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Prenal Badwaik
Department of Veterinary Clinical Medicine, Ethics and Jurisprudence, Nagpur Veterinary College, Nagpur, Maharashtra, India

CG Panchbhai
Department of Veterinary Clinical Medicine, Ethics and Jurisprudence, Nagpur Veterinary College, Nagpur, Maharashtra, India

VM Dhoot
Department of Veterinary Clinical Medicine, Ethics and Jurisprudence, Nagpur Veterinary College, Nagpur, Maharashtra, India

GR Bhojne
Department of Veterinary Clinical Medicine, Ethics and Jurisprudence, Nagpur Veterinary College, Nagpur, Maharashtra, India

SV Upadhye
Department of Veterinary Surgery and Radiology, Nagpur Veterinary College, Nagpur, Maharashtra, India

SM Kolangath
Wildlife Research & Training Centre, Gorewada, Nagpur, Maharashtra, India

Corresponding Author
Prenal Badwaik
Department of Veterinary Clinical Medicine, Ethics and Jurisprudence, Nagpur Veterinary College, Nagpur, Maharashtra, India

Prevalence of canine parvovirus infection in dogs in Nagpur

Prenal Badwaik, CG Panchbhai, VM Dhoot, GR Bhojne, SV Upadhye and SM Kolangath

Abstract
The present study was conducted at Veterinary Clinical Complex, Nagpur Veterinary College, Nagpur from October 2020 to September 2021. Out of 8,970 dogs, 173 dogs were diagnosed with Rapid CPV Ag Test Kit for canine parvovirus infection indicating a total of 1.93 percent affection Age, sex, breed and month wise prevalence of canine parvovirus infection was recorded. Dogs between 0-3 months of age showed the highest prevalence 42.20% followed by 4-6 months of age 30.63%, 7-9 months of age 12.72%, and 10-12 months of age 9.83% Whereas, the lowest prevalence of canine parvovirus was reported in the dogs above 12 months of age (4.62%). The sex wise prevalence revealed higher prevalence in male (58.38%) as compared to female (41.62%). The breed wise prevalence showed higher prevalence in non-descript dogs (35.26%) followed by Labradors (24.85%). Month wise prevalence of CPV infection was found highest (23.12%) in July and lowest (2.89%) in May and October.

Keywords: Parvovirus, CPV, prevalence, Nagpur, gastroenteritis

1. Introduction
Canine parvovirus enteritis is one of the highly contagious and fatal diseases in dogs, affecting primarily young and unvaccinated dogs, exhibiting acute infectious gastrointestinal illness with high morbidity (100%) and mortality rate as high as 91% in the absence of treatment (Prittie 2004, Nandi and Kumar 2010 and Aiello *et al.*, 2016) [14, 11, 2]. Canine parvovirus enteritis is caused by canine parvovirus type-2 (CPV-2) (Mylonakis *et al.* 2016) [10].
The CPV-2 infections have emerged as a problem in dogs in recent times around the world and are responsible for classic parvoviral enteritis; and has three strains named CPV-2 a, b, and c detectable only by monoclonal antibodies and genetic analysis (Nelson & Couto, 2013 and Odueko, 2020) [12, 13]. CPV-2 is ubiquitous, that can survive in the environment for more than a year, enabling exposure of susceptible dogs to infected faeces, vomitus, or fomites (Mylonakis *et al.* 2016) [10]. The virus is resistant to several common detergents, disinfectants, as well as temperature, pH fluctuations and persist in soil or on fomite for months to years (Aiello *et al.*, 2016) [2]. The infection has two clinical forms as acute haemorrhagic enteritis and myocarditis. Acute enteritis form is seen chiefly in puppies up to 12 months of age (ER and OK 2015) [4].
Anorexia, fever, depression, and lethargy are some of the non-specific initial clinical signs whereas typical symptoms include depression, vomiting, and small bowel haemorrhagic diarrhoea. Dehydration and hypovolemic shock often develop quickly due to a large amount of protein and fluid loss from the gastrointestinal tract (Ahmad & Waheed, 2020) [1]. The disease has a quick clinical course, with death may occur within 2–3 days of the onset of symptoms (Vaishali & Jain, 2020) [19]. In the current study the prevalence of Parvovirus infection was studied in dogs of Nagpur city and prevalence in various breeds, sex, season and age was inferred.

2. Material and Methods
The footfall of dog population presented to Veterinary Clinical Complex, Nagpur Veterinary College from October 2020 to September 2021 were screened for Canine parvovirus infection. Dogs showing chief complaint of anorexia, foul-smelling diarrhoea, vomition, dehydration, depression and suspected for canine parvovirus infection were further subjected to clinical examination, screening by using Rapid CPV Ag Test Kit and haemato-biochemical examination. The prevalence of canine parvovirus enteritis was studied for a period between October 2020 to September 2021.

3. Results and Discussion

A total of 8,970 canine patients were presented to VCC, Nagpur Veterinary College, Nagpur from October 2020 to September 2021, out of which total 173 dogs were diagnosed with canine parvovirus infection indicating a total of 1.93 percent affection.

