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International A	A STUDY ON THE PREVALENCE OF INTESTINAL PARASITIC INFECTIONS IN TERTIARY CARE HOSPITAL IN WESTERN UTTAR PRADESH : A TWO YEAR RETROSPECTIVE STUDY.								
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ABSTRACT Indeveloping countries have made, intestinal parasitic infections remaind indicipation reduit problem. This retrospective study was carried out to determine the prevalence of intestinal parasitic infections among patients attending our tertiary care teaching hospital. The records were collected for a period of two years from January 2018 to December 2019. Direct stool examination was carried out using saline and iodine mount. In our study the prevalence of intestinal parasitic infection was 6.68%. The most common parasites encountered were Giardia lamblia 40.3%, followed by Entamoeba histolytica 18%, Trichomonas hominis 8.3% and Ancylostoma duodenale 8.3%. Protozoal infections were more common as compared to helminthic infections in the present study. Intestinal parasite infection is very common among children. This study demonstrates that poor sanitary conditions are important factors that predispose children to intestinal parasitic infections. Hence, necessary interventions like health education, awareness creation and medical intervention should be undertaken particularly among the rural population and school going children to prevent intestinal parasitic infections.

KEYWORDS : Prevalence, Intestinal parasites, stool samples

INTRODUCTION

Intestinal parasitic infections (IPI) are known since the time immemorial and remain a major public health issue in tropical and sub-tropical countries. It is estimated that around 3.5 billion people are infected and 450 million suffer from illness caused by intestinal parasites, among which majority were children [1]. Parasitic infections affect the poorest and deprived communities of low and middle-income countries of the tropical and subtropical regions [2]. The prevalence of these disease ranges from 30-60% in developing countries [3]. Intestinal parasitic infection in India varies from 5.56% to 97.4% [4, 5]. About 12% of the children between the age group of 5 to 14 years are infected with intestinal parasites in developing countries. Poverty, lack of proper sanitary conditions, poor personal hygiene, crowded living and contaminated drinking water favors the transmission of intestinal parasites. According to WHO, around 270 million preschool and 600 million school children are living in area with high rate of transmission of parasitic worm [6]. These indicate that children in many developing countries are at high risk of developing a parasitic infection. Also younger children are predisposed to heavy infections with intestinal parasites because they do not have fully developed immune systems and they play in fecal contaminated soil [7]. Among the parasitic infection protozoan's like Giardia lamblia and Entamoeba histolytica are very common and has infected around 200 million and 60 million people worldwide respectively [8]. In 2004, WHO has reported 37.3 million cases of South East Asians with intestinal nematode infection.

The common helminthic infections include Ascaris lumbricoides, hook worm infections like Ancylostoma duodenale and Necator americanus, Trichuris trichiura and Enterobius vermicularis. According to World Health Organisation (WHO), globally there are 1221–1472 million, 750–1050 million and 740–1300 million cases of Ascariasis, Trichuriasis and hookworm infestation respectively [9]. Infection with these parasites in children leads to irondeficiency anaemia, chronic diarrhoea, seizures, portal hypertension, and impaired physical development in children along with other comorbidities [10,11]. The distribution of parasitic infections are variable from place to place, region to region depending upon the degree of personal and community hygiene practice and climatic factors. In Northerm India due to tropical climate and more rural population parasitic diseases remain a major significant problem and hence we aimed to study the prevalence of parasitic infections in this region of Western Uttar Pradesh.

MATERIALS AND METHODS

This was a retrospective study carried out for a period of two years from January 2018 to December 2019 at K.D. Medical College Hospital & Research Centre, Mathura. The stool samples were collected in a wide mouthed container and received in the Department of microbiology. The samples were processed on the same day and in case of delay the samples were preserved in the refrigerator. Macroscopic appearance of the stool sample was studied and the appearance like color, nature of stool sample, pH, mucus, blood were recorded and was also examined for the presence of segments/adults worms of the parasite. For microscopic examination, a saline and an iodine mount was prepared. Iodine mount was prepared using 1% lugol's iodine (from Himedia laboratories). Both saline and Iodine preparations were screened using 10X low power objective and then under 40X magnification for the presence of cyst/ova/larva. Standard precautions and protocols in accordance with CLSI guidelines were followed while collecting and handling specimens to ensure proper quality control. All patients with positive findings in stool examination were treated. Post treatment follow up was not done.

