Original Article

"PREVALENCE OF INTESTINAL PARASITIC INFECTIONS IN PATIENTS WITH DIARRHEA OF A TEACHING HOSPITAL AT KANPUR"

R.Sujatha[1], Nidhi Pal[2], Deepak Sameer[3],Vaishali[3],Dilshad[3],SwethaBajpai[3]

1. Prof. and Head of Department of Microbiology, Rama Medical College Hospital and Research Centre Kanpur
2. Ph.D. Student, Department of Microbiology, Rama Medical College Hospital and Research Centre Kanpur
3. PG student, Department of Microbiology, Rama Medical College Hospital and Research Centre Kanpur

ABSTRACT: Intestinal parasitic diseases constitute a global health burden in numerous developing countries mainly due to fecal contamination of water and food. To assess the prevalence of intestinal parasites in patients with diarrhea of a teaching hospital. **Materials and methods** It is a retrospective study conducted in the Department of Microbiology, from January to December 2016 at the Department of Microbiology Rama Medical College Hospital & Research centre, Kanpur. The records of 720 stool samples from routine stool examination carried out during the study period from the same number of patients complaining of diarrhea and pain abdomen received from various OPD's and IPD's of the hospital were analyzed . Microscopic examination was performed by wet mount preparations and after the concentration of stool samples by formol-ether concentration technique. Modified Ziehl-Neelsen (ZN) staining was also performed in seropositive patients on clinician's request. **Results**: In our study the prevalence of intestinal parasitic infection is 112(15.5%). Age group 30-40 was infected with one or more intestinal parasites. The most common parasites identified were *E.histolytica* (35.71%), Giardia lamlia (8.9%), E.Coli(22.32%). H.nana(14.28%), *A.lumbricoides(9.8%), Ancylostoma duodenale*(3.57%%), Taenia species(4.46%) and Cryptosporidium parvum(1.78%) and mixed infection of *E.histolytica* and *A.lumbricoides* (2.8%), *A.lumbricoides* and *Taenia spp*. (4.7%) were also found.**Conclusion**: In this study Protozoan infection are more common than Helminths as it is an important public health problem,data on the prevalence of parasites in a given region are fundamental in planning any rational control or eradication programme for parasites in human populations.

Key words: Intestinal parasite, diarrhea, protozoa,

INTRODUCTION

Intestinal parasitic infections is a serious public health problem in the world, especially in developing countries, and accounts for a major cause of morbidity and mortality among different high-risk groups[1]. It has been reported that annually, 2 lakh deaths are caused due to these infections, mainly in developing countries[2,3]. More than 1.5 billion people are infected with particularly soil-transmitted helminthic infections including 270 million preschool-age children and over 600 million school-age children[4]. The prevalence of intestinal parasites in India varies from 5.56% to 90% as reported by different workers [5-10]. Parasitic infestations causes malabsorption, diarrhea, poor health status, also causes poor growth, reduced physical activity, poor cognitive performances, impaired learning ability in children[11,12,]. Diarrheal diseases are a leading cause of morbidity and mortality in children in developing countries. More than 4 million children under 1 year of age die each year of infectious diarrhea, worldwide With escalating number of patients with HIV seropositivity and AIDS each year, wide range of enteric pathogens has found an opportunity to cause diarrheal infections. In India, Cryptosporidia, Cyclospora and Microsporidia are the newer coccidian parasites responsible for diarrhea, especially in children less than two years of age and among HIV seropositive/AIDS patients[13]. The magnitude of intestinal parasitic infections in patients with diarrhea needs to be carefully monitored in the developing countries. Several studies have been undertaken in different parts of India[14,15]. These infections still continue to predominate and similar studies would definitely add to the existing knowledge of parasitic infections in patients suffering from gastrointestinal problems.

This study was aimed to determine the spectrum of parasitic infections in patients with complaints of diarrhea and other gastrointestinal symptoms such as nausea, vomiting, flatulence, and pain abdomen attending a tertiary care hospital in up, India. Parasitic coinfections were also studied.

MATERIALS & METHODS

It is a retrospective study conducted in the Department of Microbiology, from January to Dec 2016 at the Department of Microbiology Rama Medical College Hospital & Research centre, Kanpur. The

records of 720 stool samples from routine stool examination carried out during the study period from the same number of patients complaining of diarrhea and pain abdomen received from various OPD's and IPD's of the hospital were analyzed . Microscopic examination was performed by wet mount preparations and after the concentration of stool samples by formol-ether concentration technique. Modified Ziehl-Neelsen (ZN) staining was also performed in seropositive patients on clinician's request.

