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Subject: PRO/AH/EDR> COVID-19 update (379): animal, UK, cat, dog, heart disease

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CORONAVIRUS DISEASE 2019 UPDATE (379): ANIMAL, UK, CAT, DOG, HEART DISEASE

A ProMED-mail post

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<https://www.eurekalert.org/news-releases/933350>

A new study in the 'Veterinary Record' reveals that pets can be infected with the alpha variant of SARS-CoV-2, which was first detected in south east England and is commonly known as the UK variant or B.1.1.7. This variant rapidly outcompeted pre-existing variants in England due to its increased transmissibility and infectivity.

The study describes the first identification of the SARS-CoV-2 alpha variant in domestic pets; 2 cats and 1 dog were positive on PCR test, while 2 additional cats and 1 dog displayed antibodies 2 to 6 weeks after they developed signs of cardiac disease. Many owners of these pets had developed respiratory symptoms several weeks before their pets became ill and had also tested positive for COVID-19.

All of these pets had an acute onset of cardiac disease, including severe myocarditis (inflammation of the heart muscle).

"Our study reports the first cases of cats and dogs affected by the COVID-19 alpha variant and highlights, more than ever, the risk that companion animals can become infected with SARS-CoV-2," said lead author Luca Ferasin, of The Ralph Veterinary Referral Centre in the UK. "We also reported the atypical clinical manifestations characterized by severe heart abnormalities, which is a well-recognised complication in people affected by COVID-19 but has never [been] described in pets before. However, COVID-19 infection in pets remains a relatively rare condition and, based on our observations, it seems that the transmission occurs from humans to pets, rather than vice versa."

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[The citation for the peer-reviewed paper addressed in the above news-release is as follows:

Ferasin L, Fritz M, Ferasin H, et al. Infection with SARS-CoV-2 variant B.1.1.7 detected in a group of dogs and cats with suspected myocarditis. Vet Rec. 2021;e944. <https://doi.org/10.1002/vetr.944> (free access)

According to the paper, a "sudden and atypical" surge of myocarditis cases in cats and dogs examined at The Ralph Veterinary Referral Centre (TDVRC) was recorded between mid-December 2020 and February 2021 (from 1.4% over the preceding 12 months to 12.8%). "This appeared to mimic the curve and timeline of the COVID-19 human pandemic in the United Kingdom due to the B.1.1.7 variant, starting in mid-December 2020, peaking at the end of January 2021, before returning to the historical rate by mid-February 2021."

Breed, age, sex and clinical data pertaining to the 11 studied cases (8 cats, 3 dogs) are available in the paper's Table 1, entitled "Characteristics of dogs and cats diagnosed with myocarditis at The Ralph Veterinary Referral Centre between 22 Jan and 10 Feb 2021". Most of the animals (6 cats, 2 dogs) were older than 8 years, which can be roughly compared to human ages above 45-50 years. The other 3 animals (2 cats and a dog) were one year old.

From the discussion section of the paper, the following One-Health related comment is noteworthy (references omitted):

"Some limitations of this observational study need to be acknowledged. First, the diagnosis of myocarditis could not be confirmed on endomyocardial biopsy due to the intrinsic risk associated with this invasive procedure and the unstable clinical condition of these pets. However, the same diagnostic ambiguity is also well reported in human cardiology, where a high suspicion of myocarditis arises in patients with acute onset of cardiac symptoms or ECG modifications, elevated cardiac troponin and echocardiographic abnormalities, like in the small cohort of cats and dogs in this study. Another important limitation is the incapacity to provide a definitive demonstration that myocarditis was directly or indirectly associated with SARS-CoV-2 infection, especially for the absence of an appropriate control group. However, even in this case, there are important analogies with human medicine where, although cardiac inflammation has been well documented in patients with COVID-19, at the moment there is no evidence of SARS-CoV-2 in human cardiomyocytes. Therefore, the possibility of a direct myocardial infection from the virus remains to be demonstrated. Interestingly, there is evidence that most human patients with clinically suspected myocarditis secondary to COVID-19 have a favourable in-hospital outcome and are discharged, as observed in our cats and dogs."

