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Research Article

INTESTINAL PARASITIC INFECTION WITH SPECIAL REFERENCE TO AMOEBIASIS IN RURAL AND URBAN POPULATION OF DISTT BAREILLY, UTTAR PRADESH

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ABSTRACT

The important protozoan pathogens are *Entamoeba histolytica*, *Giardia lamblia* and certain newer pathogens like *Cryptosporidium*, *Cyclospora* and *Isospora*. Amoebiasis is a common infection of the human gastrointestinal tract caused by the protozoan parasite *Entamoeba histolytica*. The intestinal parasitic infection in urban and rural areas of Bareilly district was worked out with respect to different age groups and in different sexes. In the present study, out of 82 samples of male individuals from urban areas of district Bareilly, 26 (37.71%) and in rural areas out of 76 samples 28 (36.84%) were positive for parasitic ova/cysts. In females from urban areas of district Bareilly, out of 61 samples, 22 (36.07%) were found to be infected, while out of 88 samples, 31(35.23 %) females were positive for protozoan infection from rural areas.

Keywords: Bareilly, *Entamoeba histolytica*, Intestinal Parasite, Amoebiasis.

INTRODUCTION

In India, intestinal parasitic diseases and other diarrheal diseases like gastroenteritis, amoebiasis are the major health problems among children under the age of five years. During 2005, about 1.07 million cases of acute diarrhea with 2040 deaths were reported by the Govt. of India (2006), the actual incidence might have been manifolds. The important protozoan pathogens are *Entamoeba histolytica*, *Giardia lamblia* and certain newer pathogens like *Cryptosporidium*, *Cyclospora* and *Isospora*. Amoebiasis is a common infection of the human gastrointestinal tract caused by the protozoan parasite *E. histolytica*. It has worldwide distribution especially in the whole of China, South East and West Asia and Latin America. Amoebiasis is a major health problem. Globally, it has been estimated that 45 million people carry *E. histolytica* in their intestinal tract and approximately one tenth of infected people suffer from invasive amoebiasis which accounts for about 70,000 deaths in the world. There may be even more cases in the areas devoid of sanitation (WHO, 1998) reported In India, the prevalence rate is about 15% ranging from 9.6 to 47.4 per cent. This variation may be due to incorrect diagnosis and lack of sampling criteria. The invasive strains can give rise to cysts which are discharged through the faeces.

MATERIAL AND METHODS

The present work was conducted with an objective to record parasitic infection of Gastro-intestinal (GI) tract in rural and urban populations of Bareilly district. For this purpose, the following methodology was adopted.

Selection of Human Population/Collection of samples

Stool samples were collected from population with the assistance of primary and junior High Schools of rural, semi-urban and urban centers in Uttar Pradesh. These samples were also collected from different pathological labs situated in urban and semi-urban areas of Bareilly, Uttar Pradesh, Tamilnadu, India.

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Gastro Intestinal Parasite Study

Protozoan Parasite *Entamoeba:* The morphological characteristics were observed minutely by the culture of this parasite from fresh samples in Do belles medium (Serum + egg albumin and starch), which grows in 24 to 36 hours at 37^{o}C.

Fresh Preparations

5 gm of faecal matter was suspended in about 5.0 ml of normal saline and it was stirred well with a glass rod to make a homogenous suspension. A drop of suspension was kept on a slide by maintaining 37^{o}C temperature. Gram's iodine: A drop of saline suspension or watery stool was mixed with one drop of Gram's iodine and a cover slip was applied. The iodine reagent stained the cystic forms of protozoa and the morphology of parasite became distinct for identification.

Merthiolate Iodine Formalin Concentration (MIFC) Method

Permanent Preparations: The protozoan cysts were concentrated from the stool sample by Floatation and Sedimentation techniques (For cysts identification).

