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Subject: PRO/AH/EDR> COVID-19 update (76): China (HU) animal, cat, owned, stray, seropositive

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CORONAVIRUS DISEASE 2019 UPDATE (76): CHINA (HUBEI) ANIMAL, CAT, OWNED, STRAY, SEROLOGY POSITIVE

A ProMED-mail post

<http://www.promedmail.org>

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<http://www.isid.org>

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Source: bioRxiv (preprint, not peer reviewed) [edited]

<https://doi.org/10.1101/2020.04.01.021196>

ref: Zhang Q, Zhang H, Huang K, et al. SARS-CoV-2 neutralizing serum antibodies in cats: a serological investigation. bioRxiv (preprint, not peer reviewed); <https://doi.org/10.1101/2020.04.01.021196>.

Summary

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first reported in Wuhan, China, and rapidly spread worldwide. Previous studies suggested cat could be a potential susceptible animal of SARS-CoV-2. Here, we investigated the infection of SARS-CoV-2 in cats by detecting specific serum antibodies. A cohort of serum samples were collected from cats in Wuhan, including 102 sampled after COVID-19 outbreak and 39 prior to the outbreak. A total of 15 of 102 (14.7%) cat sera collected after the outbreak were positive for the receptor binding domain (RBD) of SARS-CoV-2 by indirect enzyme-linked immunosorbent assay (ELISA). Among the positive samples, 11 had SARS-CoV-2 neutralizing antibodies with a titer ranging from 1/20 to 1/1080. No serological cross-reactivity was detected between the SARS-CoV-2 and type I or II feline infectious peritonitis virus (FIPV).

Our data demonstrate that SARS-CoV-2 has infected the cat population in Wuhan during the outbreak.

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communicated by

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[Of the 15 ELISA-positive cats, 3 were home-kept (owned by COVID-19 patients); they presented the highest neutralization titers. The other 12 cats came from pet hospitals or were stray cats -- 6 each. No information on clinical signs in any of the tested cats is

included.

These results are in agreement with earlier reports on 2 PCR-positive cats that had been exposed to their COVID-19-infected owners: one from Belgium (with mild clinical signs, see 20200327.7151215) and the other one from Hong Kong (without clinical signs, 20200402.7173286). The current report is also in agreement with the results of an experimental infection trial, undertaken by HVRI (Harbin, China), which revealed that SARS-CoV-2 will infect cats both by inoculation as well as by contact with infected cats (item 2 in the said posting).

The possible role of cats in the epidemiology of COVID-19 is yet to be further studied; their infection could rather present a case of anthroponosis. This, obviously, does not preclude the need to prevent exposure of humans to infected cats or other pets. Excrements from infected stray cats may, at least theoretically, contribute to environmental contamination (for example, Wuhan's seafood market?).

OIE's Q&A on COVID-19 in animals was updated 1 Apr 2020; see at <https://www.oie.int/en/scientific-expertise/specific-information-and-recommendations/questions-and-answers-on-2019novel-coronavirus/>.

So far, Hong Kong (SAR-PRC) officially reported 3 cases of COVID-19 (SARS-COV-2) in pets (2 dogs, one cat), as "emerging disease", to the OIE:

- https://www.oie.int/wahis_2/public/wahid.php/Reviewreport/Review/viewsummary?fupser=&dothis=&reportid=33455

- https://www.oie.int/wahis_2/public/wahid.php/Reviewreport/Review/viewsummary?fupser=&dothis=&reportid=33684

- https://www.oie.int/wahis_2/public/wahid.php/Reviewreport/Review/viewsummary?fupser=&dothis=&reportid=33832

The Belgian infected cat was reported to the OIE in a written report available at https://www.oie.int/fileadmin/Home/eng/Our_scientific_expertise/docs/pdf/COV-19/Belgium_28.03.20.pdf.

The 4th call of OIE's ad hoc Group "COVID-19 the human-animal interface" was held on 31 Mar 2020. The meeting's notes are available at https://www.oie.int/fileadmin/Home/eng/Our_scientific_expertise/docs/pdf/COV-19/4th_call_OIE_informal_advisory_group_on_COVID19_and_animals.pdf.

The notes include, among other information, the following:

1. In the USA, a research institute is planning on doing experimental infection studies in brown bats (which have a long range) to address the research question, "If humans introduce SARS-CoV-2 infections into brown bats, could they become a reservoir?"
2. The OIE project "EBO-SURSY" is proposing to test 3000 samples already collected from bats for haemorrhagic fever virus surveillance in West Africa for the presence of coronavirus to assess whether precursor viruses to SARS-CoV-2 have been circulating.
3. In China, animals from fur farms (including mink, foxes, raccoon dogs) have been tested for SARS-CoV-2 by RT-PCR. So far all have been negative.
4. In North America, huge investment (time and resources) has gone into captive breeding (with a view to reintroduction) of the endangered black-footed ferret. Infectious disease, including canine distemper, has already been a huge set back to the programme. The programme is already implementing strict biosecurity to avoid workers infecting the ferrets with SARS-CoV-2. This highlights the relevance of animal infection studies (of ferrets to conservation work). - Mod.AS

HealthMap/ProMED-mail map of Hubei Province, China: <https://promedmail.org/promed-post?place=7179946,340.>

See Also

COVID-19 update (75): China (Hong Kong) animal, cat, OIE 20200403.7179945
COVID-19 update (70): China (Hong Kong) animal, cat, pets & stock 20200402.7173286
COVID-19 update (58): Belgium, animal, cat, clinical case, RFI 20200327.7151215
COVID-19 update (56): China (Hong Kong) animal, dog, final serology positive 20200326.7146438
COVID-19 update (50): China (Hong Kong) animal, dog, 2nd case PCR positive, OIE 20200323.7129951
COVID-19 update (45): China (Hong Kong) animal, dog, 2nd case PCR positive 20200319.7112693
COVID-19 update (37): China (Hong Kong) animal, dog, prelim. serology negative 20200312.7081842
COVID-19 update (30): China (Hong Kong) animal, dog, susp, serology pending 20200306.7057595
COVID-19 update (25): China (Hong Kong) animal, dog, susp, OIE 20200302.7040373
COVID-19 update (22): companion animals, dog susp, RFI 20200229.7036661
COVID-19 update (17): China, animal reservoir, wildlife trade & consumption 20200225.7024245
COVID-19 update (11): animal reservoir, intermediate hosts, pangolin susp 20200220.7009213
COVID-19 update (08): companion animals, RFI 20200218.7002276
COVID-19 update (06): animal reservoir, intermediate hosts 20200217.6997782
Novel coronavirus (40): animal reservoir, pangolin poss intermediate host, RFI 20200210.6972104
Novel coronavirus (28): China (HU) animal reservoir 20200201.6943858
Novel coronavirus (22): reservoir suggested, bats 20200129.6930718
Novel coronavirus (20): China, wildlife trade ban 20200127.6922060
Novel coronavirus (18): China (HU) animal reservoir 20200125.6915411
Novel coronavirus (15): China (HU) wild animal sources 20200123.6909913
Novel coronavirus (03): China (HU) animal reservoir suggested, RFI 20200114.6887480
Novel coronavirus (01): China (HU) WHO, phylogenetic tree 20200112.6885385
Undiagnosed pneumonia - China (HU) (07): official confirmation of novel coronavirus 20200108.6878869
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