



Studies on the Occurrence of Canine Distemper in Gannavaram: Investigating Viral Prevalence and Impact in Domestic Dog Populations

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The present study was conducted at the Veterinary Clinical Complex, NTR College of Veterinary Science, Gannavaram to highlight the occurrence of canine distemper in dogs. A total of 3905 dogs of various breeds and age groups were screened for canine distemper based on clinical examination and case history. Of these, 72 dogs exhibiting neurological and other signs suggestive of canine distemper were subjected to PCR of which 44 cases were confirmed, resulting in an overall disease prevalence of 1.13%. Age-wise analysis indicated the highest occurrence (61.36%) in dogs aged 1 to 5 years, and males represented 59.09% of the cases among the affected dogs, majority were non-descript breeds (52.28%), and 93.18% of infected dogs were unvaccinated. These findings align with previous research, reaffirming the increased susceptibility of unvaccinated or incompletely vaccinated dogs to canine distemper. Additionally, the study noted breed- and age-related variations in disease prevalence, consistent with earlier reports. The results underscore the pivotal role of timely vaccination and booster administration in reducing canine distemper incidence. Regular vaccination is essential for maintaining protective immunity, particularly in dogs exposed to stressful environments, immunosuppressive factors, or direct contact with infected animals. These insights may help inform public health efforts and pet care strategies aimed at controlling the spread of canine distemper.

Keywords: Canine distemper; prevalence; vaccination.

1. INTRODUCTION

The popularity of owning a dog as a pet has increased over the years with the fast-changing socio-economic scenario of our country. Pet ownership has risen worldwide as the COVID outbreak forced people to stay indoors for extended periods. The strong bonding between owners and their pet dogs lead to the concern about the health and well-being of the later.

The common diseases of dogs can be categorized into infectious, noninfectious, and non-specific diseases [1]. The prevalence of infectious diseases in dogs was 53.8 % followed by non-infectious diseases with least prevalence of non-specific diseases [2]. The exposure of the pet dogs with vast amount of free roaming street dog population which were believed to be potential spreaders of infectious diseases, might be a reason of higher incidence of infectious disease. Canine distemper virus (CDV) is a member of the morbilli virus genus (*Paramyxoviridae*) and has a negative strand non segmented RNA genome. Although vaccination against canine distemper has been used widely for many decades, this infection still represents an important disease for dogs. Canine distemper is an acute or subacute highly contagious febrile disease that may include respiratory, gastrointestinal, and central nervous system (CNS) disease. The CNS manifestation may occur during the acute phase of the disease or several weeks or even months later and causes high

mortality rates [3], particularly in unvaccinated dogs or dogs with incomplete vaccination.

The disease is clinically characterized by temporal twitching, abdominal pustules, diphasic fever, ocular and nasal catarrh, gastrointestinal disturbances, pneumonic and neurological complications. The case fatality rate is too high when compared to all other canine diseases after Rabies and Seroprevalence of CDV had been reported to be 70% from south India [4]. Age wise incidence of canine distemper was found to be higher in dogs below 6 months age [5,6].

The endemic nature of the disease, changes in seasonal prevalence and the resultant high morbidity as well as mortality in many dogs including stray dogs are the big challenges for Veterinarians despite following the regular vaccination schedule in dogs in India. The present study was undertaken to study the occurrence of canine distemper in Andhra Pradesh, India.

2. MATERIALS AND METHODS

In the present study a total of 3905 dogs of different breeds, age groups of either sex were presented to Small animal Medicine ward, Veterinary Clinical complex, NTR College of Veterinary science, Gannavaram during the period between May 2021 to December 2021. Out of which 72 dogs were selected based on history and clinical observations. Blood samples were collected from all the selected dogs and were subjected to RT PCR for confirmation [7].

3. RESULTS AND DISCUSSION

A total of 3905 dogs were observed for signs of canine distemper during the period of study and 72 suspected animals with suggested clinical signs like vomiting, diarrhoea, oculonasal discharges, cutaneous lesions and nervous signs were selected and screened for canine distemper. Out of 72 cases screened, 44 dogs were positive for canine distemper thus representing an occurrence of 1.13% among the total dogs. The occurrence of canine distemper observed in the present study was in agreement with the earlier reports of Sharma [8] and Yama et al. [5] who recorded the prevalence of canine distemper as 2.34 and 1.11%, respectively. On the contrary, some authors reported a higher occurrence of canine distemper. Avizeh et al. [9], Guedes et al. [10], Luo et al. [11], Ogbu et al. [12], Shurbe [13], Desai et al. [6] and Saaed and Al-Obaidi [14] and recorded 17.52%, 32.30%, 28.5%, 45.0%, 22.9%, 19.5% and 77.77% prevalence, respectively from suspected dogs. These variations in the occurrence could be due to several extrinsic factors like geographical, environmental and managemental practices or differences in sample size. The diagnostic method used, breed variations as well as welfare conditions for pet dogs in those regions might have led to the differences in prevalence [15].

