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Administration of a multivalent vaccine (DHPPiL) ameliorates neurological signs in dogs with canine distemper: A pilot study

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Abstract
Canine distemper is deadly viral disease of carnivores like dogs there is no proven line of treatment in clinically affected animals exhibiting nervous symptoms like myoclonus even after recovery. The current studying was aimed at studying the effectiveness of DHPPiL vaccine in nondescriptive dogs suffering from canine distemper. Each dog received a vaccination on day 2 and a booster dose on day 14. The primary objective was to assess the efficacy of this vaccination regimen in mitigating the clinical signs associated with CDV. Seven out of nine dogs recovered from clinical illness including nervous symptoms without any adverse side effects. This study contributes to the further understanding of vaccination in managing canine distemper with clinical manifestation in nondescriptive dogs.

Keywords: CDV, Myclonus, non-descript dogs, DHPPiL

1. Introduction
Canine distemper (CD) is a frequent and dangerous disease caused by the canine distemper virus (Amude AM *et al*., 2007) [1]. It is the second deadliest viral disease in dogs after rabies (Imhoff H *et al*., 2007) [2]. CDV belongs to the Morbillivirus genus of the Paramyxoviridae family (Lempp C *et al*., 2014) [3]. Currently, there is no particular antiviral treatment for CDV, only supportive medications like as fluids, antibiotics, and corticosteroids are available (Xue X *et al*., 2019) [4] (Beineke A *et al*., 2009) [5]. In spite of supportive therapy, the prognosis for canine distemper is poor. As a result, an effective treatment is required to lower the fatality rate and associated problems [9].

2. Materials and Methods
9 ND dogs were reported to Veterinary Dispensary Vanapuram, Kalakuruchi District of Tamil Nadu with the symptoms of Canine Distemper like pyrexia, mucopurulent discharge, abdominal pustules, hyperkeratosis of foot and myoclonus were selected for the study. A detailed medical history of the animals were recorded that includes records of prior treatments, deworming, and immunizations, the animals were not vaccinated against CD earlier. The animal owners were informed about the treatment plan and gave their consent before it was initiated.
Rapid diagnostic kit tests (Anigen Rapid CDV Ag Test Kit; BioNote, Hwaseong, Korea) were performed on serum samples to confirm canine distemper serologically. The live attenuated (DHPPiL) vaccine (Nobivac) was administered subcutaneously to the infected dogs on day 2 and day 14.

Table 1: Treatment protocol

	Drug	Dose	Route of administration
DAY 1	Inj.Melonex	0.2 mg / kg	I/M
	Inj.Intacef	0.5 mg / kg	I/V
	Inj. Neurobion	2 ml	I/V
	Bifilac sachet	one	Oral
	Candist syrup	2 ml (BID)	Oral
DAY 2	Inj. DHPPiL - I st Dose	1 dose	S/C
	Inj.Neurobion	2 ml	I/V
	Bifilac sachet	one	Oral
	Candist syrup	2 ml (BID)	Oral
DAY 14	Inj. DHPPiL - II nd Dose	1 dose	S/C

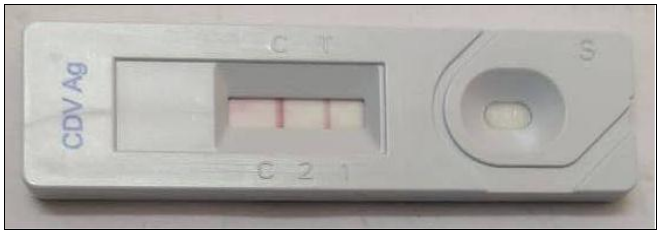

Fig 1: Anigen Rapid CDV Ag Test Kit, showing positive for CDV in serum sample collected from infected dog.

Dogs were observed for six months, during which time their clinical signs were assessed for improvement or deterioration.

3. Results and Discussion

All the 9 dogs tested positive for CD by rapid diagnostic kit. 7 out of 9dogs cured from the disease as evidences by the absence of clinical symptoms especially myoclonus. The dogs also tested for the presence Ag by rapid diagnostic kit on day 28 to 30 and found to be negative even though the owners were advised to give neurobion tablets 200mcg orally twice a day for about two months. Two dogs have died before the administration of second dose of DHPPiL.

Nine canines in the current study had myoclonus. Myoclonus in dogs also occurrs in other conditions like central nervous system lesions, lead poisoning, some parasitic infection etc., hence the differential diagnosis was made through hematological, biochemical, blood smear analysis and analysis of medical histories of the dogs (Greene CE, 2012) [10]. The results of immuno assay on serum sample using the fast diagnostic kit results correlated closely, therefore all the nine canines were positive for the test.

Almost all of the neurological problems were subsided following multivalent DHPPiL vaccination therapy. Anti-distemper antibody levels in the blood and central nervous system may be higher as a result of this. The virus is less prevalent in the blood, secretions, and central nervous system (CNS) as anti-viral antibodies become more prevalent in these tissues. For this reason, even when the animal is affected by the virus, these techniques could miss it.

The study's findings revealed that 7 out of 9 dogs were recovered and nervous symptoms were subsided after treatment. Considering the poor prognosis associated with nervous distemper, this was a notable improvement, and it was hoped that future research would concentrate on this problem to increase the number of dogs who recover from the illness (Larson LJ *et al*.,2006) [6], (An DJ *et al*.,2008) [7]. Despite the fact that using a larger statistical population makes for more accurate decision-making. None of the nine dogs in the current study experienced any negative side effects with multivalent vaccine. The findings of this study may therefore indicate that the vaccine's first adverse effects were minimal and that animal owners may eventually find them to be acceptable. Even in dogs exhibiting neurological symptoms, the multivalent (DHPPiL) vaccine has been shown to improve the recovery rate from distemper and be helpful in empirical clinical practice. It's unknown exactly how the multivalent (DHPPiL) vaccination works to treat patients. Since antibodies are not formed in the donor dog within 10 to 12 hours following the vaccination, they undoubtedly have no effect on the course of treatment.

It is believed that a number of unidentified cytokines excite the immune system, resulting in a swift immunological response that eradicates the distemper virus. The multivalent (DHPPiL) vaccine might have produced some protective cytokines after initial administration which might have reduce the viral load.

A conclusive scientific report on the administration of the multivalent (DHPPiL) vaccine does not exist, despite a number of empirical clinical reports. In order to treat canine distemper, this study examined the effectiveness of the multivalent (DHPPiL) vaccination.

Therefore, this study set out to find out how the multivalent (DHPPiL) vaccine affected the way neurological distemper symptoms were treated.

4. Conclusion

The present study highlights the use of vaccination as a strategy to manage canine distemper infection in dogs which has no prove standard treatment regime in alleviating the nervous signs after recovery from clinical illness. This research offers a fresh perspective as managing this deadly illness to the field veterinarian /vet professional.

5. Conflict of Interest

Not available

6. Financial Support

Not available

7. References

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