RESULTS AND DISCUSSION

The intestinal parasitic infection in urban and rural areas of Bareilly district was worked out with respect to different age groups and in different sexes. The protozoan parasite *E. histolytica* observed in this study. Amoebiasis (*E. histolytica*): The incidence of this protozoan parasite was investigated in hosts belonging to 0-5 years, 5-15 years, 15-30 years, 30-50 years and above 50 years age group in urban vs. rural areas and males vs. females. Urban areas: Out of the total infected samples, the males of urban areas having highest infection belonged to the age groups 30-50 years and above 50 years, the infection rate 60% in each. The males of 15-30 years had minimum percentage of infected samples (23.08%) whereas that in 0-5 years was 28.57% and 5-15 years 25.00%. Out of all the samples examined maximum numbers 6 of the infected samples (10) and 3 out of (5) in age groups 30-50 years and above 50 years respectively (Table 1).

In case of females, hosts of the highest age group (above 50 years) were most susceptible to the amoeboid infection, infection reaching 100% of the infected samples. This was followed by 15-30 years age group (62.50%), 30-50 years age group (42.86%), 0-5 years age group (41.67%) whereas females of 5-15 years were most poorly infected (19.35%) (Table 2). Rural areas: Out of the total infected samples, the males of rural areas having highest infection belonged to the age groups 30-50 years; the infection rate was 56.25%. The males of above 50 years had minimum percentage of infected samples (25%) whereas that in 0-5 years was 27.78%, 5-15 years 35.00% and 15-30 years 35.71%. Out of all the samples examined maximum numbers (9) of the infected samples (16) in age groups 30-50 years (Table 3).

In case of females, hosts of the highest age group (above 50 years) were most susceptible to the amoeboid infection, infection reaching 60% of the infected samples. This was followed by 30-50 years age group (40.00%), 15-30 years age group (33.33%), 5-15 years age group (30.43%) whereas females of 0-5 years were most poorly infected (30.00%). The number of females infected (3) with *E. histolytica* parasites was highest out of 5in above 50 years age group (Table 4). Thus, the females of urban areas appear to be most susceptible to this particular species of parasites indicating its high prevalence in female than the rural population of Rohilkhand area. It is surprising to note that the overall percentage was found to be highest among the samples of 5-15 years of age group whereas the protozoan parasite *E. histolytica* was highest in the elder people. During the present study, Incidence of amoebiasis was more common infection. Similarly, other studies (Norhayati *et al*., 2003) have focused on estimating the number of intestinal parasitic (prevalence) infections in man in Malaysia and have reported that intestinal protozoans were *E. histolytica* and *G. duenalis*. Currently, *Blastocystocytis, Cryptosporidium* species and *Isopora* species have been identified as causes of diarrhoea in children and immunocompromised patients. The common intestinal helminth parasites in man were *A. lumbricoides, T. trichiura* and *N. americanus*.

Similar studies on intestinal protozoan parasites were carried out where the maximum prevalence of infection was recorded for rural areas (50.5%) as compared to urban areas (44.1%) of Nigeria. Thus, an insignificant change (P>0.05) was statistically recorded (Tripathy *et al*., 1972). In the present study, out of 82 samples of male individuals from urban areas of district Bareilly, 26 (37.71%) and in rural areas out of 76 samples 28 (36.84%) were positive for parasitic ova/cysts (Table 1 and 3). In females from urban areas of district Bareilly, out of 61 samples 22 (36.07%) were found to be infected while out of 88 samples, 31 (35.23 %) females were positive for protozoan infection from rural areas (Table 2 and 4). Earlier, studies (Saifi, 2001) on parasitic infection were carried out on primary school children (367) from Ujhani district Badaun (U.P.). This study too revealed that out of 38.4% intestinal protozoan parasites, *E. histolytica* infection was the highest (15%). Intestinal parasitic infections were highly prevalent; 84.7 % of the children harboured intestinal protozoa (Erismann *et al*., 2016). Some trophozoites invade the bowel and cause ulceration (bleed), mainly in the caecum and ascending colon (colitis), then in the rectum. Amoebic liver abscesses are formed due to the release of toxins released and hepatocyte damage within months after infection (Erismann *et al*., 2016; Kucik *et al*., 2004).