RESULTS

In our study the prevalence of intestinal parasitic infection is 112(15.5%). Age group 30-40 were infected with one or more intestinal parasites. The most common parasites identified were *E.histolytica* (35.71%), Giardia lamlia (8.9%),E.Coli(22.32%). H.nana(14.28%), *A.lumbricoides(9.8%),Ancylostoma duodenale* (3.57%%),Taenia species (4.46%) and cryptosporidium parvum (1.78%) and mixed infection of *E.histolytica* and *A.lumbricoides* (2.8%), *A.lumbricoides* and *Taenia spp*. (4.7%) were also found.

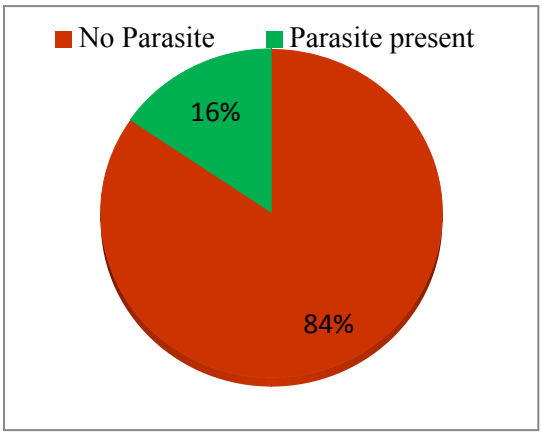

Fig 1: Prevalence of intestinal parasite

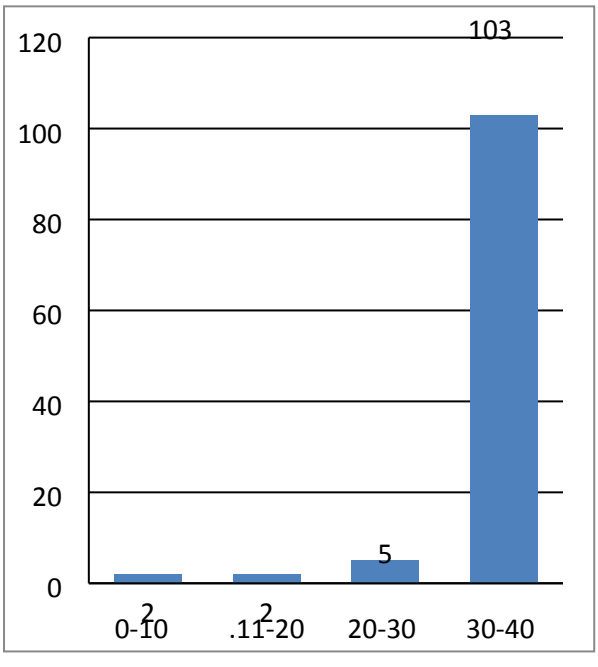

Fig 2: Age wise distribution of intestinal parasites detected in stool samples

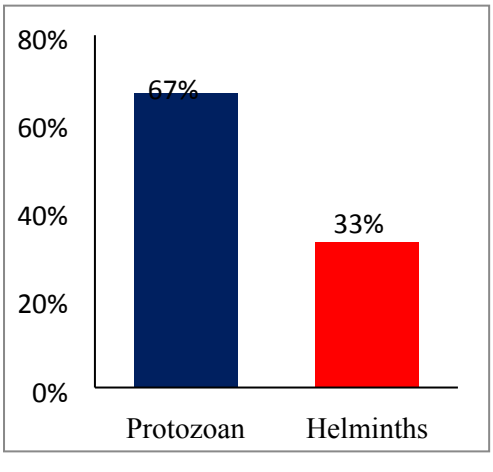

Fig 3: Percentage of Protozoans and Helminths

DISCUSSION

Stool examination for parasitic ova, cysts, trophozoite and larvae remains the gold standard for laboratory diagnosis for intestinal Parasitic infections(IPIs) Lack of knowledge of prevalence of parasites in a particular geographic area may lead to misdiagnosis of IPI's as appendicitis and other inflammatory bowel diseases.