The highest affection of canine parvovirus infection was found in the age group of 0-3 months with 42.20%, followed by dogs of age between 4-6 months (30.63%), 7-9 months of age 12.72% and 10-12 months of age 9.83% (Table 1), whereas, the lowest prevalence was found in dogs with age more than 1 year (4.62%). In the present study, the dogs between 0-3 months of age showed highest prevalence which is in agreement with Hasan *et al.* (2016) [6], Mehta *et al.* (2017) [9] and Khare *et al.* (2019) [7], that could be due to the virus's preference for fast proliferating intestinal crypt cells in weaning pups with a higher mitotic index as a result of changes in bacterial flora as well as in the diet due to weaning (Mehta *et al.* 2017 and Sharma *et al.* 2019) [9, 16], lack of protective immunity due to lack of maternal antibody, or probably had not been vaccinated or incomplete vaccination status of pups (Mehta *et al.* 2017) [9]. On the contrary, lowest prevalence was found in dogs with age more than 1 year which is in agreement with Khare *et al.* (2019) [7] and Sharma *et al.* (2019) [16]. The lower prevalence of CPV was reported in dogs with increase in age might be due to acquired immunity (Sharma *et al.* 2019) [16].

Table 1: Age-wise prevalence of dogs affected with Canine parvovirus infection

Age	No. of dogs affected	Percentage of dogs affected (%)
0-3 months	73	42.20
4 to 6 months	53	30.63
7 to 9 months	22	12.72
10 to 12 months	17	9.83
>12 months	8	4.62
Total	173	100

The occurrence of canine parvovirus infection was higher in males (58.38%) than females (41.62%) with respect to total number of dogs with CPV infection (Table 2). The findings of this study are in agreement with Reddy *et al.* (2015) [15], Khare *et al.* (2019) [7], and Sharma *et al.* (2019) [16]. Whereas, Chethan *et al.* (2021) [5] reported higher prevalence in female (51.11%) than male (48.89%). In the present study, male dogs were found to be more susceptible for the infection which could be due to higher footprints of males than female in VCC also their behaviour and the pet owners' selected preference for keeping males as pets. It is also speculated that males usually move more than females, hence makes them more susceptible to field infections (Chethan *et al.* 2021) [5].

Table 2: Sex-wise prevalence of dogs affected with Canine parvovirus infection

Sex	No. of dogs affected	Percentage of dogs affected (%)
Male	101	58.38
Female	72	41.62
Total	173	100

Canine parvovirus infection was found to be most prevalent in non-descript dogs (35.26%), followed by Labradors (24.85%), Doberman (10.40%), German Shepherd (8.67%), Rottweiler (5.20%), Spitz (4.05%) Golden Retriever (2.89%), Lhasa Apso (2.31%), however Pug, Great Dane, St. Bernard breeds showed an equal prevalence of 1.73%. The lowest prevalence of 1.15% was recorded in Boxer breed (Table 3). The present study revealed highest prevalence in non-descript dogs (35.26%), which is in corroboration with Archana *et al.* (2009) [3], Hasan *et al.*, (2017) [6], Khare *et al.* (2019) [7], whereas, Tanwar *et al.* (2020) [18] and Chethan *et al.* (2021) [5] documented that CPV infection was more prevalent in Labrador retriever. On the contrary Kumar *et al.* (2011) [8], Singh *et al.* (2013) [17] and Reddy *et al.* (2015) [15] reported highest prevalence of CPV in German Shepherds, Doberman and Spitz, respectively. In the current study non-descript breed shows highest prevalence of CPV infection which might be attributed to a lack of vaccination in these breeds and the fact that the majority of them were stray so they have a habit of roaming around and even entering hospital premises, where they can easily pick up an infection (Sharma *et al.* 2019) [16]. Labrador dogs are at second position in prevalence which could be because of, the fact that it is most reared breed in this region, and its sociable breed trait combined with easy maintenance which makes this breed very appealing to pet parents.

Table 3: Breed-wise prevalence of dogs affected with canine parvovirus infection

Breed	No. of dogs affected	Percentage of dogs affected (%)
Non-descript	61	35.26
Labrador	43	24.85
Doberman	18	10.40
German Shepherd	15	8.67
Rottweiler	9	5.20
Spitz	7	4.05
Golden Retriever	5	2.89
Lhasa Apso	4	2.31
Pug	3	1.73
Great Dane	3	1.73
St. Bernard	3	1.73
Boxer	2	1.15
Total	173	100.00

In this investigation, Canine parvovirus infection was found to be most prevalent in month of July (23.12%), followed by August (16.76%), September (12.14%) November (11.56%), January (5.78%), April (6.94%), December (5.20%), February (4.62%), March (4.05%) and June (4.05%), however May and October showed an equal and lowest prevalence of 2.89% (Table 4). Canine parvovirus infection was found most prevalent in month of July (23.12%), which is in agreement

with the Reddy *et al.* (2015) [15], whereas Mehta *et al.* (2017) [9] reported highest prevalence (65.00%) in the month of February. The highest prevalence was reported in July which could be because, CPV is normally dead or latent over the winter, therefore most cases observed in seasons other than winter (Sharma *et al.* 2019) [16].

