



Prevalence of Intestinal Parasitic Infection in a Tertiary Hospital in Manipur

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Abstract

Background: Causing various range of morbidity and even mortality, intestinal parasitic infection is a serious public health concern in developing countries. A study was carried out in the Department of Microbiology, RIMS, Imphal to determine the prevalence of intestinal parasitic infection among all the stool specimens examined from November 2018 to November 2020 i.e., 3 years.

Methods: Records of stool samples examined during the study period were searched. After checking for correctness, they were entered in Microsoft Excel 2010 & descriptive statistics was used to describe the findings. Methods of identification of parasites in stool sample in the Department were: First stool samples were collected in a wide mouthed clean, dry, properly labeled plastic container. Second, macroscopic examination was done to look for colour, consistency, presence of mucus and blood, and presence of parasitic structures such as proglottids, scolices, adult tapeworm, enterobius, ascaris, or hookworm. Third, for microscopic examination, saline wet mount and Lugol's iodine wet mount were prepared. The study is conducted after taking approval from Institutional Ethics Committee.

Results: Intestinal parasitic infection in this study was found to be 0.9%. Helminth infection was the most common and among this Ascariasis *Lumbricoides* was the commonest. Age group 11-15 years was the common age group for parasitic infection in this study. Most of the infected were males.

Conclusion: Prevalence of intestinal parasitic infection was low in this study. But it needs to study further regarding its distribution to develop effective prevention and control strategies including health education and environmental hygiene where it is more prevalent.

Keywords: Parasitic infection, protozoa, helminths, prevalence

Introduction

Intestinal parasitic infections are distributed all over the world with varying prevalence.¹ It is more prevalent among the developing and underdeveloped countries. Their transmission is by the eggs present in human feces which in turn contaminated soil in areas where sanitation is poor. The common among them are roundworm (*Ascaris lumbricoides*), the whipworm (*Trichuris trichiura*) and the hookworms (*Necator americanus* and *Ancylostoma duodenale*). As per latest WHO report, more than 880 million children need

treatment for these parasites.²It affects nutritional status, worsening school performance and even severe complication requiring surgical interventions. According to WHO, it is recommended that annual treatment in areas where prevalence rate of soil-transmitted helminthiases is between 20% and 50%, and a bi-annual treatment in areas with prevalence rates of over 50%.² Moreover, high prevalence on intestinal worms calls for improvement in sanitation and health education strategies. So, this study objective was to determine the prevalence of intestinal parasitic infections among the stool samples examined at RIMS, which is a major hospital in Manipur.

Methods

A retrospective study was conducted in the Department of Microbiology, RIMS, Imphal using secondary data after approval from Institutional Ethics Committee. All stool specimens examined from November 2018 to November 2020 i.e., 3 years in the department of Microbiology, RIMS were included irrespective of age and sex. During this study period, a total of 1436 stool samples were collected & examined. As per protocol in the department, first stool samples were collected in a wide mouthed clean, dry, properly labeled plastic container. Second, macroscopic examination was done to look for colour, consistency, presence of mucus and blood, and presence of parasitic structures such as proglottids, scolices, adult tapeworm, enterobius, ascaris, or hookworm. Third, for microscopic examination, saline wetmount and Lugol’s iodine wet mount were prepared. Saline wet mount was done to detect protozoal trophozoites and helminthic eggs or larvae and iodine wet mount was done to detect cysts. Concentration was done by saturated salt solution technique and formalin-ether sedimentation technique. Data were entered in Microsoft Excel 2010 &

descriptive statistics was used to describe the finding of this study after checking for correctness.

Results

Prevalence of intestinal parasitic infections was 0.9% in this study (13 positives out of 1436 samples). The most common parasitic intestinal infection was Ascariasis lumbricoides in 30.8% followed by hookworm (23.1%), Paragonimus(15.4%), Strongyloides(15.4%), Giardia (7.7%) & Cryptosporidium in 7.7% of cases. Out of these 13, 2 (15.4%) are only on females and so 11 (84.6%) are on males. So, Helminths infection was more common than protozoal infection (84.6% and 15.4% respectively). The commonest age of intestinal parasitic infection was 11-15 years age group in 7% of cases followed by 26-30 years in 3.6%. Single case of giardia was a female patient and out of 3 hookworm, 1 was female and 2 were males.

