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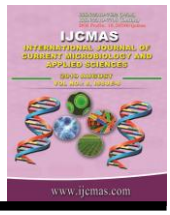

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Haemagglutination Test as a Screening Test for Diagnosis of Canine Parvoviral (CPV) Infection in Dogs

M. Geetha* and G. Selvaraju

Department of Veterinary Public Health and Epidemiology, Veterinary College and Research Institute, Namakkal – 2, India
Tamil Nadu Veterinary and Animal Sciences University, Chennai – 51, India

**Corresponding author*

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A B S T R A C T

Canine parvoviral enteritis (CPVE) is a serious disease of dogs of less than six months age group. This disease is caused by canine parvovirus 2, 2a, 2b and 2c subtypes of CPV.Diagnosis and therapeutic management of CPVE affected dogs are usually based on clinical diagnosis. This study aims the applicability of haemagglutination test in diagnosis of CPV infection. A total of 110 faecal swabs of dogs suspected for CPVE were collected and subjected to haemagglutination (HA) test using porcine red blood cells. Thirty two samples (29.0 %) were positive to CPV infection by HA. The HA testgave higher rate of detection of CPV in faecal samples and it could be used as a field level screening test for diagnosis of CPVE in dog.

Introduction

Parvoviruses are small, non-enveloped, single stranded DNA viruses that are known to cause disease in a variety of mammalian species, although most parvoviruses are species specific (Pollack, 1982: Carr *et al.,* 1997). Canine parvovirus (CPV) was first identified in 1978 in USA and was designated as CPV type 2 (CPV-2) for differentiating it from CPV-1, a previously recognised parvovirus of dogs known as minute virus of canines (Binn *et al.,* 1970). After its emergence, CPV-2 spread globally, and now it is endemic in most populations of domestic and wild canids (Parrish *et al.,* 1988). Since its emergence in 1978, canine parvoviral enteritis remains a common and important cause of morbidity and mortality in young dogs. Even though CPV infection can be tentatively diagnosed based on clinical signs, precise laboratory diagnosis is mandatory to initiate better treatment in the affected animals. Hence, this study was aimed to screen dogs for CPV infection by using haemaggluination (HA) test.

Materials and Methods

A total of 110 faecal swabs were collected aseptically from various breeds of dogs presented to Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal, Tamil Nadu, India showing clinical signs of foul smelling haemorrhagic enteritis, vomiting and dehydration. Collected faecal swabs were kept in phosphate buffer saline and transported to the laboratory at 4°C. The swabs were squeezed and the tubes were centrifuged at 10000 rpm for 10 minutes and the supernatant was collected and stored at 4°C until further use. Blood collected from healthy pigs, centrifuged and cells are washed thrice in PBS and 0.5 % RBC solution was prepared for HA test.

Haemagglutination test was conducted as per the prototcol recommended by Carmichael *et al.,* (1980) for assessing the presence of CPV in the faecal samples. Commercial vaccine containing CPV2 was kept as positive control.

Results and Discussion

Canine parvovirus continues to be an important pathogen of canines and is responsible for increased incidence of mortality and morbidity in young dogs, despite the availability of safe and effective vaccines (Decaro *et al.,* 2006). The HA titres of faecal samples from 110 dogs were ranged from <2 to 1:4096. The HA titres of >1: 64 is considered as positive and titres of > 1:32 is considered as weakly positive for CPV (Desario *et al.,* 2005). Thirty two samples (29.00 %) had HA titre of greater than 1:64.Faecal samples from dogs with acute enteritis may contain upto 20,000 haemagglutination units of virus equivalent to about 10^9 virions per gram (Chollom *et al.,* 2012). This may be the explanation for the high HA titres of faecal samples in CPV affected dogs. The simplest procedure for the laboratory diagnosis of CPV infection is haemagglutination of pig or rhesus monkey erythrocytes by virus present in faecal extracts of infected dogs (Kapil *et al.,* 2007). Marulappa and Sanjay (2009) developed haemagglutination test kit for diagnosis of CPV infection in dogs. However, alteration the haemagglutination pattern was noticed with different strains of CPV. Some strains like Cp49 and 29F showed temperature dependent HA and some strains like Sp-80 and Y-1 showed temperature independent HA with erythrocytes from eight species of animals (Senda *et al.,* 1988). The HA test gave higher rate of detection of CPV in faecal samples and comparison of conventional polymerase chain reaction (PCR) with HA test revealed that there is no significant difference between the results of these tests in detection of CPV infection in dogs (Chollom *et al.,* 2012). Moreover requirement of highly sophisticated equipments and laboratory intensive procedure for extraction of DNA and its amplification in PCR limits its utility in routine diagnosis of CPV infection under field conditions. Hence, HA test can be used as a better alternative screening test for diagnosis of CPV infection in dogs and results of this test can be utilised for timely therapeutic interventions in CPV infected dogs.

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