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Differential diagnosis of canine distemper and rabies: A case study

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Abstract

A 2-month-old, unvaccinated stray pup presented at Department of veterinary medicine, Bhubaneswar, Odisha. Clinical examination revealed that the dog is showing nervous signs of chorea. Bloody vomition and frothy discharge, bilateral ocular discharge was also seen. As the clinical signs are not clear so in order to rule out whether the nervous signs are due to the rabies or CDV, test has been done by rapid test kit (antigen rapid rabies Ag test kit), saliva and ocular swabs were collected from suspected dog for c-PCR targeting the N gene. This study suggested differential diagnosis of CDV and Rabies showing similar clinical signs or showing concurrent infection.

Keywords: Differential, canine, rabies, CDV

Introduction

Canine distemper is acute, highly infectious viral disease and the most important worldwide disease of domestic dogs (*Canis familiaris*), and its fatality rate is second only to that of rabies affect carnivores and domestic dogs of any age (Swango *et al.*, 1995)^[15]. It is classified in the Morbillivirus genus of the family Paramyxoviridae (Griffin, 2001; Murphy *et al.*, 1999). Morbillivirus is transmitted by aerosols or direct contact. The most notorious property of Morbillivirus infection is the establishing of severe transitory immunosuppression (Messling *et al.*, 2003; Griffin, 2007). CD is common in young unvaccinated dogs, usually in their first year of life, but many cases are also seen in adults (Tipold, *et al.*, 1992). A number of vaccines against canine distemper are available for dogs and other domestic and nondomestic animals (Deem *et al.*, 2000). Rabies, an acute progressive encephalomyelitis caused by infection with viruses of the *Lyssavirus*. Usually transmitted through the saliva of an infected animal, rabies encephalitis has the highest fatality rate among infectious diseases with the average interval from clinical disease onset to death reported to be 5-7 days in furious rabies and 11 days in paralytic rabies (Rupprecht *et al.*). Survival from rabies is rarely seen. Antigen detection using fluorescent antibody test recommended by WHO and OIE, rapid rabies antigen kits are also available. Concurrent rabies and canine distemper encephalitis in a raccoon (*Procyon lotor*) is seen in New Jersey (Hamir *et al.* 1998).

Case History

A 2-month-old, unvaccinated stray pup presented at department of veterinary medicine, Bhubaneswar, Odisha with a complain that the dog is showing nervous signs of chorea, giving anxious look, frequent epilepsy upto 3 min then circling movement upto 5 min then seek for corner and sit. Bloody vomition and frothy discharge, bilateral ocular discharge also seen. Treated with-Inj. Optineuron, Inj. Prednisolone, Inj. Epsilon, Inj. Taxim, Inj. Ranitine. Due to severity of the condition, it doesn't show recovery towards treatment and dies late night.

Materials and Methods

As per owner request post mortem examination was done to rule out the cause of death. As the clinical signs were not clear so in order to rule out whether the nervous signs was due to rabies or CDV, test has been done by rapid test kit (antigen rapid rabies Ag test kit) by collecting the cerebral fluid, saliva and ocular swabs were collected from suspected dog for c-PCR targeting the N gene. Sample was collected in a 2ml ependorff tubes and were kept in ice- pack container. Saliva and ocular swabs collected from suspected dogs in sterile Phosphate Buffer Saline (1X PBS) in eppendorff tube were squeezed properly and centrifuged at 5000 rpm for 5

minutes in a centrifuge at 4 °C. Then samples were stored at -80 °C. The primers used for the amplification of N gene (243 bp) of CDV1622 (F)-(ACCTGGGACCAGTGAAGAGA) HPSF 0.01 scale,1864 (R) - (TCTCTCTGAGGGCTTTGAGG) HPSF 0.01 scale HF-(AACTTAGGGCTCAGGTAGTC) 0.05 scale PAGE, HR-(AGATGGACCTCAGGGTATAG) 0.05 scale PAGE. Brain homogenate sample (swab mixed with PBS 10:90) is collected for rapid rabies antigen kit.

Table 1: Procedure temp time cycles

S. No.	Procedure	Temp	Time	Cycles
1	Denaturation	95 °C	5 minutes	1 cycle
2	Denaturation	95 °C	30 seconds	35 cycles
	Annealing	55-60 °C	1 minute	
	Extension	72 °C	1 minute	
3	Extension	72 °C	10 minutes	1 cycle
		4 °C	∞	-

Result

In Post- mortem examination carcass was found dehydrated, lungs and liver was found haemorrhagic and heart was non-haemorrhagic, only little congestion was found (coronary vessel was found congested), in intestine there was absence of food and intestinal content, only frothy mixture of bile and mucus was present. Majority of the dogs remain silent (upto 70%) and excretion of the CDV with intermittent shedding pattern noted commonly (Greene and Appel, 1998). Some dogs shows gastrointestinal or respiratory form, frequently with CNS involvement. Vomiting is a common finding in early stages of infection. The oculo-nasal discharge was prominent systemic sign in study on neurologic distemper. In our case, it revealed that the dog was anorexic, showing nervous signs of chorea, anxious look, frequent epilepsy. Bloody vomition, frothy discharge and bilateral ocular discharge was also seen. By using the designed primers targeting N gene having 243 bp detected CDV through cPCR from sample of suspected dog (saliva and ocular) (fig.1). Negative result against rabies by using rapid antigen kit (fig. 2).



Fig 1: Band shown at 243bp positive for CD in c-PCR



Fig 2: Band showing negative result for Rabies by using rapid antigen kit

Conclusion

Detection of presence of rabies by antigen kit is done 1st time in Department of Veterinary Medicine Bhubaneswar, Odisha. This kit is easy to use, rapid and time saving.

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