Table 1. Intestinal parasitic infection in male of urban areas of district Bareilly in different age groups.

Age Group (in years)	No. of Samples	Urban Area Protozoan Parasite (*Entamoeba histolytica*)	
		Number of infected samples	Percentage of infection
0-5 yrs.	14	4	28.57%
5-15 yrs.	40	10	25.00%
15-30 yrs.	13	3	23.08%
30-50 yrs.	10	6*	60.00%
Above 50 yrs.	5	3*	60.00%
Total	82	26	37.71%

Table 2. Intestinal parasitic infection in female of urban areas of district Bareilly in different age groups.

Age Group (in years)	No. of Samples	Urban Area Protozoan Parasite (*Entamoeba histolytica*)	
		Number of infected samples	Percentage of infection
0-5 yrs.	12	5	41.67%
5-15 yrs.	31	6	19.35%
15-30 yrs.	8	5	62.50%
30-50 yrs.	7	3	42.86%
Above 50 yrs.	3	3*	100.00%
Total	61	22	36.07%

Table 3. Intestinal parasitic infection in male of rural areas of district Bareilly in different age groups.

Age Group (in years)	No. of Samples	Rural Area Protozoan Parasite (*Entamoeba histolytica*)	
		No. of infected Samples (%)	Percentage of infection
0-5 yrs.	18	5	27.78%
5-15 yrs.	20	7	35.00%
15-30 yrs.	14	5	35.71%
30-50 yrs.	16	9*	56.25%
Above 50 yrs.	8	2	25.00%
Total	76	28	36.84%

Table 4. Intestinal parasitic infection in female of rural areas of district Bareilly in different age groups.

Age Group (in years)	No. of Samples	Rural Area (*Entamoeba histolytica*)	
		No. of infected	Percentage of infection
0-5 yrs.	20	Samples	30.00%
5-15 yrs.	23	7	30.43%
15-30 yrs.	15	5	33.33%
30-50 yrs.	25	10	40.00%
Above 50 yrs.	5	3*	60.00%
Total	88	31	35.23%

* Indicate the maximum number of infected samples and percentage of infection in each age group.

CONCLUSION

This study too revealed that out of 38.4% intestinal protozoan parasites, *E. histolytica* infection was the highest (15%). Intestinal parasitic infections were highly prevalent; 84.7 % of the children harboured intestinal protozoa. Some trophozoites invade the bowel and cause ulceration (bleed), mainly in the caecum and ascending colon (colitis), then in the rectum. Amoebic liver abscesses are formed due to the release of toxins released and hepatocyte damage within months after infection.

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REFERENCES

Erismann, S., Diagbouga, S., Odermatt, P., Knoblauch, A. M., Gerold, J., Shrestha, A., Utzinger, J. (2016). Prevalence of intestinal parasitic infections and associated risk factors among schoolchildren in the Plateau Central and Centre-Ouest regions of Burkina Faso. *Parasites and Vectors, 9*(1), 554.

Kucik, C. J., Martin, G. L., & Sortor, B. V. (2004). Common intestinal parasites. *American Family Physician, 69*(5), 1161-1168.

Norhayati, M., Fatmah, M., Yusof, S., & Edariah, A. (2003). Intestinal parasitic infections in man: a review. *Medical Journal of Malaysia, 58*(2), 296-305.

Saifi, M. Wajihullah (2001). Intestinal parasitic infestation in school children of Ujhani, Budaun. *Journal of Parasitology Diseases, 25*, 26-29.

Tripathy, K., Duque, E., Bolaños, O., Lotero, H., & Mayoral, L. G. (1972). Malabsorption syndrome in ascariasis. *The American Journal of Clinical Nutrition, 25*(11), 1276-1281.

WHO (1998). *The World health report: 1998: Life in the 21st century: a vision for all: report of the Director-General*: World Health Organization.