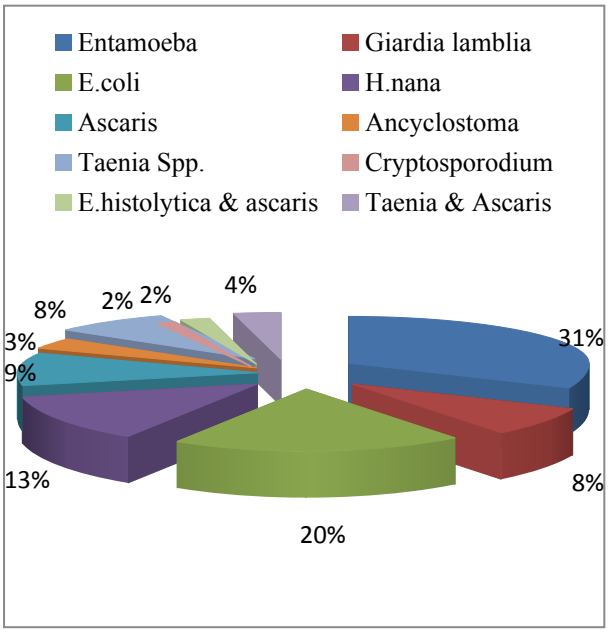

Fig 4: Distribution of intestinal parasites in stool samples

The prevalence rate in this study was 15.5%.Various studies from rural and urban regions have shown different prevalence rates ranging from 5.56% to 46.7% [16,17].This varied differences could be due to seasonal variations, geographical areas, health education and awareness ,sanitation measures and socioeconomic conditions of the different communities. There was no statistical difference between male and female patients in this study, may be due to equal involvement of females in outdoor activities as compared to males nowadays. In various studies, the most common age group involved was 6-20 years as compared to this study, where it is 31-40 years. In a previous study also, the trend of parasitic infection in recent years has shown to predominate among adults as compared to children [18-22]. The most common parasites identified in this study were *E.histolytica* (35.71%), Giardia lamlia (8.9%), E.Coli(22.32%). Protozoan infection are more common than Helminths similar to other studies[23,24]. In this study H.nana(14.28%), *A.lumbricoides*(9.8%), *Ancylostoma duodenale*(3.57%), Taenia species(4.46%) are similar to other studies[18] and Cryptosporidium parvum(1.78%) in this study was isolated from non-HIV patients which is different from a studies conducted by Vyas et. al. [25,26] and mixed infection of *E.histolytica* and *A.lumbricoides* (2.8%), *A.lumbricoides* and *Taenia spp*. (4.7%) were also found, in this study showed both protozoal and helminthic infections can coexist, other studies showed prevalence of 9.8% and 13.4% by Kumar et. al. and Choubisa et al[22,27] , as it is an important public health problem,

data on the prevalence of parasites in a given region, is necessary since variations in the parasite prevalence may be accounted to the difference in the geographic conditions and cultural practices and food habits in different regions, which future strengthens the need for such type of studies.

CONCLUSION

In this study Protozoan infection are more common than Helminths as it is an important public health problem, An improvement in the sanitation and hygiene is also essential in decreasing the morbidity due to enteric pathogens. A periodic laboratory monitoring of drug susceptibility and a formulation of antibiotic policy in the hospital should become mandatory to prevent further difficulty and apprehension in treating diarrheal illness. Additional study to define the relative frequency of specific pathogens during each season should be conducted to generate further valuable data, on the prevalence of parasites in a given region are fundamental in planning any rational control or eradication programme for parasites in human populations.

Limitations: This study being a hospital based study cannot determine the true burden of parasitic infections in the community, for which more studies at community and village levels are needed with larger sample size.

REFERENCES

1. Kang G, Methew MS, Rajan S, Daniel JD, Mathan MM, Muliyil JP. Prevalence of intestinal parasites in rural india. Tropical med and international health 1998; 3(1): 70-5.
2. Hall A, Hewitt G, Tuffrey V, de Silva N. A review and meta-analysis of the impact of intestinal worms on child growth and nutrition. Matern Child Nutr. 2008;4 Suppl 1:118-236.
3. World Health Organization. The Global Burden of Disease; 2004 update. Geneva: World Health Organization; 2008. Available from: http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf. [Last accessed on 2017 Feb 04].
4. Soil-Transmitted Helminth Infections. WHO, Fact Sheet Update March; 2016. Available from: http://www.who.int/mediacentre/factsheets/fs366/en. [Last accessed on 2017 Feb 10].
5. Patel MM, Patel PR, Gamit B, Modi J, Padsala S. Prevalence of Intestinal Parasites Infestation in

Surat City of South Gujarat. A Hospital Based Study. Natl J Community Med 2014: 5(3);273-5

