Editorial Note for the Special Issue "Pathogenesis and Epidemiology of Corona Virus"

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Editorial Note

Coronavirus disease (COVID-19) is caused by SARS-COV2 and represents the causative agent of a potentially fatal disease that is of great global public health concern. Based on the large number of infected people that were exposed to the wet animal market in Wuhan City, China, it is suggested that this is likely the zoonotic origin of COVID-19. Person-to-person transmission of COVID-19 infection led to the isolation of patients that were subsequently administered a variety of treatments. Extensive measures to reduce person-to-person transmission of COVID-19 have been implemented to control the current outbreak. Special attention and efforts to protect or reduce transmission should be applied in susceptible populations including children, health care providers, and elderly people. In this review, we highlights the symptoms, epidemiology, transmission, pathogenesis, phylogenetic analysis and future directions to control the spread of this fatal disease.

Patients infected with COVID-19 showed higher leukocyte numbers, abnormal respiratory findings, and increased levels of plasma pro-inflammatory cytokines. One of the COVID-19 case reports showed a patient at 5 days of fever presented with a cough, coarse breathing sounds of both lungs, and a body temperature of 39.0 °C. The patient's sputum showed positive real-time polymerase chain reaction results that confirmed COVID-19 infection. The laboratory studies showed leucopenia with leukocyte counts of 2.91 × 10^9 cells/L of which 70.0% were neutrophils. Additionally, a value of 16.16 mg/L of blood C-reactive protein was noted which is above the normal range (0–10 mg/L). High erythrocyte sedimentation rate and D-dimer were also observed. The main pathogenesis of COVID-19 infection as a respiratory system targeting virus was severe pneumonia, RNAaemia, combined with the incidence of ground-glass opacities, and acute cardiac injury. Significantly high blood levels of cytokines and chemokines were noted in patients with COVID-19 infection that included IL1-β, IL1RA, IL7, IL8, IL9, IL10, basic FGF2, GCSF, GMCSF, IFNγ, IP10, MCP1, MIP1α, MIP1β, PDGFB, TNFα, and VEGFA. Some of the severe cases that were admitted to the intensive care unit showed high levels of pro-inflammatory cytokines including IL2, IL7, IL10, GCSF, IP10, MCP1, MIP1α, and TNFα that are reasoned to promote disease severity.

This epidemic has spread exponentially across the globe ever since the advent of the latest coronaviral epidemic COVID-19 triggered by the SARS-CoV-2 virus. In consideration of the possibility of a pandemic, scientists and physicians have been trying to grasp this emerging virus and its pathophysiology to recognize potential therapeutic protocols and to find therapeutic agents and vaccinations that are successful in the disease management. Several pneumonia cases that were localized in Wuhan in December 2019 were identified, and sources were checked. On 12 December 2019, the first case of COVID-19 was identified with apparent pneumonia, while on 31 December 2019, 27 cases of extreme viral pneumonia were officially confirmed. Etiological studies of people that came to the hospital due to specific viruses have been conducted. The medical history of these patients has increased the likelihood of a virus outbreak. Novel SARS-COV-2 from wild bats and group 2 β-CoVs, which comprises severe acute respiratory syndrome-related coronavirus (SARS-COV), was announced to be

developed on 22 January 2020. This was the case, although COVID-19 and SARS belong to the same category of β-CoVs, genome-overlap between the two species is only 70%.

It is important for the clinics to thoroughly carry out thermal screening. Doctors are giving patients protective disposable gowns as they enter the clinic. Even doctors wear proper personal protective equipment (PPE) appropriate for the procedures performed. It is imperative that clinics adhere to the highest standards of sterilization of chairs and dental instruments. Only allowing one patient per chair will also help curtail the risk to a greater extent. Constant sanitisation of surfaces also becomes non-negotiable.

Hence, we are pleased to present this Special Issue entitled “Pathogenesis and Epidemiology of Corona Virus” which focuses on key leading areas related to oral cavity, saliva, blood, and respiratory tract secretions.

The manuscripts submitted to this Special Issue were peer-reviewed following the standard procedures of the Journal of Medical Microbiology and Diagnosis; as a result, the collection of papers included here aim to provide the most recent developments in a field of ever-growing scientific, industrial, and socio-economical interest. Authors are leading experts coming from universities, research centers, industries, and hospitals located all around the world in Europe, America, Asia, and Australia. In summary, the objective of this Special Issue is to build a bridge among various stakeholders in the health community.

Lastly, we would like to express our sincere gratitude to all the authors for their efforts and contributions to this Special Issue. We also thank Profs. Kevin Coombs, and Karim Essani, Editors-in-Chief of the Journal of Medical Microbiology and Diagnosis