

COVID-19: Veterinary Perspective

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In December 2019, the Wuhan health authorities detected a few cases of an atypical pneumonia of unknown aetiology and having symptoms like pyrexia, myalgia, fatigue, coughs, dyspnea, and pneumonia (Shanker, 2020). By laboratory finding, this illness was later confirmed as a novel coronavirus and initially named as a 2019 novel coronavirus (2019-nCoV). The disease name, as Corona Virus Disease (COVID-19) was recommended subsequently by the World Health Organization (WHO). The name SARS-CoV-2 instead of 2019-nCoV was suggested by the International Committee on Taxonomy of Viruses. WHO declared this recent ongoing viral outbreak as a pandemic on 11th March, 2020 and as an international public health emergency on 30th January, 2020 [1].

The SARS-CoV-2 has a diameter of 50–200 nm, a spherical envelope, and a single-strand positive-sense RNA genome (30 kb in length) [2]. The genome sequencing similarity of SARS-CoV-2 was noticed as 79.6% and 96% with SARS-CoV and Bat-CoV, respectively. The SARS-CoV-2 membrane having four major structural proteins; namely, spike (S) glycoprotein, small envelope (E) glycoprotein, membrane (M) glycoprotein, and nucleocapsid (N) protein [3].

SARS-CoV-2, a member of the Coronaviridae family and the genus -coronavirus, shares genetic similarities with Bat-CoV (RaTG13/Beta-CoV) [4]. According to Phylogenetic analyses and by using the large sub genomic data set of bat coronaviruses, it's indicated that SARS-CoV-2 likely originated in horseshoe bats from China, as its genome sequence has approximately 96% nucleotide identity with RaTG13, isolated from Chinese *Rhinolophus affinis*. The nucleotide similarity of Pangolin-CoV genome with SARS-CoV-2 and Bat CoV RaTG13 was noticed as 91% and 90.6%, respectively [5].

Although SARS-CoV-2 is alleged to have originated from an animal host (zoonotic origin) with further human to human transmission may has occur [6]. Sneezing and coughing are the most common symptoms of human coronavirus transmission by air from an infected person to a healthy person. The virus transmission was mainly noticed by the close physical contact like rubbing or shaking of hands, close contact of the surface contaminated with the virus, lips contact, nose or eyes contact before washing their hands [7].

Currently 625 outbreaks in animals have been reported globally, affecting 17 species in 32 countries including Dog, Cat, Tiger, Lion, Puma, Ferret, Mink and Gorilla [8] and SARS-CoV-2 was experimentally inoculated by the intranasal route for the evaluation of the susceptibility in several domestic animals. The results indicate that Cat, Dog and Ferret are highly susceptible to SARS-CoV-2 [9]. The first case of COVID-19 was confirmed in a Malayan tiger maintained at the Bronx Zoo, New York on 4th April 2020. The zookeeper was suspected for COVID-19 infection spreading among the captive wild felids. The SARS-CoV-2 isolated from the Malayan tiger (SARS-CoV-2/tiger/NY/040420/2020) consists of a similar whole-genome sequence with the available human sequences of SARS-CoV-2 [10].

The clinical diagnosis of 2019-nCoV depends on the symptoms and travel history to a country known to have the disease and/or exposure to an infected person. The different testing procedures for COVID-2019 have been published by WHO. The real-time reverse transcription polymerase chain reaction (RT-PCR) is the most common technique used for the testing of COVID-2019. The RT-PCR test may be done on respiratory samples like nasopharyngeal swab or sputum samples [11].

For the contain and control of SARS-CoV 2 various efforts are being made, which is haunting the lives of humans and now become a serious pandemic. Rapid diagnosis, appropriate isolation and quarantine techniques, and strict vigilance are all required to prevent the virus from spreading further around the world [12].

However, to prevent the further spread of virus from human to animal, a person with COVID-19 positive is instructed to avoid direct contact with pets. They should strictly maintain safe distance as they do with other household persons and in fact they should avoid petting, grooming, kissing and licking them and should wear a personal protection equipment like face mask and gloves, wash hands before and after providing food and water [13].

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