6. Sethi S , Sehgal R, Malla N, Dudey ML, Mahajan RC. Changing trends of intestinal parasitic infections in Chandigarh (Northern India): Hospital based study. Ind. J. Med. Microbiol., 2000, 18: 106-109.
7. Rao VG, Aggrawal MC , Yadav R, Das SK, Sahare LK, Bondley MK, Minocha RK. Intestinal parasitic infections, anaemia and undernutrition among tribal adolescents of Madhya Pradesh. Ind. J.Community Med., 2003, 27: 26-29.
8. Kumar R., Biswas P.P., Yasmin T.,Sen A., Ganguly U. Prevalence of Intestinal Parasitic Infections in Patients Attending a Tertiary Care Hospital in Eastern Bihar. Journal of Evolution of Medical and Dental Sciences 2014;3(24):6740-6746,
9. Patel JC. Ten year study of stool samples with particular reference to intestinal parasites. J. Postgrad. Med., 1986, 32:219-224
10. Hedge GR, Patel JC. Prevalence of intestinal parasitic infestation in rural area. J. Postgrad. Med., 1986, 32: 225-228
11. Singh R, Singla P, Sharma M, Aparna, and Chaudhary U. Prevalence of Intestinal Parasitic Infections in a Tertiary Care Hospital in Northern India: Five year retrospective study. Int.J.Curr.Microbiol. App.Sci. 2013;2: 112-117
12. Sah RB, Bhattarai S, Yadav S, Baral R, Jha N, Pokharel PK. A study of prevalence of intestinal parasites and associated risk factors among the school children of Itahari, Eastern Region of Nepal. Trop Parasitol. 2013;3: 140–144.
13. Walsh JA, Warren KS. Selective primary health care. An interim strategy for disease control in developing countries. N Eng J Med 1979; 301: 967-974.
14. Kaur R, Rawat D, Kakkar M, Uppal B, Sharma VK. Intestinal parasites in children with diarrhea in Delhi, India. Southeast Asian J Trop Med Public Health. 2002;33(4):725-29.
15. Kotian S, Sharma M, Juyal D, Sharma N. Intestinal parasitic infectionintensity, prevalence and associated risk factors, a study in the general population from the Uttarakhand hills. Int J Med Public Health. 2014;4(4):422-25.

16. Patel MM, Patel PR, Gamit B, Modi J, Padsala S. Prevalence of Intestinal Parasites Infestation in Surat City of South Gujarat. A Hospital Based Study. Natl J Community Med 2014: 5(3);273-5
17. Wani SA, Ahmed F, zargar S.A, Ahmad z, Ahmad P& Tak, H. Prevalence of intestinal parasites and associated risk factors among school children. In Srinagar city, Kashmir, India J Parasitol 2007;93:1541-3.
18. Singh R, Singla P, Sharma M, Chaudhary U. Original research article prevalence of intestinal parasitic infections in a tertiary care hospital in Northern India: Five year retrospective study. Int J Curr Microbiol Appl Sci. 2013;2(10):112-17.
19. Patel MM, Patel PR, Gamit B, Modi J, Padsala S. Prevalence of intestinal parasites infestation in Surat city of South Gujarat: A hospital based study. Natl J Community Med. 2014;5(3):273-75.
20. Parameshwarappa KD, Chandrakanth C, Sunil B. The prevalence of intestinal parasitic infestations and the evaluation of different concentration techniques of the stool examination. J Clin Diag Res. 2012;6(7):1188-91.
21. Champa H, Sreeshma P. Intestinal parasitic infections among patients attending a Teritiary Care hospital in South india. J Evol Med Dent Sci. 2012;1(4):308-14.
22. Choubisa SL, Jaroli VJ, Choubisa P, Mogra N. Intestinal parasitic infection in Bhil tribe of Rajasthan, India. J Parasit Dis. 2012;36(2):143-48.
23. Kavathia G, Pattani M, Dharsandiya M, Chaudhary A, Joshi T. A prevalence study of intestinal parasitic infections in a Tertiary Care hospital in Rajkot city of Gujarat (India): A hospital based study. IOSR J Dent Med Sci. 2015;14(10):45-7.
24. Kavathia G, Pattani M, Chaudhary A, Joshi T, Mehta K. A prevalence study of intestinal parasitic infections in symptomatic children at tertiary care hospital in Rajkot city of Gujarat (India). IOSR J Dent Med Sci. 2016;15(5):13-15.
25. Vyas N, Pathan N, Aziz A. Enteric pathogens in HIV-positive patients with diarrhoea and their correlation with CD4+ T-lymphocyte counts. Trop Parasitol. 2012;2(1):29-34.

26. Vyas N, Sood S, Sharma B, Kumar M. The prevalence of intestinal parasitic infestation and the related profile of the CD4 (+) counts in HIV/AIDS people with diarrhoea in Jaipur city. J Clin Diagn Res. 2013;7(3):454-6.
27. Kumar R, Biswas PP, Yasmin T, Sen A. Prevalence of intestinal parasitic infections in patients attending a tertiary care hospital in Eastern Bihar. J Evol Med Dent Sci. 2014;3(24):6740-46.

CORRESPONDING AUTHOR:
Dr. R.Sujatha
Professor and Head of Department of Microbiology
Rama Medical College Hospital& Research Centre,Mandhana, Kanpur, U.P.
EmailID: drsujatha152@gmail.com