

Udarbejdet af	Graham J. Belsham
Øvrige deltagere	Anne Sofie Hammer, Jens Frederik Agger, Thomas Bruun Rasmussen
Kontaktperson i FVST	Pernille Dahl Nielsen

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Besvarelse vedr.

▸ Kliniske symptomer hos dyr med COVID-19

Bestilling

- 1) Hvad er de mest typiske symptomer på COVID-19 i en pelsdyrbesætning?
- 2) Hvad er de mest typiske symptomer på COVID-19 i hunde og katte?

Baggrund/kontekst for bestilling (hvorfor, til brug for hvad)

▸ I forbindelse med opdatering af Bekendtgørelse nr 926 af 22/06/2020 om COVID-19 hos pelsdyr skal de nuværende symptomer tilrettes, da vi er blevet bekendt med, at ikke alle de symptomer, der opførtes i § 3 er retvisende.

§ 3. Den, som i sin varetægt har pelsdyr, hvor et eller flere pelsdyr i pelsdyrholdet er eller kan mistænkes for at være inficeret med COVID-19, skal tilkalde en dyrlæge. Dyrlæge kan tilkaldes, når der hos pelsdyret bl.a. optræder symptomer som diarree, opkast, luftvejssymptomer eller forøget temperatur.

Vedr. hunde og katte, så vil vi gerne kunne vejlede de praktiserende dyrlæger om, hvornår der bør rejses en klinisk mistanke i disse dyr.

Svar

▸ In general terms, the CDC has described (<https://www.cdc.gov/coronavirus/2019-ncov/community/veterinarians.html#clinical-signs-animals>) clinical signs which are likely to be compatible with SARS-CoV-2 infection in mammalian animals, this includes: fever, coughing, difficulty breathing or shortness of breath, lethargy, sneezing, nasal discharge, ocular discharge, vomiting and diarrhea.

A major feature of SARS-CoV-2 infections in animals is the high proportion of asymptomatic cases, this is true for mink, dogs and cats.

As described in more detail below, in mink, respiratory distress, when it is observed, is an important symptom.

However, detection of fever in mink is not easy and diarrhea is too unspecific an occurrence to be a useful sign. Vomiting is, in general, rare in mink and has not been seen in Danish mink farms with COVID-19.

It is striking that the three mink farms prioritized for investigation, and found to have infected mink, were those where personnel with close contact to the mink had been identified as being infected with SARS-CoV-2. In 120 other mink farms (ca. 10% of the total) that have been screened, no incidence of SARS-CoV-2 infection has been observed in the mink.

For more specific information:

1) What are the most typical symptoms of COVID-19 in farmed fur animals (mink)?

In the Netherlands, the initial infections in mink were identified from symptoms of severe respiratory distress in some animals and, more frequently, watery nasal discharge (Oreshkova et al., (2020). Higher rates of mortality than normal (2-4x elevated) were observed in the first two farms among the mainly pregnant females. Necropsies revealed interstitial pneumonia.

In Denmark:

Symptomer på danske minkfarme inficeret med Sars-CoV-2

Den 1. farm var uden symptomer, bortset fra at minkavleren over nogen dage har set minktæver, der "puster" og har drøftet dette med sin dyrlæge 9. juni. Det blev ikke undersøgt nærmere fordi symptomerne fortog sig igen af sig selv. Samme dyrlæge gik farmen grundigt igennem 13. maj, og der var ingen tegn på sygdom.

På 2. farm er der ved 1. prøveudtagning (22. juni) konstateret dyr med luftvejssymptomer, og der har fra et par dage efter 2. prøveindsamling (30. juni) været rapporteret om forøget dødelighed og luftvejssymptomer (2-9 tæver døde dagligt). Flere af disse mink har vist luftvejssymptomer, herunder forceret vejrtrækning/pusten, vejrtrækning med åben mund, flåd fra snuden (når man løfter meget syge eller døde dyr op løber der væske ud af næsen). Hos mink, der dør, er beskrevet et meget hurtigt fremadskridende forløb med apati og nedstemthed, minken ligger på siden og trækker vejret stødende, nogen gange med åben mund og responderer ikke på omgivelserne.

