

## RISK FACTORS ASSOCIATED WITH CANINE PARVOVIRUS ENTERITIS IN VOM AND ENVIRONS

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### ABSTRACT

*A study was carried out to assess the effects of age, sex, breed, location of cases and tick infestation on the prevalence of canine parvovirus (CPV) enteritis in dogs treated in the Veterinary Clinic of the National Veterinary Research Institute Vom between July 1999 and July 2002. A case control study design was used to assess the association between the risk factors and the disease. Out of 3075 dogs examined during the period, 87 had CPV enteritis (2.8%). Dogs between 0 to 5 months of age had elevated risk (OR = 25.14; 95% CI = 9.74, 67.26%). Other factors did not significantly affect the occurrence of the disease. The disease was most prevalent in May and June with a lesser peak in January. Age and seasonal variation should be considered in planning a control programme.*

**Keywords:** Risk factors, Canine parvovirus enteritis.

### INTRODUCTION

Canine parvovirus enteritis is gastroenteritis of acute onset and varying morbidity and mortality, caused by a parvovirus that was first reported in 1978 (MERCK, 1979). Houston *et al.*, (1996) reported that at the end of 1983, Canine Parvovirus infections had been reported in 50 countries around the world.

Initially, two common clinical forms of the disease were recognized. They are myocarditis and gastroenteritis. Myocarditis was seen in young puppies, leading to myocardial necrosis with either acute cardiopulmonary failure or scarring of the myocardium and progressing cardiac insufficiency. However, myocarditis is no longer seen because effective immunizations of bitches protect puppies during this early period of life (MERCK, 1998).

Gastroenteritis is more common in puppies 6-20 weeks old, that is, the period when maternal antibody protection falls and vaccination has not yet adequately protected the puppy against infection. Dogs with the enteric form suffer from an acute onset of lethargy, anorexia, fever, vomiting and diarrhea, with loose faeces, which may contain mucus or blood (MERCK, 1998).

A lot of work had been done on the risk factors associated with the disease in many parts of the world. Glickman *et al.*, (1985) found that Doberman Pinschers, Rottweilers, English Springer Spaniels had significantly increased risk factor for CPV enteritis. In another work, Rottweilers, American Pit Bull Terriers, Doberman Pinschers, and German shepherd had significantly higher risk factor for CPV corresponding to age and sex. Sexually intact male dogs were more admitted with CPV enteritis in July, August and September compared with the rest of the months (Houston *et al.*, 1996). Although a lot of work

had been done on the risk factors associated with CPV enteritis in many parts of the world, no work had been done on the risk factors associated with the disease in Vom and its environs. The aim and objective of the study is to determine the relationship of age, sex, breed and seasonal predisposition on the prevalence of CPV enteritis in dogs examined in Vom and its environs, using the Epi info computer software to statistically check the association between each of the risk factors and CPV enteritis.

### MATERIALS AND METHODS

#### Criteria for Selection of Cases and Controls:

Data was obtained by going through clinical records in Veterinary Clinic, National Veterinary Research Institute, Vom from July 1999 to July 2002. The medical records were reviewed and the dogs with a history of foul smelling diarrhea and / or tentative diagnosis of CPV enteritis were selected. The rejected cases included a situation whereby enteritis, gastroenteritis or CPV enteritis was given as the tentative diagnosis but the history and clinical signs recorded had nothing to suggest the diagnosis of CPV enteritis. For all the cases, control dogs were selected and examined. The control dogs were clinically normal dogs brought to the clinic for vaccination or routine check up.

**Data analysis:** The data was analyzed to check for association between each risk factor and CPV enteritis using the Epi info software. Odds ratio (OR) of each variable was calculated and 95% confidence interval set up. A value of odds ratio greater than unity denotes association. The association is significant if the 95 % Confidence Interval (CI) does not include one. Seasonal distribution of the disease was

assessed by isolating seasonal indices for each month using the ratio- to- moving average method (Harnett and Murphy, 1974) and plotting the indices against the calendar months.

