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CORONAVIRUS DISEASE 2019 UPDATE (384): ANIMAL, FRANCE, VARIANT B.1.160, DOG, CLINICAL, RESEARCH

A ProMED-mail post

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Source: Transboundary and Emerging Diseases [abridged, edited]

<https://onlinelibrary.wiley.com/doi/epdf/10.1111/tbed.14359>

Citation: Medkour H, Catheland S, Boucraut-Baralon C, et al. First evidence of human-to-dog transmission of SARS-CoV-2 B.1.160 variant in France. Transboundary and Emerging Diseases. 2021; 1-8; <https://doi.org/10.1111/tbed.14359>.

Abstract [slightly abridged]

In this study, we report a case of COVID-19 in a French dog living in close contact with its owners who were COVID-19 patients. The dog presented rhinitis and was sampled one week after its owners (a man and a woman) were tested positive for COVID-19. The nasal swabs for the dog tested remained positive for SARS-CoV-2 by reverse transcription quantitative real-time PCR (RT-qPCR) one month following the 1st diagnosis. Specific anti-SARS-CoV-2 antibodies were detectable 12 days after the 1st diagnosis and persisted for at least 5 months as tested using enzyme-linked immunoassay (ELISA) and automated western blotting. The whole-genome sequences from the dog and its owners were 99%-100% identical (with the man's and the woman's sequences, respectively) and matched the B.1.160 variant of concern, the most widespread in France at the time the dog was infected. This study documents the 1st detection of B.1.160 in pets (a dog) in France, and the 1st canine genome recovery of the B.1.160 variant of global concern. Moreover, given the enhanced infectivity and transmissibility of the [B.1.160] variant for humans, this case also highlights the risk that pets may potentially play a significant role in SARS-CoV-2 outbreaks and may transmit the infection to humans. We have evidence of human-to-dog transmission of the [B.1.160] variant since the owners were 1st to be infected. Finally, owners and veterinarians must be vigilant for canine COVID-19 when dogs are presented with respiratory clinical signs.

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[According to the above paper, the main clinical sign presented by the dog was "a severe bout of acute rhinitis," apparently followed by recovery. Tests for "canine pathogens implicated in canine cough or rhinitis" were negative.

The dog was positive for SARS- CoV-2 with a viral load that was said to be "equivalent to viral loads usually detected in humans during the symptomatic phase of the disease." The virus concentrations remained of significance for nearly 3 weeks after the 1st test, without clinical signs.

Earlier reports of SARS-CoV-2 infections in kept dogs, available since early stages of the pandemic (postings presented in "See Alsos" below) were generally indicative of the infection remaining subclinical. No dog-to-man infections have, so far, been reported. These field observations have been supported by evidence from experimental infection trials, undertaken in China and USA. According to the Chinese (Harbin) paper (Ref 1), "SARS-CoV-2 replicates poorly in dogs," and "dogs have low susceptibility to SARS-CoV-2."

According to the USA (Colorado) paper (Ref 2), the dogs remained clinically normal and afebrile. The authors maintained that "dogs do not shed virus following infection but do seroconvert and mount an antiviral neutralizing antibody response. There is currently no evidence that cats or dogs play a significant role in human infection."

The virus strain with which the dogs in the above trials were challenged, was close or identical to the initial Wuhan strain. The French observations, though limited to a single case, illuminate the need to further study, experimental infection trials included, the potential of new variants becoming more infectious/pathogenic in pets and/or other animal species. Such process has been seen in minks, and (to a lesser extent) in cats and ferrets. The potential of SARS-CoV-2 variants to get adapted to animals and mutate further, becoming a zoonotic threat, deserves to be kept in mind.

Finally, as rightly indicated by the authors, owners and veterinarians must be vigilant for canine COVID-19 when dogs are presented with respiratory clinical signs.

References

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2. Bosco-Lauth AM, Hartwig AE, Porter SM, et al. PNAS. 2020; 117(42): 26382-26388; <https://doi.org/10.1073/pnas.2013102117>.

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HealthMap/ProMED map of France: <https://promedmail.org/promed-post?place=8699586,100>]

See Also

COVID-19 update (379): animal, UK, cat, dog, heart disease 20211107.8699496
COVID-19 update (342): animal, Myanmar, dog, OIE 20211009.8698934
COVID-19 update (292): animal, UK, dog, OIE 20210825.8621632
COVID-19 update (187): animal, Uruguay, dog, cat, OIE 20210529.8404030
COVID-19 update (174): animal, Thailand, dog, OIE 20210518.8368402
COVID-19 update (152): animal, Croatia, dog, OIE 20210429.8336058
COVID-19 update (109): animal, Argentina, Italy, cat, dog, OIE 20210323.8262789
COVID-19 update (57): animal China (Hong Kong) dog, OIE 20210210.8182259
COVID-19 update (49): animal, Bosnia & Herzegovina (SA) dog, OIE 20210205.8165920
2020

COVID-19 update (552): USA, animal, cat, dog, snow leopard, OIE 20201223.8042405
COVID-19 update (516): China (Hong Kong) animal, dog, Lithuania, mink, OIE 20201203.7986508
COVID-19 update (506): Argentina (BA, SE) animal, cat, dog, OIE 20201125.7972283
COVID-19 update (485): animal, Italy, dog 20201111.7934864
COVID-19 update (448): animal, raccoon dog, research, experimental infection 20201022.7880283
COVID-19 update (417): Japan (TK) animal, dog, OIE 20200927.7817541
COVID-19 update (364): USA (NC,NY) animal, dog, comment 20200818.7689234
COVID-19 update (360): USA (NC, NY) animal, dog, comment 20200815.7681907
COVID-19 update (355): USA (NC) animal, dog 20200813.7672505
COVID-19 update (346): USA (LA) animal, dog, conf 20200805.7648734
COVID-19 update (322): USA (SC) animal, dog 20200719.7588843
COVID-19 update (308): USA (TX) animal, dog conf. 20200708.7554832
COVID-19 update (299): USA (GA) animal, dog conf 20200703.7535112
COVID-19 update (284): Denmark (ND) animal, farmed mink, spread, dog 20200624.7506728
COVID-19 update (231): USA (NY) animal, dog conf. 20200602.7420541
COVID-19 update (227): animal, cat, dog, research, experimental infection 20200601.7416648
COVID-19 update (189): Netherlands (NB) animal, farmed mink, research, cat, dog 20200517.7344274
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) dog, susp, OIE 20200302.7040373
COVID-19 update (22): companion animal, dog susp, RFI 20200229.7036661
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