Small animal review

The world continues to recover from the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic, and although the impact of the disease has been reduced as a result of vaccination, increased immunity and less severe variants, it is still a disease of worldwide significance. Four recent studies look at the role of domestic animals in the epidemiology of the disease.

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Hernandez et al (2023) noted that different animal species are possible intermediate hosts that could aid the inter-species transmission of SARS-CoV-2. This study aimed to determine the seroprevalence of SARS-CoV-2 in dogs and cats and evaluate its relationship to coronavirus disease in humans in Villavicencio, Colombia. The prevalence of human COVID-19 cases was compared to the seroprevalence in dogs and cats; 300 dogs and 135 cats were included in the study. The overall seroprevalence of SARS-CoV-2 was 4.6% (3.7% in dogs and 6.7% in cats). There was a weak positive correlation between COVID-19 cases in humans and the seroprevalence of the virus in dogs and cats. The authors concluded that cats were more susceptible to SARS-CoV-2 than dogs. This study provides information about the inter-species dynamics of SARS-CoV-2 transmission.

Bianco et al (2023) also noted that, because several animal species are known to be susceptible to SARS-CoV-2 infection, it is important to examine the occurrence of infection in domestic dogs and cats. The authors of this study performed serological screening to identify SARS-CoV-2 exposure in dogs and cats from three regions of Southern Italy during 2021 and 2022. Serum samples were collected from 89 dogs and 11 cats in 2021, and 577 dogs and 63 cats in 2022. The overall positive prevalence was 2.7%, with dogs more susceptible than cats, in contrast to the above study. However, serum neutralisation tests were only positive in two samples collected from dogs. Serologically distinct SARS-CoV-2 assays showed that there was variant-specific positivity. The authors suggested that the monitoring of SARS-CoV-2 exposure in animals might be affected by the antigenic evolution of the virus, necessitating continual updates of the tests used to detect the virus. Therefore, they recommended that variant-specific serological methods are used for serological screening studies. These types of studies are vital to determine the impact of new variants on animals, how humans might be affected, to identify virus reservoirs and monitor antigenic changes.

Nilsson et al (2024) looked exclusively at dogs – in rescue shelters, foster homes and private homes. The authors noted that at the time of their writing, 775 outbreaks of SARS-CoV-2 had been reported in 29 animal species across 36 countries. They also noted that transmission of SARS-CoV-2 from owners to dogs has been widely described. This study evaluated the extent of SARS-CoV-2 infection and SARS-CoV-2 antibodies in sheltered and fostered compared to owned dogs and whether management and environmental risk factors could be identified. All 111 dogs included in the study tested negative by reverse transcription-quantitative polymerase chain reaction on oropharyngeal and rectal swabs. However, 20.2% of dogs had immunoglobulin G antibodies against SARS-CoV-2 on enzyme-linked immunosorbent assay. There was an age-related association, with adult dogs over four times more likely to be positive than juveniles. A high population density of humans and/or dogs was considered to be a risk factor for seropositivity of the virus in the dogs in this study.

Finally, many of the recent studies on SARS-CoV-2 infection in animals were brought together in a systematic review (Heydarifard et al, 2024). This review found a 1.3% positive rate for SARS-CoV-2 for dogs and 1.6% for cats. Most of the studies involved screening pets presenting to veterinary practices; however, only a small number of investigated animals were thought to be in contact with owners who were positive for COVID-19. Most infected pets showed few or no clinical signs. The authors concluded that continuous surveillance of this virus in dogs and cats is essential to understand the epidemiology of the virus in animals and to guide healthcare strategies. CA

References

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