RESULTS

A total of 587 stool samples were included in this study. Among these, 361 samples were from male patients and 226 were from female patients. Parasitic infection was seen in 12.3% (72/587) of the samples tested. The parasitic infection was present in 13.6% (49/361) of male and 10.2% (23/226) of female patients. Around 60% of patients included in this study were distributed in the age group of 0- 10 yrs, 11-20 yrs and 21-30 yrs. Among these age groups 12.5%, 18.5% and 11.4% were found to be positive respectively for intestinal parasitic infection. Protozoan parasites were more common (66.67%) compared to the helminthic parasitic infections (33.33%). Among protozoan parasites, *Giardia lamblia* 29 (40.3%) was the most commonly detected parasite. The distribution of different parasites detected in the study are tabulated in Table- 1 & Fig.-1. The highest percentage of 30.6% (22/72)

intestinal parasites was present in the 11-20 age group. Among females with parasitic infection, the highest percentage of 39.1% (9/23) was in the age group of 11-20 yrs, similar to the males where highest percentage of 26.5% (13/49) was seen in the age group of 11-20 years followed by 24.5% (12/49) each in the age group of 0-10 years and 21-30 years. Age & sex wise distribution is given in Table-2. Dual parasites were detected in 6.9 % samples. Multiple infections were observed and the combinations included Ascaris lumbricoides/ Trichuris trichiura and Ascaris lumbricoides/ hookworm.

Tab	le-1	: b	ntes	tina	l P	arasi	ite	Dis	trib	utic	on I	n S	tool	Sam	ıple
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S.No	Parasite distribution in stool sample	n (%)
1.	Giardia lamblia	29 (40.3)
2.	Entamoeba histolytica	13 (18)
3.	Trichomonas hominis	6 (8.3)
4.	Ancylostoma duodenale	6 (8.3)
5.	Ascaris lumbricoides	4 (5.6)
6.	Hymenolepis nana	4 (5.6)
7.	Taenia species	4 (5.6)
8.	Strongyloides stercoralis	1 (1.4)
9.	Mixed infections	5 (6.9)
	Total	72 (100)



Table-2: Age & Sex Wise Distribution Of Intestinal Parasites

Age	Male		Female		Total	Total positive	
(Years)	Total	No.	Total	No.	sample		
	sample	Positive	sampl	Positive	(Male+	(Male +	
	No.	for	e No.	for	Female	Female)	
		parasit		parasit) (%)	(%)	
		e (%)		e (%)			
0 - 10	69	12 (17.4)	51	3 (5.9)	120	15 (12.5)	
					(20.4)		
11 - 20	76	13 (17.1)	43	9 (20.9)	119	22 (18.5)	
					(20.3)		
21 - 30	80	12 (15)	34	1 (2.9)	114	13 (11.4)	
					(19.4)		
31 - 40	39	6 (15.4)	29	4 (13.8)	68	10 (14.7)	
					(11.6)		
41 - 50	30	2 (6.7)	22	1 (4.5)	52 (8.9)	3 (5.8)	
51 - 60	35	2 (5.7)	20	2 (10)	55 (9.4)	4 (7.3)	
> 60	32	2 (6.3)	27	3 (11.1)	59 (10)	5 (8.5)	
Total	361	49 (13.6)	226	23 (10.2)	587	72 (12.3)	
					(100)		

DISCUSSION

Intestinal parasitic infections remain an increasing social health problem in northern parts of India. Few studies have been conducted on the prevalence of parasitic infection in this part of India. Our study shows a total of 12.3% positivity rate of intestinal parasitic infection which is similar to other studies conducted in north India [12].

