Retrospective Study of Prevalence of Common Intestinal Parasitic Infection in Tertiary Care Centre at Kanpur

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ABSTRACT

Introduction: Intestinal parasitic infections are one of the major health problems in several developing countries, including India. Survey on the prevalence of various intestinal parasitic infestations in different geographic regions is a prerequisite to obtain an accurate understanding of the burden and cause of intestinal parasitic infestations in a particular area. This study was conducted to find out the prevalence of intestinal parasitic infection in rural areas in and around kanpur.

Materials and methods: A retrospective laboratory analysis of stool samples was carried in a tertiary care Hospital, kanpur. The records were collected from Microbiology Laboratory for a period of one years (july 2014 to june 2015). Stool samples were examined by direct method and concentration techniques.

Results: In our study the prevalence of intestinal parasitic infection is 31.9%. Age group <10 and 11-20 were infected with one or more intestinal parasites. The most common parasites identified were *A.lumbricoides* (44.9%), *Taenia spp.*(31.87%), *H.nana* (6.5%), *E.histolytica* (5.6%), *Ancylostoma duodenale* (3.7%) and mixed infection of *E.histolytica* and *A.lumbricoides* (2.8%), *A.lumbricoides* and *Teania spp*. (4.7%) were also found.

Conclusions: Helminthes are more common than protozoa in our study. It is an important public health problem and is necessary to develop effective prevention and control strategies including health education. Data on the prevalence and other parasites and host related factors are fundamental in planning any rational control or eradication programme for parasites in human populations.

Keywords: Helminthes, Intestinal parasitic infections, Protozoa

INTRODUCTION

Intestinal parasitic infestations have a very high prevalence in tropical and subtropical countries and the populations face substantial morbidity on this account.[1] Poverty, illiteracy, bad hygiene,unavailability of potable water and hot and humid tropical climate are the factors that increase the risk of intestinal parasitic infestations.[2] These parasites dwell in the gastrointestinal tract in humans and other animals.[3] Current estimates suggested that *Ascaris lumbricoides* can infect over a billion, *T. trichiura* can infect 795 million, and hookworm can infect 740 million people.[3] Parasitic infestations causes malabsorption, diarrhea, poor health status, also causes poor growth, reduced physical activity, poor cognitive performances, impaired learning ability in children.[4,5] The frequency of parasitic infestations varies with age and sex of the general population, and children aged below 10yrs frequently complain of problems related to parasitic infestations, then older children.[6,7] It then becomes important to know the disease burden of parasitic infestations in the communities, like other developing countries, intestinal parasitic infestations are a major health problem in India. Limited data regarding this is available in literature in U.P, Kanpur, therefore we were prompted to undertake this study to know the prevalence and pattern of intestinal parasitosis in rural areas in and around Kanpur.

MATERIALS AND METHODS

A retrospective study was carried out in the department of microbiology for a period of one years [july 2014 to june 2015]. Patients with symptoms suggestive of parasitic infections who came to our teritiary care hospital for whom stool examination for parasites was advised by clinicians were included in the study and stool samples for bacterial culture were excluded. Stool specimens were collected in wide mouth container without any preservative and properly labelled and sent to laboratory within an hour and the stool samples were subjected to gross and microscopic examination. Saline wet mount preparation was done to detect protozoal trophozoites and helminthic eggs or larvae. Lugol's iodine mount was done to detect cysts and modified ZN stain was also performed to detect oocyst in clinically suspected or immunodefiency cases. Saturated salt concentration and Formol-ether concentration technique was performed.[8]

RESULTS

The prevalence rate of the study is 31.9%. The prevalence of parasite was more in the age group in <10 and 10-20 year 10.5% and 9.4% respectively. [Table-1] Male were having more parasitic infections (65.2%) then female (34.2%). The common isolates were helminth, *A.lumbricoides* (44.9%), *Taenia spp.*(31.8%), *H.nana* (6.5%), A. *duodenale* (3.7%) and protozoa, *E.histolytica*(5.6%). Some cases of mixed infections of *E.histolytica* and *A.lumbricoides* (2.8%), *A.lumbricoides* and *Teania spp*. (4.7%) were also found. [Fig-1]

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Distribution of parasites among different age groups was shown in fig-2. Among male *A.lumbricoides*(29.6%) and *Taenia spp*(20.9%) more common then female 12.2% and 8.7% respectively. While *H.nana* and *A.duodenale* were more in female.[Fig-3]

DISCUSSION

Intestinal parasitic infections have always been an important health care problem but its prevalence and severity may vary on location and period of time. The prevalence of intestinal parasitic infections among rural area in Kanpur were found to be 31.9% which is similar to Sah RB et.al. in Nepal (31.5%)[5] but low when compared with other studies 61%[9], 75.7%[10] 92.7%.[11] Many studies from India have reported varying rates of intestinal parasitic infections such as 23.6% by Das., et al. 2007[12], 24.78% by Shrihari., et al. 2011[13], 26.1% by Dudeja., et al. 2012.[14] The campaign of anti-helminthic drug administration to the children could possibly explain the lower prevalence of helminthic infections seen in this study. Distribution of parasitic infection among different age group found prevalence of intestinal manifestation was found mostly in <10 (10.5%) and 11-20 years (9.4%) similarly Khanal LK et al[15] documented highest intestinal infection among 6-8 years (21.4%) followed by 9-12 years (18.6%) and Rayapu V. et.al. also seen 71% of children in age group of 11-14 years appears to have parasitic infections.[16] As this age group accounts for more outdoor activities and poor hygiene practices, associated with access to water is a highly probable risk factor for increased parasitic infestation among these children.

