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202

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LETTER

Possible Transmission Dynamics of Canine Distemper Virus at Khumbu Region of Nepal

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DEAR EDITOR,

Canine distemper caused by Canine Distemper Virus (CDV) belongs to the genus *Morbillivirus* of the family *Paramy-xoviridae* [1 - 3]. CDV is a highly contagious and neglected zoonotic disease that affects mainly the respiratory, gastrointestinal and central nervous system [4]. This virus occurs among domestic dogs and many other carnivores including wild animals such as raccoons, wolves, skunks and foxes. It is also frequently found in house pets and ferrets. Young, unvaccinated puppies and non-immunized older dogs are more susceptible to this disease [5 - 9]. However, CDV is preventable and has been controlled in many countries through the use of live attenuated vaccines in a similar manner to rabies. Based on the H gene of CDV; phyologenetic analysis revealed that fourteen major geographically genetic lineages of CDV including Asia1, Asia 2, Europe and America are widely distributed throughout the world [5, 10, 11].

CDV is considered a major public health concern among street dogs in Pokhara valley with one study reporting that CDV prevalence to be 2.3% [12]. While this may seem low, serum antibodies to CVD have been shown to be in high prevalence in another study of dog serum. This study was conducted in collaboration with Australian University and focused on dogs in the Khumbu region surrounding a wildlife sanctuary when tested by IgG ELISA as following the manufacture instructions [Demeditec Diagnostics GmbH, Germany] (Personal communication with NZFHRC team).

Khumbu is one of the popular tourist destinations of Nepal where rabies is still endemic and stray dogs are common. Information regarding the risk of rabies exposure among travelers is limited in Nepal. However, previous study conducted in Nepal shows that animal exposure occurs in Kathmandu and monkey bite/scratches accounts for 43% of all exposure to tourists in that area [13]. Tourists from different countries have different behaviors that can be related to higher or lower risk of animal exposure. Another important factor could be that rabies is endemic in the region. The Khumbu area is a forest fringe where wild animals like jackals, bats, wolves and wild dogs are found which can act as a wildlife reservoir for rabies which can then spill over into other more domesticated animals. Not only travelers but local people especially children are inevitably at risk as well [13].

Foreign residents of Nepal are significantly more likely to be exposed to rabies than tourists. Trekking does not increase the chances of being exposed to rabies. Children have a higher risk of being bitten on the face and head, and females are more likely than males to be bitten or scratched by possibly rabid animals [13]. However, to present date there is no data available regarding the testing of surveillance for CDV either in dogs or wild life animals in Nepal.

Therefore, Government of Nepal should initiate active surveillance of both diseases (rabies and CDV) in stray dogs as well as on wild carnivores near protected areas of Nepal like Khumbu region to further prevent the outbreak of these two zoonotic diseases to human population living near the buffer zone. The government of Nepal has initiated active surveillance of both diseases (rabies and CDV) in stray dogs and carnivores wild animals to prevent the outbreak of these both zoonotic diseases to human population. It is recommended that a regular vaccination control policy programme, diagnosis, treatment, online record keeping system and risk assessment should be undertaken.

REFERENCES

[1] Appel MJ, Summers BA. Pathogenicity of morbilliviruses for terrestrial carnivores. Vet Microbiol 1995; 44(2-4): 187-91. [http://dx.doi.org/10.1016/0378-1135(95)00011-X] [PMID: 8588312]

[2] Nambulli S, Sharp CR, Acciardo AS, Drexler JF, Duprex WP.

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Mapping the evolutionary trajectories of morbilliviruses: What, where and whither. Curr Opin Virol 2016; 16: 95-105. [http://dx.doi.org/10.1016/j.coviro.2016.01.019] [PMID: 26921570]

[3] Swati DD, Deka D, Uppal SK, Verma R. Isolation and phylogenetic characterization of *Canine distemper virus* from India. Virus dis 2015; 26(3): 133-40. [http://dx.doi.org/10.1007/s13337-015-0256-x] [PMID: 26396979]

[4] Feng N, Yu Y, Wang T, *et al.* Fatal canine distemper virus infection of giant pandas in china. Sci Rep 2016; 142(6): 27518.

[5] Cheng Y, Wang J, Zhang M, *et al.* Isolation and sequence analysis of a *canine distemper virus* from a raccoon dog in Jilin Province, China. Virus Genes 2015; 51(2): 298-301. [http://dx.doi.org/10.1007/s11262-015-1236-3] [PMID: 26265248]

[6] Deem SL, Spelman LH, Yates RA, Montali RJ. Canine distemper in terrestrial carnivores: A review. J Zoo Wildl Med 2000; 31(4): 441-51. [http://dx.doi.org/10.1638/1042-7260(2000)031[0441:CDITCA]2.0.CO;2] [PMID: 11428391]

[7] Qiu W, Zheng Y, Zhang S, *et al.* Canine distemper outbreak in rhesus monkeys, China. Emerg Infect Dis 2011; 17(8): 1541-3. [http://dx.doi.org/10.3201/eid1708.101153] [PMID: 21801646]

[8] Zeng X, Liu LL. Variations of haemagglutinin in protein gene of *Canine distemper virus* isolated from breeding fox and raccoon dog. Shou Lei Xue Bao 2008; 28: 217-20.

[9] Zhang H, Shan F, Zhou X, *et al.* Outbreak and genotyping of *Canine distemper virus* in captive Siberian tigers and red pandas. Sci Rep 2017; 7(1): 8132. [http://dx.doi.org/10.1038/s41598-017-08462-4] [PMID: 28811626]

[10] Nguyen DV, Suzuki J, Minami S, *et al.* Isolation and phylogenetic analysis of *Canine distemper virus* among domestic dogs in Vietnam. J Vet Med Sci 2017; 79(1): 123-7. [http://dx.doi.org/10.1292/jvms.16-0394] [PMID: 27746406]

[11] Swati DD, Deka D, Uppal SK, Verma R. Isolation and phylogenetic characterization of Canine distemper virus from India. Virus disease 2015; 26(3): 133-40. [http://dx.doi.org/10.1007/s13337-015-0256-x] [PMID: 26396979]

[12] Acharya M, Dhakal S. Major health problems and diseases of street dogs in pokhara valley, Nepal AJOR. Int J Appl Sci Biotechnol 2016; 4(1): 53-6. [http://dx.doi.org/10.3126/ijasbt.v4i1.14571]

[13] Pandey P, Shlim DR, Cave W, Springer MF. Risk of possible exposure to rabies among tourists and foreign residents in Nepal. J Travel Med 2002; 9(3): 127-31. [http://dx.doi.org/10.2310/7060.2002.23219] [PMID: 12088577]