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Original Research Article

Prevalence of intestinal parasitic infections in a tertiary care hospital in Kashmir India-five year retrospective study

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ABSTRACT

Introduction: Intestinal parasitic infections represent a grave public health problem especially in developing nations like India, leading to malnutrition, growth retardation, anaemia's and vitamin deficiencies in early childhood. As such the burden of these intestinal parasitic infections in the society needs to be focussed at the right time which will in turn lead to enhanced health and improved economic conditions of the country.

Aim: To find out the prevalence of intestinal parasitic infections in a tertiary care hospital in Kashmir.

Materials and Methods: A retrospective study was carried out in the Parasitology division in the department of Microbiology of Government Medical College, Srinagar for a period of five years. Routine stool examination was studied to detect the parasitic infections among the patients attending various outpatient departments of our hospital.

Results: A total of 2159 stool samples were examined in five years out of which 165 (7.6%) revealed the presence of parasites. The most common parasite identified was *Ascaris lumbricoides* (71.9%) followed by *Giardia lamblia* (16.4%).

Conclusion: Intestinal infection due to *Ascaris lumbricoides* was the most common parasite identified in our study. The prevalence of these infections can still be higher as these parasites are excreted intermittently in stool samples. As such taking repeat samples from same patients suffering from intestinal parasitic infection is important followed by concentration methods, which together will help and enhance better retrieval of intestinal parasites reflecting the total burden of these infections in our community.

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1. Introduction

Intestinal parasitic infections is a serious public health problem in most of the regions of the world, especially in developing countries like India as it leads to a major cause of morbidity and mortality In children and among high risk groups.¹ The ten global parasitic diseases are; Amoebiasis, Ascariasis, Hookworm infection and *Trichuriasis*. The three major soil-transmitted

helminths of global health concern are; *Ascaris lumbricoides*, *Trichuris trichiura* and *Hookworm*. They cause over one billion infections and two billions are at risk of infection.² The prevalence of parasitic infections vary from country to country depending upon the social, environmental and economical factors. The morbidity caused by helminthic infections include malnutrition, growth retardation, vitamin A deficiency, anaemia etc.³ WHO estimates that one in every four harbours parasitic worms. The most important drawback of intestinal parasitic infection is that about 90% of infected individuals remain

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asymptomatic.⁴ Good environmental conditions and high standard of living have resulted in the reduction of prevalence of intestinal parasitic infection in the developed countries. A retrospective study was therefore undertaken to determine the prevalence of parasitic infections in the general population who attended the outpatients department of our hospital so as to know the burden of intestinal parasitic infection in the community.⁵ In view of the significant prevalence of these infections in the developing nations, the data will help the clinician in the diagnosis and management of the patient and would thus enable them to take necessary steps of public health importance.

2. Materials and Methods

This was a retrospective study carried out in the Parasitology section of Department of Microbiology, Government Medical College, Srinagar Kashmir for a period of five years (Jan 2014 to Dec 2018) in which routine stool examination was done to detect the intestinal parasitic infection among the patients with symptoms suggestive of parasitic infections attending various outpatient department of our hospital. A total of 2159 fresh stool samples were collected in a properly labelled, wide mouthed, clean dry screw capped plastic container without preservatives. Stool samples were transported to the Parasitology division of Microbiology lab within 1-2 hrs of collection and processed immediately thereafter. Each sample was examined macroscopically to look for colour, consistency, mucus, blood, adult worms and parasitic structures like proglottids and scolices. Saline wet mount and Lugol's iodine wet mount were prepared for each sample to detect the presence of helminthic eggs/ cysts respectively and examined under 40x of the microscope. No concentration or sedimentation technique was done in the study. The morphological details of the parasitic cysts/ova were identified and documented. The parasitic distribution was also evaluated according to the age and sex of the patient. The repeat samples from the same patient were not included in the study.

3. Results

A total of 2159 stool samples were examined in five years, out of which 165(7.6%) revealed presence of parasites. Among which male patients 90(54.5%) were more common than the females, 75 (45.5%) Maximum numbers of patients were in the age group of 16-30 years (56) followed by 0-15 years age group (39) [Table 2]. Total 165 parasites were isolated from 165 positive cases. Maximum number of parasites, 56 (33.93%) were isolated from patients in the 16-30 year age group, followed by 39 (23.63%) parasites isolated from patients in 0-15 year age group. There were five different parasites encountered. Among the isolated parasites *Ascaris lumbricoides* (71.4%) were the most

common followed by *Giardia lamblia* (16.4%), *Taenia species* (6.7%), *Trichuris trichiura* (4.2%) and *Enterobius vermicularis* (1.3%).

