SEROPREVALENCE OF ROTA VIRUS IN BOVINES IN AND AROUND JABALPUR DISTRICT OF MADHYA PRADESH

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ABSTRACT

A study was conducted to detect seroprevalence of bovine Rota virus in diarrheic and non-diarrhoeic bovine calves and adult animals. A total of 82.22 per cent serum samples were found positive for rota virus antibodies with more positive cases in diarrheic animals. The ELISA test was performed on serum sample of 30 buffalo calves and 40 cow calves including both diarrheic and non diarrheic clinical category. The findings revealed 76.66% and 77.5% positive serum samples of buffalo calves and cow calves, respectively for rota virus antibody. In both the group of animals, more number of positive samples were recorded in diarrheic animals.

KEY WORDS : Bovine rotavirus (BRV), ELISA, Diarrhoea, Seroprevalence, Bovine.

INTRODUCTION

Rotaviruses (RV) infections are ubiquitous in nature and have been recognized as important etiological agent of gastroenteritis in young animals and children (Steele *et al*., 2004 and Radostits *et al*., 2007). Infections with serologically related rotaviruses (Thouless *et al*., 1977) are associated with diarrhea in animals. For the effective control measures, prompt diagnosis of the disease is important (Dhama *et al*., 2009). Hence the present study was conducted to find the seroprevalence of bovine rota virus in serum samples of both diarrheic as well as non diarrheic animals.

MATERIALS AND METHODS

The study was conducted in the Department of Veterinary Pathology, College of Veterinary Science and Animal Husbandry, Nanaji Deshmukh Veterinary Science University, Jabalpur, Madhya Pradesh. The work was conducted for a period of seven months from September 2013 to March 2014. Buffalo and cow calves (less than 6 month of age) as well as adult of both sexes in and around Jabalpur were included in the study. 5 ml Blood was collected in clot activator vial, aseptically from jugular vein, from healthy as well as diarrhoeic animals and serum was separated in sterile container for serological studies. Separated serum was stored at -20ºC till use. For detection of Bovine rota virus antibody, the commercially available Bovine Rota virus ELISA antibody detection kit was used. The association between diarrhea and detection of antigen in faeces or antibody in serum of the animal was determined by Chi –Square test as described by Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

The results of the present study based on ELISA test for detection of bovine rota virus performed on a total of 90 serum samples revealed that a total 82.22 per cent serum samples were found positive for rota virus antibodies with 92.30 per cent in diarrheic animals and 74.51 per cent in non diarrheic animals ..

The test was performed on 30 buffalo calves, of which 13 were diarrheic and 17 were non diarrhoeic. The ELISA was also performed in serum samples from 40 cow calves, amongst these 19 were

diarrhoeic and 21 were non diarrhoeic. 76.66% and 77.5% serum samples of buffalo calves and cow calves, respectively were found positive for rota virus antibodies. In both the group of animals, more number of positive samples were recorded in diarrheic animals (Table).

Table: ELISA to detect rota virus antibodies in calf serum

Animal	Category	Sample size	Positive cases	Per cent positive
Buffalo calf	Diarrhoeic	13	13	100
	Non diarrhoeic	17	10	58.82
	Total	30	23	76.66
Cow calf	Diarrhoeic	19	16	84.21
	Non diarrhoeic	21	15	71.43
	Total	40	31	77.50

Rota viruses are enteric pathogens in many animal species but sub-clinical infections are also common in cattle (McNulty and Logan, 1983). Radostits et al. (2007) have stated that due to the ubiquity of rota viruses in cattle populations, newborn calves that ingest colostrums usually have circulating anti-rota virus antibody, thus remain susceptible to infection with rota virus in the first few weeks of life. Passive immunity to calf rota virus diarrhoea could be accomplished by sufficiently elevating calf serum antibodies titers. Protection is usually associated with local immunity, which either develops actively following intestinal infection, or is transferred by passive "lactogenic" antibodies via colostrums and milk.

Association between diarrhoea and serum antibody

Association between clinical finding of diarrhoea and presence of rota virus antibody in serum of animal was determined by using the Chi Square test. The significant value of 2 (4.789) indicating that the finding of diarrhoea and rota virus antibodies in serum are associated with each other.

In this study, the findings of diarrhoea and rota virus antibodies in serum were found to be associated with each other. In contrast to our findings, Archambault et al. (1990) found that both diarrhoeic as well as non diarrhoeic calves are equally responsible for source of contamination to infect healthy calves. Jindal and Oberoi (2000) established the genomic diversity and prevalence of Rota virus in cow and buffalo calves in northern India. Definitely this genomic variation may also be responsible in inducing different immune responses in different geographical locations.

It was concluded that seroprevalence of bovine rotavirus is high in the cattle population of Jabalpur region. The infection is not evidenced by diarrhoea but may be enlisted as an important cause of calf mortality, perhaps due to concurrent infection with some other pathogen.

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