In our study, the highest percentage positivity was seen in the age group of 11-20 years which is the school going population similar to various other studies [13, 14]. This emphasizes on the fact that there should be an increased access to water and sanitation facilities in schools for students, and hygiene

practices should be promoted among children. Additional support should be provided to students at elementary schools to promote personal hygiene awareness. In contrast to our study, Saurabh et al from West Rajasthan reported the increasing trend of parasitic infection among adults as compared to children [12].

The present study shows that males have higher prevalence rate of intestinal parasitic infection as compared to females. Similar findings have been observed in other studies by R. Saraswathi et al [15] and D. Langbang et al [16], but these findings are in contrast to some other studies [17,18]. Male predominance in our study could be due to the fact that males are more exposed to environmental factors due to outdoor occupations and females avoid visiting health care facilities till their condition worsen.

Various studies have reported the prevalence rate of parasitic infections ranging from 5.56% to 46.7% [19, 20]. The prevalence of parasitic infection is not uniform. Some parts of India have commonly reported Entamoeba histolytica followed by Giardia lamblia and vice versa as the common parasitic infection, whereas among helminths Hymenolepis nana followed by Ascaris lumbricoides was the most common and vice versa in other areas. Studies conducted in South India reported 40.4% and 20.3% parasitic infections from rural and urban areas respectively [16]. In our study from Mathura (Western Uttar Pradesh) protozoal infections were the most common dominated by Giardia lamblia (40.3%) and Entamoeba histolytica (18%). As reviewed by Yogendra Pratap et al and Langbang et al, Entamoeba histolytica or Giardia lamblia remains the commonest isolates. Prevalence of protozoal infection was very high in our study compared to helminthic infections which is similar to studies from southern/northern parts of India. Saurabh et al in 2017 from west Rajasthan reported Entamoeba histolytica (37.57 %) as the most common protozoa, followed by Giardia lamblia (23.12%)[12].

These protozoan parasites can be transmitted orally by drinking contaminated water. The water supply is really an important risk factor for protozoan infections. Several large outbreaks of Giardiasis have resulted from the contamination of municipal water supplies with human waste [21].

Among helminths, Ancylostoma duodenale showed the highest prevalence (8.3%). Saurabh et al (2017) from West Rajasthan detected 2.9% Hymenolepis nana followed by 1.1% Ascaris lumbricoides. A study conducted in Bihar by R. Bhattacharya reported Enterobius vermicularis as the predominant parasite among children [22]. In this study, Giardia lamblia and Ancylostoma duodenale were the most commonly detected protozoa and helminths respectively. From Moradabad (Western Uttar Pradesh) 15.8% parasitic infection was reported among which helminth infection by hookworm (31.25%) was most common followed by H.nana (17%). In our study, helminthic infections were less common. Ascaris lumbricoides, Hymenolepis nana and Taenia species were reported at a rate of 5.6% each. Mixed infections from other studies were also reported ranging from 8% to 13% [12]. In our study, 6.9% of mixed infections were reported. High prevalence of mixed infection was seen in school going children [10], whereas it is low in other studies [11].

CONCLUSION

Protozoal infections were more common as compared to helminthic infections in the present study. Intestinal parasite is very common among children. This study demonstrates that poor sanitary conditions are important factors that predispose this part of the population to intestinal parasitic infections. Necessary interventions like health education, awareness creation and medical intervention should be undertaken particularly among the rural population and school going

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children. Increased access to water and sanitation facilities (through the provision of hand pumps and construction of latrines) in primary schools for students, to promote hygiene practices and improved health among school-aged children and people at large should be the goal to reduce the burden of parasitic infections from our country [10].

LIMITATION

Examination of single stool sample from every individual is not adequate in case of individual like asymptomatic carriers. Triple faeces test is needed to increase the sensitivity.

Modified Z.N. staining was not performed which would have increased the positive cases infected with the intestinal parasites. The true burden of the parasitic infections cannot be estimated from this hospital based study and hence a community or village based study with inclusion of large sample size is needed.

Conflict Of Interest: None

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