På 3. farm har der været spredte tæver med luftvejssymptomer (forceret stødende vejrtrækning, pusten, vejrtrækning med åben mund).

Fælles for farmene har været, at det er tæver (ikke hvalpene), der har vist symptomer, og ligeledes er dødelighed også blandt tæverne.

Opsummering af symptomer hos mink med Sars-CoV-2

De karakteristiske symptomer har været luftvejssymptomer med lav prævalens hos voksne dyr.

Luftvejssymptomerne har omfattet forceret/stødende vejrtrækning, vejrtrækning med åben mund, flåd fra næsen (når syge dyr løftes op, løber der væske fra næsen), eventuelt kombineret med nedstemthed og apati. På nogle farme kan ses let forhøjet dødelighed.

Differentialdiagnoser for infektion med Sars-CoV-2 hos mink

Vigtige differentialdiagnoser ved dette symptombillede vil være smitsom lungebetændelse, influenza, kolipneumoni og hvalpesyge (distemper). Ved smitsom lungebetændelse, influenza og kolipneumoni ses dog som regel et endnu hurtigere sygdomsforløb (pludselige dødsfald uden forudgående symptomer), og ved udbrud af hvalpesyge vil de tydeligste symptomer og dødelighed typisk ses hos hvalpene frem for de voksne dyr. Der kan ses væske fra næsen hos mink, der dør med smitsom lungebetændelse, influenza og kolipneumoni, men her vil væsken ligne blod (være blodtilblandet). Hos mink med covid-19 er det en tyndtflydende klar til let uklar væske.

2) What are the most typical symptoms of COVID-19 in dogs and cats?

a) Dogs

Typically, dogs do not develop clinical symptoms when infected with SARS-CoV-2.

There have been several documented cases of dogs becoming infected when their owners have suffered from COVID-19. Two cases were described in Hong Kong by Sit et al., (2020). In a 17 year-old Pomeranian, with a variety of pre-existing diseases, SARS-CoV-2 RNA was detected in nasal swabs collected on 5 separate occasions over a period of 12 days.

However, rectal swabs and fecal samples were negative. There was no change in the clinical condition of the dog. In the second case, a 2.5 year-old German Shepherd dog, whose owner was diagnosed as having COVID-19, was sampled on 5 occasions over 12 days. The nasal and oral swab samples from the first 2 sampling days tested positive by RT-qPCR, and 4 of 6 rectal swabs also tested positive. A second dog in the household was also sampled on 5 occasions and remained negative. Serum from the dogs in both the first and second cases scored positive in virus neutralization assays. No specific clinical signs of infection were observed in this dog either.

On the mink farm 1 in Denmark, one dog on the farm was tested positive by RT-PCR and serology but without clinical signs.

Shi et al. (2020) have performed experimental studies using SARS-CoV-2 in inoculated animals. Five, 3-month-old beagles were intranasally inoculated with SARS-CoV-2. Viral RNA was detected in rectal swabs at 2 and 6 days post infection but at 4 days post inoculation one dog that had excreted viral RNA on day2 was euthanized. No viral RNA was detected in any organ or tissue tested. At 14 days post inoculation, serum samples were collected and two of the inoculated dogs had seroconverted but two contact dogs had not. There was no description of any clinical disease in the dogs and no evidence of virus transmission from them.

b) Cats

SARS-CoV-2 infection has been described in Malayan tigers, Amur tigers and African lions in the Bronx Zoo, USA. The animals had respiratory signs including a dry cough and in some cases wheezing but no nasal or ocular discharge. Other large cats at the zoo remained healthy (<https://promedmail.org/promed-post/?id=20200406.7191352>).

As indicated above, Shi et al., (2020) also described experimental inoculation of cats. Sub-adult (aged 6-9 months) and juvenile (70-100 days old) cats were inoculated with the virus. Viral RNA was detected in nasal turbinates, soft palates and tonsils of the sub-adult animals but not in lungs. Transmission, presumably via droplets, of the virus from the infected cats to exposed cats (in the same room) was also observed. Seroconversion occurred in both inoculated and exposed cats. In the juvenile animals, "massive lesions" in nasal and tracheal epithelium and lungs were observed. It was suggested that juvenile cats may be more vulnerable than older cats.

References

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