Hopefully, the above first report of cardiac changes in cats and dogs, suspected to result from exposure to COVID-19, will lead to increased attention, by practitioners and the public, with subsequent reporting of larger number of affected animals and a wider spectrum of age, breed and gender. On top of the benefit to animal health, animal studies are expected to support the ongoing research efforts addressing the cardiac phenomenon in human COVID-19 patients. - Mod.AS

HealthMap/ProMED map:

United Kingdom: <https://promedmail.org/promed-post?place=8699496,40>

See Also

COVID-19 update (367): animal, Europe, cat, seroprevalence 20211027.8699313

COVID-19 update (213): Japan, endemic, Afghanistan, cardiac, Lambda variant, WHO 20210620.8462089

COVID-19 update (187): animal, Uruguay, dog, cat, OIE 20210529.8404030

COVID-19 update (109): animal, Argentina, Italy, cat, dog, OIE 20210323.8262789

COVID-19 update (93): animal, Estonia (HA) cat, OIE 20210310.8239589

COVID-19 update (62): animal, Latvia (RA) cat, OIE 20210212.8187389

COVID-19 update (39): animal, Spain, Switzerland, mink, cat, OIE 20210129.8146532

COVID-19 update (35): animal, South Korea (KN) cat 20210126.8138196

COVID-19 update (22): animal, Russia (LN) St. Petersburg, cat 20210117.8111937

2020

COVID-19 update (552): USA, animal, cat, dog, snow leopard, OIE 20201223.8042405

COVID-19 update (535): Denmark, animal, mink, zoonotic, cat, RFI 20201213.8015149

COVID-19 update (519): Switzerland (ZH) animal, cat, OIE 20201204.7993204

COVID-19 update (506): Argentina (BA, SE) animal, cat, dog, OIE 20201125.7972283

COVID-19 update (495): animal, cat, transmission model 20201119.7954363

COVID-19 update (463): Brazil (MT) animal, cat, OIE 20201031.7905784

COVID-19 update (452): Chile (RM) animal, cat, OIE 20201023.7885452

COVID-19 update (392): USA motorcycle rally, cardiac manifestations, WHO, global 20200907.7753457

COVID-19 update (350): USA (TX) animal, cat 20200808.7658191

COVID-19 update (345): animal, cat, research, experimental infection 20200805.7648370

COVID-19 update (334): animal, Netherlands, mink, spread, UK, cat, 1st rep, OIE 20200727.7617582

COVID-19 update (330): China (Hong Kong) animal, cat, OIE 20200724.7609215

COVID-19 update (267): animal, domestic, wild, cat, research 20200617.7480013

COVID-19 update (248): Netherlands (NB, LI) animal, mink, spread, culling, cat 20200609.7446478

COVID-19 update (238): USA (MN) animal, cat 20200605.7429133

COVID-19 update (227): animal, cat, dog, research, experimental infection 20200601.7416648

COVID-19 update (212): Russia (Moskva) animal, cat, OIE 20200526.7379578

COVID-19 update (209): Netherlands (NB) farmed mink, animal-to-human, cat, epid 20200525.7375359

COVID-19 update (189): Netherlands (NB) animal, farmed mink, research, cat, dog 20200517.7344274

COVID-19 update (183): Japan/USA, animal, research, cat, experimental infection 20200514.7337185

COVID-19 update (181): Germany (BY), France (AC), cat, OIE animal case defin. 20200513.7332909

COVID-19 update (177): Netherlands (NB) animal, farmed mink, Spain (CT) cat susp 20200512.7328587

COVID-19 update (166): China (Hong Kong) animal, cat, OIE, resolved 20200508.7314521

COVID-19 update (149): France (IF) animal, cat, owned 20200501.7289409

COVID-19 update (124): USA (NY) animal, cat, lion, OIE 20200423.7259119

COVID-19 update (123): USA (NY) animal, cat, conf. 20200422.7256272


COVID-19 update (113): USA (NY) animal, cat, susp, RFI 20200418.7240811

COVID-19 update (76): China (HU) animal, cat, owned, stray, seropositive 20200403.7179946

COVID-19 update (75): China (Hong Kong) animal cat, OIE 20200403.7179945

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