SARS CoV-2 infections of mink in the Netherlands

Christanne Bruschke

15.05.2020
Anamneses

• Respiratory and gastrointestinal problems in mink reported to AHS
• E-coli and pseudomonas excluded
• Tested for CoV2 because owners had COVID-like symptoms
• Cov2 positive at AHS and confirmed in Lelystad

• Farm 1 Milheeze:
  • Location 1 and 2: 13000 mink

• Farm 2 Beek en Donk
  • 7500 mink
Research protocol farms 1 and 2

**Mink**
- Disease history
- 20 dead or sick animals: pathology and virology
- 60 animals without symptoms, intervals 3 weeks: serology, faeces
- Characterisation of virus isolates

**Environment**
- Dust and air samples, weekly 3 times:
  - In stable
  - In surroundings / environment 0, 10 and 80 meter.
  - 6 and 30 hr sampling

**Humans**
- Personnel: disease history and characterisation of available isolates
Research protocol farms 1 and 2

Molecular epidemiology
• Characterisation of isolates
• Comparison of mink and human CoV2 isolate

Cats
• Cats on the farm: serology and virology
Measures

• Obligation for mink holders, veterinarians and research institutes to report signs resembling COVID-19 in mink

• No transport of animals or manure from the farm

• Precaution: no cycling or walking in zone of 400 meters
Results

Mink
• Pathology: severe pneumonia
• Nearly all samples dead and sick mink PCR positive, high virus load
• Faeces samples: 11/53 and 9/30 positive
• Serology: nearly all positive tested in VNT (one dilution, no titer).

Environment
• Air samples in barn 2/6, 1/6, 3/6 positive, low virus load
• None of the samples outside the barn positive
• Second sampling: all samples negative, inside and outside

Cats
• 3/11 seropositive but PCR negative
Results

Molecular epidemiology

• Infections probably already more than 4 weeks on the farms

• Probably efficient mink to mink transmission

• No relation between both farms

• No relations to known CoV2 human isolates (so no spread out of the farm)
New development

• Location 3 of farm 1, 10,000 mink, also infected
  • No clinical signs reported

• Farm 3 Deurne: 1500 mink, same anamneses

• Same measures implemented
Some remarks

- Farm 1/ location 3 did not show symptoms but clearly positive in PCR
- The virus circulates for a longer time already on the farms
- Mostly animals at end of gestation were found dead or sick
- These animals may be more susceptible
- 400 meter zone lifted after the second air sampling