It was evident in the present study that age wise occurrence of canine distemper (Table 1) was more in dogs aged between 1 -5 years (61.36%) followed by dogs aged above 5 years (18.18%) and up to 6 months (15.92%) and was less in dogs aged between 6-12 months (4.54%). The findings of this study were almost in concurrence with those of Latha et al. [4] and Jesus et al. [16] who reported higher prevalence in 1-5 years of age and between 2-8 years of age respectively.

Contrary to this, the studies by Nelson and Couto [17], Budaszewski [18] and Luo et al. [11] reported higher prevalence in young puppies of less than 1.5 year. In this study all age groups showed positive results with emphasis on dogs aged between 1-5 years. These findings gained support by Luo et al. [11] who documented that the prevalence of CDV infection ranged from 6.0 % to 61.9 % in different ages and opined that prevalence of distemper in dogs had no age predilection.

The gender wise occurrence of canine distemper (Table 1) was higher in males (59.09%) than females (40.91%) which was similar to that observed by Jesus et al. [16]. However several previous studies [19,4,12,13] documented that gender had no influence on the prevalence of canine distemper because of equal exposure of both genders to the virus.

The occurrence of canine distemper was observed more in non-descript dogs (52.28%) followed by Pomeranian (22.73%), German Shepherd (11.36%) and 6.82% in Labrador Retriever. The present finding was in accordance with the observations of Headley and Graca [19], Budaszewski et al. [18] and Ogbu et al. [12] and Sharma [8]. This could be due to the fact that nondescript breeds receive less attention and were allowed to stray about without adequate vaccinations whereas exotic breeds were well confined and properly vaccinated or it could be due to variation in the immune status and management among different breeds [13]. Conversely, Luo et al. [11] reported higher occurrence in pure breeds. The relative breed wise differences in the prevalence of canine distemper in the present study might be due to distribution of a particular breed in the geographical area under study (Table 1).

Table 1. Epidemiological factors: age, gender, breed and vaccination status canine distemper cases

Age wise distribution of canine distemper in dogs (n = 44)		
Age group	No of infected dogs	Percentage
Up to 6 months	7	15.92
>6-12 months	2	4.54
Between 1-5 years	27	61.36
> 5 years	8	18.18
Total	44	100
Gender wise distribution of canine distemper in dogs (n= 44)		
Gender	No of infected dogs	Percentage
Male	26	59.09
Female	18	40.91
Total	44	100
Breed wise distribution of canine distemper in dogs (n=44)		
Breed	No of infected dogs	Percentage
Nondescript	23	52.28
Pomeranian	10	22.73

Breed wise distribution of canine distemper in dogs (n=44)		
Breed	No of infected dogs	Percentage
German Shepherd	5	11.36
Labrador Retriever	3	6.82
Shih Tzu	1	2.27
Pug	1	2.27
Saint Bernard	1	2.27
Total	44	100
Vaccination status among the dogs infected with canine distemper (n=44)		
Vaccination status	No of infected dogs	Percentage
Vaccinated	3	6.82
Unvaccinated	41	93.18
Total	44	100

Out of canine distemper infected dogs 93.18 % were unvaccinated and 6.82 % were vaccinated (Table 1) which was similar to the findings of Garde et al. (2013); Luo et al. [11] and Abirami et al. [20]. This could be due to improper immune status as reported by Martella et al. [21]. Latha et al. [4] reported that lack of regular vaccination resulted in higher incidence of the disease. Dogs that did not receive periodic immunizations might lose their protection and become infected when exposed to stress, immunosuppression, or contact with diseased individuals. The occurrence of infection in vaccinated dogs in the present study was in agreement with Temilade et al. [22] and Kapil and Yeary [23] who also recorded canine distemper infection in vaccinated dogs and was ascribed to improper immunization, poor storage of the vaccine, stress and use of polyvalent vaccine which could be the reason for vaccination failure as opined by Sharma [8].

4. CONCLUSION

Overall occurrence of canine distemper was 1.13%. and majority (61.36%) of the affected dogs were aged between 1 to 5 years significantly, 93.18% of the infected dogs were unvaccinated. The study further revealed that the majority of affected dogs were of the Nondescript breed (52.28%), followed by Pomeranians (22.73%) and a higher prevalence was observed in male dogs (59.09%). These findings emphasize the critical role of vaccination and highlight the increased risk among specific breeds, age groups, and gender.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Generative Ai technology was used during the writing and editing of this manuscript specifically ChatGPT 4.0 was employed for paraphrasing and grammar checking. The input prompts provided to ChatGPT included request for improving grammatical accuracy only.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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