**RESULTS**

The analysis of the risk factor for CPV is presented on table 1. Of the 3075 dogs brought to the Vet Clinic, NVRI, Vom, 87 were diagnosed tentatively as CPV enteritis cases (prevalence rate of 2.8%). The result showed that the odds ratio (OR) for age was significantly elevated (OR = 25.14, 95% CI 9.74-67.26%). While the OR for the other risk factors considered like sex (OR = 1.45 CI 0.74-2.87%), breed (OR = 0.71 CI 0.31-1.64%), location (OR = 1.59 CI 0.61- 4.19%) and presence of ticks (OR = 1.27 CI 0.27-7.42%) were not significantly elevated (Table 1).

**Table 1: Analysis of risk factors for the development of canine parvovirus enteritis in Vom**

Risk factor	No. of Cases (n= 87)	No. of controls (n= 87)	Odds ratio	95% confidence interval
<b>Age (months)</b>				
0 - 5	75	22	25.14	9.74-7.26
6 and above	8	59	1.00	
<b>Sex</b>				
Male	48	46	1.45	0.74-2.87
Female	28	39	1.00	
<b>Breed</b>				
Local	59	69	0.71	0.31-1.64
Exotic	18	15	1.00	
<b>Location</b>				
A	68	60	1.59	0.61-4.19
B	10	14	1.00	
C	7	10	0.98	0.23-4.15
<b>Presence of ticks</b>				
Yes	29	3	1.27	0.27-7.42
No	38	5	1.00	

A = K/Vom, Vom and Kuru; B = Bukuru; C = Jos and other places

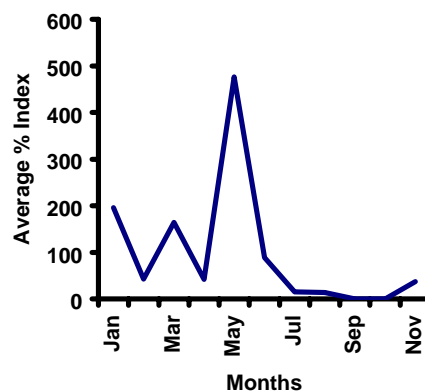
By plotting the average percentage index against the months (Table 2), it could be seen that the disease is more prevalent in the dry season months from December to June with a peak period in May. The disease is lower in July to August and absent in September to October (Figure 1).

**DISCUSSION**

The findings reported here indicate that CPV enteritis is a disease of the young animals. We also found that the disease has a seasonal pattern. However in our area (Vom), the disease is most prevalent (showing average percentage index of 476.5%) in May and lowest (0%) in September to October (figure 1). However, Houston et al, (1996) found in Canada that dogs were more likely to be admitted with CPV enteritis in July to September than in other months of the year.

**Table 2: Monthly average percentage index of canine parvovirus enteritis in Vom**

Months	Average % index
January	196
February	42.5
March	164
April	42
May	476.5
June	89
July	15
August	13.5
September	0
October	0
November	37
December	85



**Figure 1: Monthly prevalence of CPV enteritis at Vet clinic, Vom**

There was no significant association between CPV enteritis and breed probably due to the fact that most of dogs around Vom were of the same breed (Local breed). There was also no significant association between CPV enteritis and sex, as the disease affects both males and females in the study area (Vom). Houston *et al*, (1996) however, found that sexually intact dogs above 6 months of age were more likely to develop CPV enteritis, compared with neutered dogs. Furthermore, intact male dogs above 6 months of age were twice more likely to develop the disease than intact females.

There was no association between the presence of ticks and CPV enteritis. CPV enteritis is not known to be transmitted by ticks. Location did not play a significant role in the development of CPV enteritis. However, further work may need to be carried out on the relationship between sexually active dogs and CPV enteritis in Nigeria.

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