

EDITORIAL

WUHAN CORONAVIRUS (COVID-19): YET ANOTHER BAT VIRUS ZONOTIC

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The recent outbreak of Coronavirus infection (COVID-19) which was earlier labelled as 2019-nCoV¹, in china has resulted in 1,113 deaths from the illness overall and a total toll of 42,638 cases in mainland china², out of which only 1 death occurred outside of China, i.e., in the Phillipines.³ Outside of china 393 confirmed cases of COVID-19 have been reported worldwide from twenty-four countries.⁴ The disease broke out in Wuhan city, capital of Hubei province in December last year when deaths due to an unknown pneumonia were reported to the WHO by the Chinese authorities.⁴ The local seafood market was identified as a reservoir for infection and it was shut down on January 1, 2020.⁵

The outbreak is similar to other outbreaks in past such as the SARS or the MERS in which the causative organism migrated to human population from its animal reservoir, i.e., the bats, where it had been present without causing any symptoms. The new virus, the COVID-19 belongs to bat coronavirii and is not related to human SARS coronavirus.^{6,7} The coronavirii are known to cause mild infections e.g., common cold with a few exceptions such as the SARS or the Middle East Respiratory Syndrome (MERS). The COVID-19 is a beta-coronavirus and resembles closely two SARS-like coronavirii, the bat-SL-coVZX21 and bat-SL-CoVZX45. The human SARS viruses responsible for the 2002-2003 epidemic resembled the SARS-like viruses in bats more than the bat coronavirii and was not related to other coronavirii. COVID-19 exhibits feature of both the coronavirii and SARS-like viruses of bats, and does not show a significant resemblance to the human SARS virus, suggesting it's a new variant of bat coronavirii. Considering that all coronavirii that show close connection with the COVID-19 have bat-origin, it can be safely assumed that this virus originated from bats.⁶ Since the infection is known to have originated from a wholesale seafood market in Wuhan, where bats are not usually traded, it is quite possible that it was acquired from contact with an animal that serves as a transmission vehicle for COVID-19.^{6,9} Direct exposure to zoonotic viruses present in bats in the form of hunting and processing of the bat meat for consumption as well as indirect exposure in the form of sitting, setting up business under bat roosts, and as well as exposure to bat faeces in the form of consumption of contaminated water have been identified as determinants of transmission of infection from bats to humans.¹⁰ In order to curb the spread of infection to other people, the Chinese Govt quarantined Wuhan, Huanggang and then

additional cities, locking down as many as 50 million people in 17 cities.¹¹

The infection with virus results in respiratory symptoms such as flu, running nose, shortness of breath, cough which appear within 2–14 days of acquiring infection from coming into contact with an infected individual.^{12,13} Many have died after acquiring the infection and while they were mostly elderly or had comorbidities, the virus itself may have been lethal. The mean age of affected individuals was 49 years¹⁴, and as much as one third of the patients affected till Jan 2, 2020 had underlying health problems such as diabetes mellitus, cardiovascular disease and hypertension.¹⁵ While the WHO has declared the risk to be very high within china and high for the rest of the world, it is important that preventive measures be adopted as soon as possible since the disease has been known to spread between individuals.¹⁶

Bat coronaviruses have been extensively studied and fears of a new bat coronavirus epidemic have been expressed^{17,18}, since within last fourteen years bat coronaviruses have been implicated in many coronavirus infections affecting humans adversely.¹⁹⁻²³

In the past, the previous outbreaks of coronaviruses such as the SARS or the MERS, involved spread between individuals through droplets, fomites and contact, the transmission of COVID-19 may follow similar paths, therefore it is important that steps such as frequent handwashing after direct contact with suspicious environment or ill people, avoiding contact with individuals suspected to be ill with COVID-19 infection, avoiding unsafe contact with wild or farm animals, practicing cough etiquette when ill, i.e., maintaining distance from other individuals, covering mouth while coughing and sneezing into disposable material / clothing and not into hands, and washing hands after wards should be taken in order to minimize the risk of spread to other individuals. In fact, it has been now observed that spread of COVID-19 occurs from person to person, with neither having come into contact with an infected animal.¹²

In addition, contact of customers with the vendors or the live or dead animals at wildlife / animal markets increases the risk of spread from animals to humans. In China, for example, live animals are slaughtered in front of customers for cultural reasons and therefore the risk of spread of infections to healthy individuals increases and this is how SARS actually started in 2002-2003 and the COVID-19 may have

started in a similar fashion.^{24,25} While banning the trade of live animals/wildlife as has happened in China recently, may be a temporary solution to the problem, improving the handling of live animals, their slaughter and proper disposal of their entrails, in addition to making it mandatory to wear proper protective equipment for the handlers may prove to be an effective intervention elsewhere specially in Pakistan. While these steps may help in reducing inter-individual transfer of the pathogen, it is important to understand the lifecycle of the coronaviruses that originate from bats and cause disease in humans. The missing link between the reservoir, i.e., the bats and the humans need to be identified before another large-scale disaster strikes again.

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