Table 4: Months-wise prevalence of dogs affected with Canine parvovirus infection

Months	No. of dogs affected	Percentage of dogs affected (%)
October	5	2.89
November	20	11.56
December	9	5.20
January	10	5.78
February	8	4.62
March	7	4.05
April	12	6.94
May	5	2.89
June	7	4.05
July	40	23.12
August	29	16.76
September	21	12.14
Total	173	100.00

4. Conclusion

The prevalence of CPV infection at the VCC, Nagpur during the period October 2020 to September 2021 was 1.93 percent. The highest prevalence was observed in non-descript dogs, and among the exotic, Labrador breed was found to be highly positive as compared to other breeds of dogs aged 0-3 months, whereas sex wise prevalence was higher in male than female.

5. References

1. Ahmad M, Waheed A. Case of Canine Parvovirus Infection. Research Journal of Veterinary Practitioners. 2020;8(2):23–25.
2. Aiello SE, Moses MA, Allen DG. The Merck veterinary manual, 2016.
3. Archana, Shukla PC, Gupta DK, Bhoopendra K. Epidemiology on canine pavovirus infection. The Indian Journal of Veterinary Research. 2010;18(2):42-44.
4. Cenk ER, Mahmut OK. Levels of cardiac biomarkers and coagulation profiles in dogs with parvoviral enteritis. Kafkas Univ. Vet. Fak. Derg. 2015;21(3):383-388.
5. Chethan GE, Singh M, Chander V, Singh D, Rajesh JB, Prasad H, *et al.* Occurrence of Canine parvovirus-2 and canine adenovirus-1 Infections in Dogs: A Hospital Based Study. Indian Journal of Animal Research. 2021;55:2.
6. Hasan MM, Jalal MS, Bayzid M, Sharif MAM, Masuduzzaman M. A comparative study on canine parvovirus infection of dog in Bangladesh and India. Bangladesh Journal of Veterinary Medicine. 2016;14(2):237-241.
7. Khare DS, Gupta DK, Shukla PC, Das G, Tiwari A, Meena NS, *et al.* Prevalence of canine parvovirus infection in dogs in Jabalpur (MP). J Entomol. Zool. Stud. 2019;7:1495-1498.
8. Kumar M, Chidri S, Nandi S. A sensitive method to detect canine parvoviral DNA in faecal samples by nested polymerase chain reaction. Indian Journal of Biotechnology. 2011 April;10:183-187.
9. Mehta SA, Patel RM, Vagh AA, Mavadiya SV, Patel MD, Vala JA, *et al.* Prevalence of Canine Parvo Viral Infection in Dogs in and around Navsari District of Gujarat State, India. The Indian Journal of Veterinary Sciences and Biotechnology. 2017;13(02):67-72.
10. Mylonakis ME, Kalli I, Rallis TS. Canine parvoviral enteritis: an update on the clinical diagnosis, treatment, and prevention. Veterinary medicine (Auckland, N.Z.). 2016;7:91–100., https://doi.org/10.2147/VMRR.S80971
11. Nandi S, Kumar M. Canine parvovirus: Current perspective. Indian Journal of virology. 2010;21(1):31-44.
12. Nelson RW, Couto CG. Small Animal Internal Medicine - E-Book (5th Ed.), Elsevier Health Sciences, 2013.
13. Odueko FD. Literature review on canine parvoviral enteritis variants in Nigeria. J Dairy Vet. Anim. Res. 2020;9(1):26-32.
14. Prittie J. Canine parvoviral enteritis: A review of diagnosis, management, and prevention. Journal of Veterinary Emergency and Critical Care. 2004;14(3):167-176, https://doi.org/10.1111/j.1534-6935.2004.04020
15. Reddy KB, Shobhamani B, Sreedevi B, Prameela DR, Reddy BS. Prevalence of canine parvo viral infection in dogs in and around Tirupathi of India. International Journal of Livestock Research. 2015;5(3):93-98.
16. Sharma S, P Dhar, M Sharma. Study of different risk factors for Canine Parvovirus infection by Haemagglutination assay. Journal of Animal Research. 2019;9(5);735-739.
17. Singh D, AK Verma, K Amit, S Mukesh, SK Singh, AK Tripathi, *et al.* Detection of Canine Parvo Virus by polymerase chain reaction assay and its prevalence in dogs in and around Mathura, Uttar Pradesh, India. American Journal of Biochemistry and Molecular Biology. 2013;3(2):264-270.
18. Tanwar J, Bihani DK, Choudhary S, Jain G, Chahar A. Prevalence of canine parvovirus infection in Bikaner (Rajasthan) by polymerase chain reaction. Prevalence. 2020;100(30):30.
19. Vaishali, Jain T. Canine Parvovirus Infection: A Case Report. International Journal of Current Microbiology and Applied Sciences. 2020;9(2):2993-2996. https://doi.org/10.20546/ijcmas.2020.902.342