

Isolation of Giardia Cyst in Paediatric Patient Under Five in Kanpur Region

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ABSTRACT

Introduction: *Giardia lamblia* is an important cause of diarrheal disease followed by malabsorption in children throughout the world and is the most frequent pathogenic intestinal protozoan infection. Children having diarrhoea with duration of more than seven days with abdominal pain comprises of Giardia infection. Around 80% of children were affected with Giardia infection as they belong from lower socioeconomical class. *Giardia intestinalis* causes Giardiasis which is one of the major causes of diarrheal diseases throughout the world. Infection occurred by Giardia may be either asymptomatic or may cause diarrheal illness that can be acute or chronic. In areas of poor sanitation it affects 33% of the people in the developing world. Study aimed to isolate Giardia cyst in paediatric patient under five in Kanpur Region.

Material and Methods: The study was carried in the Department of Microbiology, GSVM Medical College, Kanpur, Uttar Pradesh. A total of 197 stool sample were collected and screened for Giardia through microscopy (Iodine and saline mount).

Result: Among 197 samples screened. The 18 samples were positive through direct microscopy for Giardia cyst. Maximum amount of parasitic infection was found in age group 3.5-5 years.

Conclusion: Stool microscopy is (gold standard); however, its sensitivity is low due to intermittent faecal shedding for Giardiasis which is a common gastrointestinal parasitic infection in tropics. Parasitic infection caused by *Giardia lamblia* is a major worldwide public health problem. Infection is also associated with complications in early childhood if not treated. For better management of the patients early diagnosis and treatment is required. Drinking water standards, hand hygiene, health education, safe sanitation are factors and should be given priority to minimize such infections.

Keywords: Malabsorption, Giardiasis, Endemic, Parasitic Infection

In recent years in early childhood, poor cognitive function and failure to thrive and chronic fatigue post infectious irritable bowel syndrome all of these have been responsible factors for increasing attention to this protozoan infection.^{4,5,6} Prevalence of Giardia is more common in developing countries ranges from 20% to 30% compared to 2% to 5% in developed countries in worldwide distribution.^{2,3} In 1681 Van Leeuwenhoek discovered Giardia a flagellated, binucleated protozoan. The parasites of mammals and other animals are Giardia spp. The Characteristic morphology of Giardia has, the vegetative trophozoites which are approximately 15 mm in length, teardrop shaped with two anteriorly placed nuclei. It has a ventral adhesive disc made of microtubules and four pairs of flagella. Transmission of Giardia is done by the cyst form that is 10 -12 mm long. In contaminated water Giardiasis occurs most commonly through ingestion of the cyst, but, in settings of poor fecal oral hygiene person to-person spread is common. Less commonly Foodborne transmission and mechanical transmission by flies was found.^{1,7} This study was conducted to know the prevalence of Giardia in paediatric age group and associated factors that contributes to its transmission.

MATERIAL AND METHODS

Total 197 children admitted and attended opd to the paediatric dept, LLR hospital, Kanpur, with complains of loose stool were included in this study. Their clinical history and laboratory investigations were recorded. Reports of stool for microscopy were recorded. Inclusion criteria: All children up to 5yrs with diarrhoea. Exclusion criteria: all children without diarrhoea and on antibiotics. Stool samples were processed and examined macroscopically for consistency, mucus and blood, colour. For the detection of trophozoites, and cysts of *Giardia lamblia* direct microscopy of the smear in saline and Lugol s iodine was performed.¹

INTRODUCTION

In the United States, *Giardia lamblia* had become the number one parasite-caused gastrointestinal disease and has now become a major worldwide public health problem.¹ It is an important cause of diarrhoeal disease accompanied by malabsorption in children and adults throughout the world and also the most pathogenic intestinal protozoan infection in man. In healthy individuals Infection is usually perceived as mild and self-limiting and symptoms generally subside within 2-3 weeks.² This Infectious disease may have both immediate and long-term consequences including chronic diarrhoea with or without dehydration and intestinal malabsorption, recurrent abdominal pain, and weight loss.³

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S. No	Age	Sex	Organism
1	1	female	Giardia cyst
2	1m	female	Giardia cyst
3	3	female	Giardia cyst
4	2	Male	Giardia cyst
5	4	Male	Giardia cyst
6	1.5	female	Giardia cyst
7	3.5	Male	Giardia cyst
8	5	Female	Giardia cyst
9	3.5	female	Giardia cyst
10	5	Male	Giardia cyst
11	5	Male	Giardia cyst
12	3.5	Male	Giardia cyst
13	5	Male	Giardia cyst
14	4	male	Giardia cyst
15	2.5	Female	Giardia cyst
16	2.5	Male	Giardia cyst
17	5	Female	Giardia cyst
18	5	female	Giardia cyst

Table-1: Distribution of children with diarrhoea

RESULTS

Out of 197 children with diarrhoea, 18 (9.1%) children had an infection by *Giardia lamblia*. Age group Distribution of children with diarrhoea shown in table 1. Diagnosis was made by Microscopic examination in normal saline and lugol's iodine preparation. Most commonly affected age group was 5 year with *Giardia* infection.

DISCUSSION

In communities without proper sanitation and potable water, *Giardia lamblia* is a medically important gastrointestinal protozoa associated with diarrhoea. In developing countries Acute diarrhoea is a major cause of mortality and morbidity among children, below 5 years.⁸ In developing countries where sanitation is a huge problem, Socio-economic, cultural and lifestyle differences may not necessarily be relevant to all social classes. Certain behavioural and socio-economic practices of mothers with children less than five years, may be possible risk factors of *G. lamblia* infection is matter of concern in our current study.^{9,10} Public health education on good sanitary practices including frequent hand washing, particularly at antenatal and day-care centers, may contribute to controlling infection rates. Infections of Giardiasis can be controlled by improving general health conditions because common socio-cultural practices of a population might inform risk factors associated with the infection, and variation in behaviour and lifestyle.

CONCLUSION

Poor bowel control, poor hand hygiene is a major factor for *Giardia* infection in children in 5 years. Strategies such as better waste management, safe water treatment, health education of parents regarding hygiene of child should be followed as this infection is mostly transmitted by contaminated food and water. Washing hands thoroughly with soap and water after using the toilet and before handling or eating food plays an effective role in control and transmission of infection. For

the routine diagnosis of giardiasis, microscopic examination remains the key method.

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