Updates on Low-level of Infection with COVID-19 in Pet Dog

(Updated on 27 March 2020)

Background

On 26 February, the Agriculture, Fisheries and Conservation Department (AFCD) received a referral from the Department of Health that a dog of a patient with COVID-19 would be handed over to AFCD. Staff of AFCD picked up the dog from a residential flat at Tai Hang that evening and sent the dog to the animal keeping facility at the Hong Kong Port of Hong Kong-Zhuhai-Macau Bridge. Oral, nasal, rectal and faecal samples were collected for testing for COVID-19 virus. The nasal and oral cavity samples tested weak positive for the virus on 27 February.

Subsequent tests revealed weak positive results for the nasal and oral samples taken on 28 February and similar results only for the nasal sample on 2 March, five days after it was removed from the household, indicating that the dog has a low level of infection.

Samples taken on 12 and 13 March were tested negative for COVID-19 virus and the dog was released back to its owner on 14 March. The dog did not show any signs of disease related to COVID-19 throughout the quarantine period.

Frequently Asked Questions

1. **What does tested "weak positive" mean?**
   The result indicates that there was a small quantity of COVID-19 viral RNA in the samples. It does not, however, tell whether the samples contain intact viruses which are infectious or just fragments of the RNA, which are not contagious. Virus isolation was performed on previous samples taken from the Pomeranian and the result was negative, indicating that no live virus was retrieved.

2. **What tests were used, and were they specific for the COVID-19 virus?**
   Testing on the samples was conducted by the laboratories of AFCD and the School of Public Health of The University of Hong Kong (HKU), the latter being one of the World Health Organization (WHO) reference laboratories for testing for this virus. Both laboratories used the real time reverse transcription polymerase chain reaction (RT PCR) method.

   RT PCR is a very sensitive test which can detect minute amount of the COVID-19 viral RNA in a sample. The tests conducted are specific and will not cross react with other coronaviruses of dogs or cats.

   Consistent results were obtained by AFCD and HKU.

3. **Why are the retests necessary?**
The dog was removed from the household, which was the possible source of contamination, on 26 February. Retesting was performed after the dog was put under quarantine to help determine whether the dog was in fact infected or whether its mouth and nose were being contaminated with COVID-19 virus from the household.

4. **What are the retest results? And what do the results mean?**
Subsequent tests revealed weak positive results for the nasal and oral samples taken on 28 February and only for the nasal sample taken on 2 March. The rectal and faecal samples tested negative on all three occasions. The "weak positive" result from the nasal sample taken 5 days after the dog was removed from the possible source of contamination suggests that the dog has a low-level of infection and it is likely to be a case of human-to-animal transmission.

5. **What other tests had been done?**
A blood sample was taken on 3 March for initial serological testing for antibodies specific to the virus causing COVID-19 and the result was negative. However, further serological testing has been conducted at the World Health Organization reference laboratory at the University of Hong Kong (HKU) on the blood sample taken on 3 March and the final test result is positive. The final result reconfirmed that the dog has been infected with the virus.

6. **Has gene sequencing been conducted?**
AFCD, together with the School of Public Health of the University of Hong Kong, has conducted gene sequencing of the COVID-19 virus from the dog and its close contact persons who were confirmed infected. The viral sequences are very similar. The sequence results indicate that the virus likely spread from the infected persons and subsequently infected the dog.

7. **According to WHO, there is no evidence that pets could be infected with the disease or transmit the disease. How does this correlate with your recent findings?**
COVID-19 is a newly emerged disease and scientists are still trying to understand more about it. The situation is rapidly evolving and information will be updated as it becomes available.

   However, there is still no evidence at this time that mammalian pet animals including dogs and cats could be a source of infection to other animals or humans. AFCD has formally reported the case to World Organisation for Animal Health (OIE) and OIE has already been in contact with AFCD to look into the case.

8. **What about dogs or cats in other households with confirmed human cases?**
We strongly advise that mammalian pet animals including dogs and cats from households with persons confirmed as infected with COVID-19 or as close contacts of COVID-19 infected persons should be put under quarantine in AFCD facilities

to safeguard public and animal health. We will review the arrangement from time to time taking into account the latest information available.

9. Can pets spread COVID-19?

At present, there is no conclusive evidence that pet animals such as dogs or cats can spread COVID-19 or that pet animals can be a source of infection to people. This is, however, a rapidly evolving situation and information will be updated as it becomes available.

10. What should pet owners do?

There is no evidence that pets will get sick from COVID-19 or cause human infections. The best way to prevent COVID-19 is to adopt good hygiene practices (including hand washing before and after being around or handling animals, their food, or supplies, as well as avoiding kissing them) and to maintain a clean and hygienic household environment. People who are sick should restrict contacting animals. If pets are sick, advice from a veterinarian should be sought as soon as possible.

11. What pet owners should not do?

There is currently no evidence that pet animals play a role in the spread of this human disease or that they become sick. Pet owners need not be overly concerned and under no circumstances should they abandon their pets. If for some reasons an owner is no longer able to look after his/her pet, he/she should contact AFCD (or an animal welfare organisation) for advice and assistance.

12. What should veterinarians do?

Given the absence of clinical signs in this dog, we recommend that veterinarians should review infection control measures in their practices and maintain a high level of vigilance at all times. They should use personal protective equipment (e.g. gloves, masks) and perform routine disinfection of the environment. When conducting examinations of pets with a known or suspected history of connection to the household of a confirmed case, veterinarians should take appropriate precautions to mitigate possible risks that the pets and / or pet carriers etc. may act as a fomite. They should also advise their clients to wear masks when they attend veterinary hospitals.

If their clients have any concerns upon the recent case of a dog tested positive for the COVID-19 virus, veterinarians may help advise their clients that there is no evidence yet that pets can spread the virus to humans and that the quarantine arrangements adopted by AFCD are precautionary measures to safeguard public and animal health.

Should there be any unusual situation detected in any animal, veterinarians are advised to report it immediately to AFCD through the 1823 hotline.

13. **If there is not yet conclusive evidence that pets can be a source of infection, why do pets from households with confirmed human cases need to be put under quarantine by AFCD?**

    Although there is no evidence yet that pets can transmit the virus to other pets or back to humans, we strongly advise that mammalian pets including dogs and cats from households with persons confirmed as infected with COVID-19 or as close contacts of COVID-19 infected persons should be put under quarantine in AFCD facilities to safeguard public and animal health. We will review this arrangement from time to time taking into account new information that becomes available.

Agriculture, Fisheries and Conservation Department

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