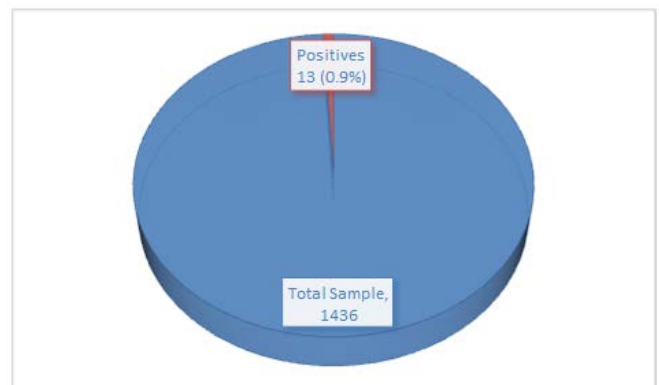


Figure 1: Pie chart showing prevalence of intestinal parasitic infections

Table 1: Various type of intestinal parasite detected

Types of intestinal parasite	Frequency	Percentage
Helminths	5	84.6
Ascariasis lumbricoides	4	30.8
Hookworm	3	23.1
Paragonimus spp.	2	15.4

Strongyloides spp.	2	15.4
Protozoa	2	15.4
Giardia lamblia	1	7.7
Cryptosporidium spp.	1	7.7
Total	13	100.0

Table 2: Age distribution of the samples examined & its positivity rates

Age in years	Total examined (N)	Positive (n)	Percentage (%)
0-5	327	1	0.3
6-10	78	1	1.3
11-15	43	3	7.0
16-20	58	2	3.4
21-25	52	1	1.9
26-30	56	2	3.6
31-35	51	0	0.0
36-40	70	1	1.4
41-45	69	1	1.4
46-50	190	1	0.5
>50	442	0	0.0
Total	1436	13	0.9

Discussion

In this study, prevalence of intestinal parasitic infection was 0.9%. This finding is almost similar to the study by Singh R et al³ where its prevalence was low i.e., 6.6%. Other studies had higher prevalence rate, like the study by Kunkal UR et al⁴, Choubisa SL et al⁵ and Ritupurna B et al⁶ where prevalence was 40.4%, 51.78% and 40.2% respectively. Low prevalence rate might be attributed to better awareness of personal hygiene and better sanitation and drinking water facilities in the state, but it needs to be studied further and also regarding its rural-urban distribution.

The most common parasitic intestinal infection was Ascariasis lumbricoides and this is supported by Choubisa et al⁷ and Comfert et al⁸ studies. Helminths infection was more common than protozoal infection (84.6% and 15.4% respectively) in this study. In the study by Pukhrabam R et al⁹, in an Urban Slum of Manipur regarding prevalence of Soil transmitted helminths, also found that all Soil transmitted helminths were Ascariasis lumbricoides.

The commonest age of intestinal parasitic infection was 11-15 years age group in 7% of cases followed by 26-30 years in 3.6%. In the study by Rehana I et al¹⁰, the most common affected age group was 11-20 years with (44.8 %) of cases which is in accordance with this study. Similar study was noted in the study by Jad et al¹¹.

Males are more infected than females (84.6% vs. 15.4%) in this study which is in concordance with the study by Singh R et al³ (68% vs. 31.9%), Mathuria YP et al¹² and Parameshwarappa KD et al¹³. This can be explained by more outdoor activities by male compared to females. Some authors believe that high Male: Female ratio may be because females in rural area avoid visiting health facilities until their condition begins affecting their work and home-made remedies have failed to provide relief but this needs to be studied further.

Strength of the study: First study of such kind in a tertiary hospital in Manipur.

Limitations: Since this study was using secondary data, many information could not be collected and presented for example rural-urban distribution which is important for taking action.

Conclusion

Prevalence of intestinal parasitic infection in this study is low (0.9%). Age group 11-15 years were more

affected. Among sex, males were more affected. The most common parasite found was Ascariasis Lumbrioides followed by hookworm. Further studies need to be carried out to find out regarding its distribution for taking various preventive actions.

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