Intestinal parasitic infestation due to *A.lumbricoides, Taenia spp*. and *E.histolytica* was found in high among male compared to female which is contrast to other findings.[17] But female were more predominant infected in case of *H.nana* and *A.duodenale* in our study. The gender may not play an important role in parasitic infection but it may depend upon the region and other environmental or behavioural factors.

In our study helminthes were more prevalent than protozoa, in contrast Rangaiahagari A. et al.[18] found more protozoal infection of *E.histolytica* (30.8%), *Giardia intestinalis* (18.8%) and *Entameoba coli* (11.3%) as compared to helminthic infection. In present study helminths *A.lumbricoides* (44.9%) was highly prevalent followed by *Taenia spp.* (31.8%). Similarly other researcher found *A.lumbricoides*, more common parasite but low prevalence was reported by Singh R et al. (5.8%)[4] while Wani et.al.[19] and Kumar BH et al[3] reported high prevalence 69.84% and 46.8% respectively. As compared to other studies reportrd by Sah RB et.al.[5] that reported *Taenia spp.* (6.5%) was more prevalent than other parasites. Prevalence of Teania spp. was high in our study as compared to other studies conducted by Kumar BH et. al[3], Singh R et. al.[4] Khenal LK et al[14] found *T.trichiura* highly prevalent while Rayapu V et al[15] found Hookworm most common intestinal parasite. There were some studies found multiple infection of protozoa and helminth[14] but our studies reported 2.8% mixed infection of protozoa and helminth (*E.histolytica* and *A.lumbricoides*) and 3.7% of different helminthes (*A.lumbricoides* and *Taenia spp.*). This indicates high soil contamination with helminthic parasites and water contamination. The lack of awareness about personal cleanliness and hygiene and illiteracy among rural population in Kanpur also be the reason of high prevalence of parasitic infection. In present study *Trichuris trichura, Enterobious vermicularis, Giardia lambia* were not found.

Limitation of the study: Firstly, single stool was examined for detection of intestinal parasitic infections, instead of multiple stool samples. Optimal laboratory diagnosis of intestinal parasitic infections requires the examination of at least three stool specimens collected over several days.[7] Secondly, it was planned to conduct stool sample testing within 2 h of collection; however, due to logistic constraints, it was

S. No.	Age	Total	Parasite present		Parasite absent	
			Number	%	Number	%
1	<10	128	38	10.5	90	24.9
2	11-20	108	34	9.4	74	20.5
3	21-30	59	19	5.3	40	11.1
4	31-40	30	9	2.5	21	5.8
5	41-50	21	9	2.5	12	3.3
6	>50	15	6	1.7	9	2.5
	Total	361	115	31.9	246	68.1

Table-1: Parasite present among different age groups

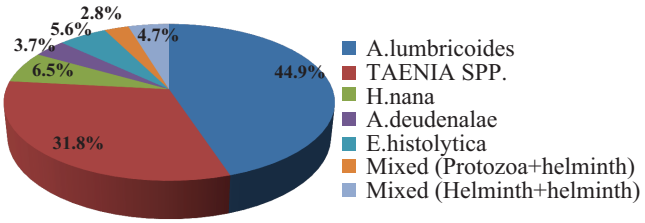

Figure-1: Distribution of parasites

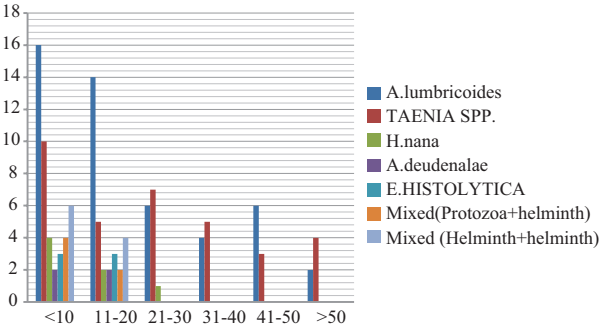

Figure-2: Distribution of parasites among different age groups

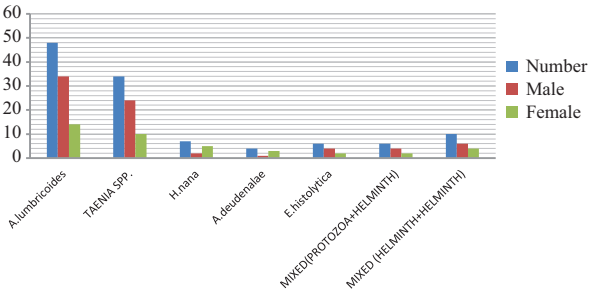

Figure-3: Distribution of Parasites Among Males And Females

delayed at times from 3 to 6 hours has a result of which we could not detect some of the invasive intestinal parasites.

CONCLUSION

The present study reveals that intestinal parasitic infections are abundant among children of rural area of Kanpur. This situation strongly calls for control measures, including treatment of infected individuals, improvement of sanitation practices and provision of clean water. The impact of each measure would be maximized through a health education program to promote hygiene practices and improved health among children and to strengthen the education program directed at children and their mothers in particular, and to communities in general.

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