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Profiling of canine distemper virus infection from Small Animal Veterinary Clinics in Cities of Nueva Ecija, Philippines

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ABSTRACT: Canine distemper virus (CDV) is a highly contagious and lethal pathogen that affects domestic and wild mustelids. This retrospective study analyzed 267 CDV cases from veterinary clinics in Nueva Ecija Philippines over three years (2020-2022). Data including age, sex, breed, vaccination status, and clinical signs were analyzed using the chi-square test. The highest infection rate (38.95%) was observed in dogs aged ≥ 13 months. Females showed higher clinical signs (53.18%) than males (43.82%). Toy breeds were the most affected (38.58%), and 68.54% of the cases were unvaccinated. Nasal discharge was the most common symptom (46.44%). The incidence of CDV peaked during the rainy season, with Cabanatuan City reporting the highest number of cases. A significant association was observed between age (p=0.003), breed (p=0.042), and CDV infection.

Keywords:
canine distemper virus, prevalence, dog, Nueva Ecija, Philippines

■ INTRODUCTION

Canine distemper is a highly lethal viral disease caused by the canine distemper virus (CDV), a member of the Morbillivirus genus within the Paramyxoviridae family, which includes viruses like measles and phocine distemper (Martinez-Gutierrez & Ruiz-Saenz, 2016). Recognized since 1760 as a highly infectious acute febrile disease in dogs (Rendon-Marin *et al*., 2019), CD poses a serious threat due to its high morbidity and mortality rates (Gastelum-Leyva *et al*., 2022). It affects a wide range of species, primarily within the Carnivora order, but also Rodentia, Primates, Artiodactyla, and Proboscidea (Rendon-Marin *et al*., 2020). In domestic dogs, CDV is transmitted via respiratory exudates, urine, and saliva (Rendon-Marin *et al*., 2019). CDV infections are globally widespread, affecting domestic dogs and wildlife across continents, including South Africa, Nigeria, the U.S., Europe, and Asia (Woma, 2010; Fitzgerald *et al*., 2022). Notably, CDV is endemic in Asia, with cases in Japan, Thailand, Korea, and China (Wang *et al*., 2021). In Indonesia, the first adolescent melanistic Javan leopard case was reported (Rahman *et al*., 2022). Mapping CDV in the Philippines is crucial for guiding effective prevention and treatment policies.

■ MATERIALS AND METHODS

Data were collected from veterinary clinics in Nueva Ecija Philippines through email and social media. Medical records, including age, breed, sex, clinical signs, vaccination status, and owner address, were manually recorded for rapid test kit-positive cases. The data were encoded in Microsoft Excel for accuracy and consistency and presented as tables, graphs, and maps for spatiotemporal analysis and disease profiling. Descriptive analysis evaluated nominal variables, and the significance of sex, age group, breed, clinical signs, and vaccination status was assessed using crosstabs and the chi-squared test of independence. Significant results ($P<0.05$) indicated the degree of relatedness between variables.

■ RESULT AND DISCUSSION

Table 1 indicates that dogs aged 13 months and older are most affected by CDV due to increased lifetime exposure, leading to higher susceptibility (Curi., 2016). Maternal antibody interference often weakens *et al* vaccine-induced immunity (Latha *et al*., 2007). Females show higher infection rates, but males have a higher fatality rate, likely due to sex steroid variations (Mahajan *et al.*, 2018). Toy breeds are more commonly infected, possibly due to head conformation affecting the olfactory bulb (Hussein *et al*., 2012). Common symptoms include nasal discharge (46.44%), ocular discharge (36.33%), and inappetence (34.46%), complicating diagnosis. CDV cases peaked during the rainy season from 2020 to 2022, with Cabanatuan City reporting the highest incidence (101 cases). Figure 1 shows the spatial distribution of CDV, with 14 cases in nine districts of San Jose, mainly Abar 1st; 101 cases in Cabanatuan, centered at Mabini Homesite; 18 cases in Gapan, focused on Marelo; and 84 cases in Muñoz, predominantly at Bantug.

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Table 1. Profiling of canine distemper virus infection from Small Animal Veterinary Clinics in Cities of Nueva Ecija, Philippines.

Parameters	Detail	Freq., (%)
Age	0-6 months	80, (29.96)
	7-12 months	70, (26.22)
	> 13 months	104, (38.95)
	Unknown	13, (4.87)
	p-value	0.003
Sex	Female	142, (53.18)
	Male	117, (43.82)
	Unknown	8, (3.00)
Breeds	Sporting dogs	24, (8.99)
	Hounds	11, (4.12)
	Terriers	6, (2.25)
	Working dogs	48, (17.98)
	Herding dogs	3, (1.12)
	Toys	103, (38.58)
	Non-sporting dogs	17, (6.37)
	Mongrel	52, (19.48)
	Unknown	3, (1.12)
	p-value	0.042
Vaccination	With	79, (29.59)
	Without	183, (68.54)
	Unknown	5, (1.87)
Clinical Signs	Anorexia	14, (5.24)
	Circling or head tilt	13, (4.87)
	Coughing	40, (14.98)
	Diarrhea	39, (14.61)
	Fever	9, (3.37)
	Hardening of nose and foot pads	10, (3.75)
	Hyperkeratosis	5, (1.87)
	Inappetence	92, (34.46)
	Lethargy	54, (20.22)
	Nasal discharge	124, (46.44)
	Ocular discharge	97, (36.33)
	Seizure	72, (26.97)
	Vomiting	44, (16.48)
Season	Rainy (Jun-Nov)	132, (49.44)
	Cool dry (Dec-Feb)	53, (19.85)
	Hot dry (Mar-May)	82, (30.71)
Year	2020	88, (32.96)
	2021	92, (34.46)
	2022	87, (32.58)
City (district)	San Jose	14, (5.24)
	Cabanatuan	101, (37.83)
	Gapan	18, (6.74)
	Muñoz	84, (31.46)

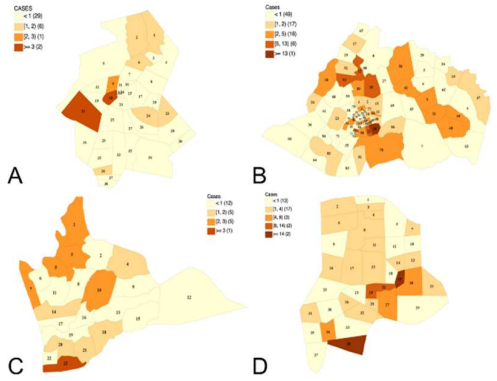

Figure 1. Spatial distribution of canine distemper from Small Animal Veterinary Clinics in Cities of Nueva Ecija, Philippines. (A) San Jose City, (B) Cabanatuan City, (C) Gapan City, and (D) Muñoz City.

■ CONCLUSION

A three-year study of 267 canine distemper cases in Nueva Ecija, Philippines, found unvaccinated dogs over 13 months old are most at risk, with infections peaking during the rainy season, especially in Cabanatuan City.

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