor of Pediatrics
Tairunnessa Memorial Medical College, Gazipur.
5. Associate Professor of Microbiology
Tairunnessa Memorial Medical College, Gazipur.
6. Assistant Professor of Microbiology
Dhaka Medical College, Dhaka.
7. Professor of Microbiology
Brahmanbaria Medical College, Brahmanbaria.

*Correspondence : Dr. Maiz-ul Ahad Suman
Email: sumanmaiz@yahoo.com
Cell : +88 01798 63 89 86

Date of Submitted : 25.04.2022
Date of Accepted : 28.05.2022

Journal of Brahmanbaria Medical College
Volume 4 Issue 2 July 2022 ; 30-32

MATERIAL AND METHODS

A cross sectional study was conducted in Tairunnessa Memorial Medical College Hospital (TMMCH) Gazipur, which is a 500 bedded private medical college hospital. TMMCH is situated in Gazipur City Corporation in Dhaka division and populated by 2500000 in 329.53 sq.km area. Before perform the study Ethical Clearence was obtained from ERB of TMMCH.

We performed stool examination of 500 patients attending Inpatient and Outpatient Departments of TMMCH from July 2017 to June 2018 at Clinical Pathology and Microbiology Laboratory. Stool examination was confined to patients attended Clinical Pathology Laboratory with advice of stool examination.

Stool was collected in a clean, dry, capped plastic container. Wet mount method with both normal saline and iodine was used for slide preparation. Each specimen was examined under a light microscope at ×10 and ×40 objectives. Detection of hook worm larvae was accomplished by Harada-Mori filter paper strip culture. About half a gram of fresh specimen of fecal sample was smeared on strip of filter paper leaving clear spaces at both the ends which wasput into test-tube along the side with unsmeared side in contact with the tube. The lower end of the filter paper was dipped in about 5ml sterile water already placed into the tube. The tube thus prepared was kept at room temperature for 4-7 days. After this period the water was poured at microscope slide and observed under low power objective.[9]

RESULTS

The overall prevalence of intestinal parasitic infestation was 2% (10 positive out of 500). Among positive samples Giardia lamblia was most common intestinal parasite, present in 5(1%) samples followed by Ascaris lumbricoides in 4(.8%) samples and Trichuris trichiura in 1(.2%) sample. No sample was positive for ova or larvae of hook worm by microscopy or stool culture.

Table I Distribution of the stool samples according to the intestinal parasite (n=500)

Variables	Frequency	Percentage (%)
Positivity for Intestinal Parasite		
Positive	10	2.0
Negative	490	98.0
Giardia lamblia	5	1.0
Type of Intestinal Parasite		
Ascaris lumbricoides	4	0.8
Trichuris trichiura	1	0.2

DISCUSSION

Study of prevalence of intestinal parasitic infestation in Bangladesh is scarce. However, a study among expatriates in Saudi Arabia found only 3.8% of Bangladeshi workers were infected, a finding which is similar to our study.[10] In contrast, a hospital based study in Nepal found higher infestation rate of 46.28%, which underscores less burden of intestinal parasites in Gazipur city corporation, Bangladesh.[11] In that relation another aspect should be borne in mind that poverty is a factor associated with intestinal parasitic infestation and being a private hospital, attendants of TMMCH are not marginalized. So, infection rate supposed to be relatively less in that population.

We found Giardia lamblia is the prominent infecting agent which infected 1% of patients which is similar to the study of Tahaet al in Saudi Arabia but contrasts with a study in Nepal which shows 9.40% prevalence.[10] This difference might be due tomore usage of unsafe water in Nepal.[3] Praharajet al in south India found 1% infection rate with Ascaris lumbricoides which is in concordance with our study but other study found much higher rate of 41.4% in Bangladeshi worker in Malaysia.[12,13] 0.2% prevalence of Trichuris trichiura in our hospital is similar to anurban slam in Karachi among children because this parasite cannot successfully complete its life cycle in the absence of more soil rich rural environment. No hookworm was identified in our study, is consistent with other study conducted in urban area.[14] Gazipur City Corporation is an industrial area and workers do not walk barefooted. Mass administration of antihelminthic drugs specially in children and behavioral change like wearing shoes might be the reason behind lack of identification of hook worm in this study. We conducted single stool examination for detection of intestinal parasites and may have missed some, as three samples over several days are required for optimum detection. However, studies suggested that one or two stool samples will detect up to 90% of protozoa.[15,16] We also didn't use concentration methods, which would have increased sensitivity. An institute in Poland indicates the detection rate by wet mount preparation is about 75%.[17] In addition, we used Harada-Mori stool culture to increase possibility of finding hook worm in samples. Several years ago Sazzad et el., reported 57% of samples found positive in Harada-Mori stool culture were also positive in routine microscopic examination.[18]

LIMITATION

Prime limitation of the study, collected data from single centre, does not reflect the actual scenario.

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CONCLUSION

We observed decreased prevalence of intestinal parasites in a tertiary care hospital at Gazipur City Corporation. Although, more intestinal parasites would have detected if we could use concentration techniques and more than one sample, however, these findings indicate that the incidence of intestinal parasitic infections has been decreased and will decrease further with the rising economic growth.

RECOMMENDATION

Multicentre research study are recommended for further works.

DISCLOSURE

All the authors declared no competing interest.

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