

A Study Of The Prevalence Of Cryptosporidium Parvum In Stool Samples Of Patients Of Tertiary Care Hospital, Ahmedabad

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Abstracts: Background: Intestinal parasitic infections remain a serious public health problem globally. Although there could be many other causes of diarrhoea, the enteric protozoa *Cryptosporidium parvum* have been recognized as important causes of both out-break-related and sporadic diarrhoea in humans. Both immunocompetent and immunocompromised individuals could be the victims but immunocompromised peoples are likely to be most seriously affected. This study was done to determine the prevalence of *Cryptosporidium parvum* in Stool samples. Methodology: A 100 Stool samples of patients visiting General Hospital, Sola, Ahmedabad from December 2013 to March 2014 were followed for Stool microscopy for demonstration of cyst of *Cryptosporidium parvum*. Modified ZN stain done from direct smear from stool sample but their concentration is increased by formal ether concentration technique. Results: Out of total 100 stool samples were examined in which 85 were positive for bacteriological infections and 15 for parasitic infection. Prevalence of *Cryptosporidium parvum* infection in our study is 5 %. Among 100 patients only 3 were positive for Cryptosporidium infection in 96 immunocompetent patients and 2 were positive for Cryptosporidium infection in 4 immunocompromised patients. So higher rate of prevalence of *Cryptosporidium parvum* infection seen in immunocompromised patients. Conclusion: Cryptosporidium infection is transmitted by feco-oral route & water borne, so proper sanitation and disinfection of water reduce the prevalence of infection. *Cryptosporidium parvum* diarrhoea is self-limiting illness and cured by fluid therapy. Drug therapy is only for severe infection. In immunocompromised patients like HIV antiretroviral therapy and fluid therapy is necessary for Cryptosporidium infection. [Patel S NJIRM 2015; 6(4):91-93]

Key Words: Diarrhoea, Cryptosporidium parvum, Immunocompromised.

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Introduction: Intestinal parasitic infections remain a serious public health problem globally¹. They have been associated with human malnutrition². Intestinal parasites are organisms that live in the gastrointestinal tract of humans and animals; they are the common cause of human diarrhoeal disease worldwide leading to significant morbidity and mortality in the world, particularly in developing countries.²

Lack of safe drinking water and environmental sanitation are largely responsible for more cases of diarrhoeal diseases in many developing countries every year³. Although there could be many other causes of diarrhoea, the enteric protozoa *Cryptosporidium parvum* have been recognized as important causes of both out-break-related and sporadic diarrhoea in humans. This is mostly attributed to its low infective dose and high resistance to the common water disinfectants, such as Chlorine and against environmental factors such as low temperature^{4,5}.

Cryptosporidiosis is most common in children aged between 1 and 5 years, although outbreaks occur worldwide in all age groups⁶. Both immunocompetent and immunocompromised individuals could be the victims of People with weak immune systems (those with AIDS, or persons who have undergone transplantation or are receiving chemotherapy) are likely to be most seriously affected⁷.

This study was done to determine the prevalence of *Cryptosporidium parvum* in Stool samples.

Material and Methods: This prospective study was done to determine the prevalence of *Cryptosporidium parvum* from 100 Stool samples of patients visiting General Hospital, Sola, Ahmedabad from December 2013 to March 2014. Stool microscopy (Stool Saline and Iodine preparation) was done for demonstration of cyst of *Cryptosporidium parvum*.⁸

Oocysts of *Cryptosporidium parvum* is detected in modified ZN method by direct making smear from

stool sample but their concentration is increased by formal ether concentration technique.⁹

Results: A total of 100 Stool samples from patients attending in GMERS Medical Collage and General Hospital, Sola, Ahmedabad from December 2013 to March 2014 were screened for the prevalence of *Cryptosporidium parvum* from Stool specimens.

Out of total 100 stool samples were examined in which 85 were positive for bacteriological infections and 15 for parasitic infection. Out of 15 parasites, 5 were *Cryptosporidium parvum*.

Among 100 patients 61 were Male patients and 39 were Female patients.

Table 1: Total Parasite detected in Stool samples

Table 2: Age and Sex wis e	Parasitic Spp.	Total no of Parasite cases
	Cyst of <i>E.histolytica</i>	06
	Oocysts of <i>Cryptosporidium</i>	05
	Cyst of <i>Giardia</i>	03
	<i>Taenia</i> Spp.	01
	Total	15

distribution of *Cryptosporidium parvum*

Age Group	No. of Stool examined	Positive for <i>Cryptosporidium</i>	Male	Female
1-20 Year	45	1	1	0
21-40 year	28	3	1	2
41-60 year	22	1	1	0
61-80 year	5	0	0	0
Total	100	5	3	2

Prevalence of *Cryptosporidium parvum* infection in our study is 5 % that affect both male and female and commonest age group affected are 21-40 year as shown in Table-2.

Among 100 patients only 3 were positive for *Cryptosporidium* infection in 96 immunocompetent patients and 2 were positive for *Cryptosporidium* infection in 4

immunocompromised patients. So higher rate of prevalence of *Cryptosporidium parvum* infection seen in immunocompromised patients.

Discussion: A total 100 Stool sample of patients were complaining of diarrhoea were examined in Microbiology department at GMERS Medical College and Hospital, Sola, Ahmedabad from December 2013 to March 2014.

Morbidity due to intestinal parasites has always been an important public health problem in the tropics, but the incidence and severity may vary depending on the location and period of time moreover, supposed differences in the rate of prevalence may be due to the use of different diagnostic methods and the difficulties involved in the identification of certain parasites.

Among this 100 Stool sample, 15(15%) patients were positive for parasitic infection, and 85(85%) patients were positive for bacterial infections.

Among them 100 Stool sample 61(61%) were male patients and 39(39%) were female and highest were male patients.

Prevalence of *Cryptosporidium* in our study was 5 % which very well correlate with other study done by Krupal et al (2%)¹⁰ and Gupta et al (9%)¹⁰

No significant different seen in *cryptosporidium* infection in male and female but, male patients were slightly more affected than Female patients in our study.

Higher positivity rate for *cryptosporidium* infection, seen with is 21-40 year which is very well correlate with study carried out by Krupal et al.¹⁰

In our study high prevalence of *Cryptosporidium parvum* infection seen in immunocompromised patients 2 positive from 4 samples, means 50% positivity rate than immunocompetent patients 3 positive from 96 samples, so positivity rate was only is 3.12%. Higher rate in immunocompromised patients well correlate with other studies like Dwivedi KK et al¹¹ (33%), Kulkarni et al.¹² (74%), Malaji M Sangamesh et al¹³ (20%) and Vyas N et al¹⁴ (25 %).

Conclusion: The study enhances awareness of the prevalent opportunistic protozoal parasite in the region of Gujarat. The most common age group responsible for *Cryptosporidium parvum* infection is 21-40 year. Our study also concluded that the immunocompromised patients were more affected than the immunocompetent patients. *Cryptosporidium* infection is transmitted by feco-oral route & water borne, so proper sanitation and disinfection of water reduce the prevalence of infection. *Cryptosporidium parvum* diarrhoea is self-limiting illness and cured by fluid therapy. Drug therapy is only for severe infection. In immunocompromised patients like HIV antiretroviral therapy and fluid therapy is necessary for *Cryptosporidium* infection.

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