4. Discussion

Helminths have plagued humans since before the era of our earliest recorded history. The eggs of intestinal helminths can be found in the mummified faeces of humans dating back thousands of years.⁶ All together including bacterial, viral and rickettsial diseases, more than 50 zoonoses are estimated to cause 2.5 billion cases of human illness and 2.7 million human deaths a year according to the study.⁷ Based on the impacts on human and animal health, 13 zoonotic diseases are identified. India is the seventh largest country in the world and finds a primary spot among countries with high incidence of zoonotic diseases according to the report by the International Livestock Research Institute(ILRI),Kenya.⁸ In the present study the prevalence of parasitic infection is 7.6%, which is in accordance with the study conducted by Rajvir singh et al 2013 wherein the prevalence was found to be 6.68% and Davane., et al. 2012.^{9,10} Among the isolated parasites *Ascaris lumbricoides* (71.5%) were the most common followed by *Giardia lamblia* (16.3%), *Taenia species* (6.6%), *Trichuris trichiura* (4.2%) and *Enterobius vermicularis* (1.2%) which is in accordance with study conducted by Wani SA et al. who found the prevalence of *Ascaris lumbricoides* the highest followed by *giardia lamblia*.¹¹ The age-specific prevalence profile of our study population suggests that persons in the age group of 16-30 years were mostly infected with intestinal parasites followed by children of 0-15 years which is in accordance with study.¹² The limitation of the present study was that analysis of a single stool specimen from each patient was done which is not adequate and the methods were not very sensitive. Triple faeces test could have increased the frequency of the parasitic occurrence to many folds compared to that of a single sample.

5. Conclusion

Intestinal parasitic infection is a problem of great concern particularly in relation to the developing nations. From the observations of our study, it is revealed that the burden of this infection is just the tip of the iceberg. The prevalence could still be higher as these parasites are excreted intermittently and repeat stool samples of the same patient were not included in the study. In the parasitology labs concentration methods should be performed routinely so that the organism which might be present in small numbers may not be missed. In addition modified acid fast staining should be done for the presence of oocysts of cryptosporidium, cyclospora and isospora. Our study also suggests that steps should be taken rigorously to prevent

Table 1: Gender wise distribution of positive cases

Years	Total No. of samples	Total No. of positive samples			% age of total positive samples
		Total	Male	Female	
2014	343	36	18(50%)	18(50%)	10.4%
2015	451	44	15(34%)	29(65.9%)	9.7%
2016	392	35	20(57%)	15(42.8%)	8.9%
2017	456	22	18(81.8%)	4(18.1%)	4.8%
2018	517	28	19(67.8%)	9(32%)	5.4%
Total	2159	165	90 (54.5%)	75(45.5%)	7.64%

Table 2: Age and sex wise distribution of positive cases

	0-15 years	16-30 years	31-45 years	46-60 years	> 60 years	Total
Male	19	30	22	11	8	90
Females	20	26	15	8	6	75
Total	39	56	37	19	14	165

Table 3: Year wise distribution of different intestinal parasites

Name of parasites	2014 n=36	2015 n=44	2016 n=35	2017 n=22	2018 n=28	Total N=165
A.lumbricoides	31(86.1%)	32(72.7%)	23(65.7%)	14(63.6%)	18(64.2%)	118(71.5%)
G.lambliia	1(2.7%)	5(11.3%)	9(25.7%)	5(22.7%)	7(25%)	27(16.3%)
Taenia spp.	2(5.5%)	5(11.3%)	1(2.85%)	2(9%)	1(3.5%)	11 (6.6%)
Trichuris trichiura	1(2.7%)	2(4.5%)	2(5.7%)	1(4.5%)	1(3.5%)	7(4.2%)
Enterobius vermicularis	1(2.7%)	0(0%)	0(0%)	0(0%)	1(3.5%)	2(1.2%)

Table 4: Distribution of different parasites in different age group [Figure III]

Name of parasites	0-15 years	16-30 years	31-45 years	46-60 years	> 60 years	Total
A.lumbricoides	33	48	27	8	2	118
G.lambliia	6	12	5	3	1	27
Taenia spp.	1	8	2	0	0	11
Trichuris trichiura	2	4	1	0	0	7
Enterobius vermicularis	2	0	0	0	0	2

any health damage through intestinal parasitosis in our area. As such, there is a need of an hour to create awareness about consumption of safe drinking water, environmental sanitation, personal hygiene in addition to the regular deworming programmes to keep the surge of this infection under constant check.

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7. Conflict of Interest

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

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