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**INTRODUCTION**

A coronavirus is a kind of common virus that causes an infection in your nose, sinuses, or upper throat. It is increasingly recognized that coronaviruses can cause major emerging viral disease threats, with the respiratory syndromes SARS and MERS being two recent examples, and two coronaviruses now endemic in humans(229E and OC43) have emerged from animals within the past few hundred years([Poon & Peiris, 2020](#_ENREF_8)). The outbreak of the coronavirus SARS-CoV-2 started in December 2019.On the 30 January 2020, the World Health Organization declared this event a Public Health Emergency of International Concern. The reported cases and deaths of COVID-19 already exceed those of SARS or MERS. Here we highlight some of the key recent findings related to this global epidemic.

**The aim of the paper is to**:

Give meaningful information for future research related to this topic to support decision making on strategies to handle this public health emergency at community, national, levels.

**SCOPE**

To achieve the above aim, a review of the aetiology, histopathological features the current and the potential therapies to address the pandemic will be made. Also, the future of Covid-19 on public health will be addressed.

**AETIOLOGY OF COVID-19**

Coronaviruses are positive stranded Ribonucleic Acid (RNA) viruses with a crown like appearance under an electron microscope (coronam is the latin term for crown) due to the presence of spike glycoproteins on the envelope ([Ali, Baloch, Ahmed, Ali, & Iqbal, 2020](#_ENREF_2)).The genes are mostly expressed by a complex procedure whereby nested Messenger Ribonucleic Acid (MRNA) transcripts are produced, the regulation of which governs the progression of the replication cycle. Coronaviridae and the order Nidovirales (International Committee on Taxonomy of Viruses). This subfamily consists of four genera- Alpha coronavirus(alphaCov), Beta coronavirus(betaCov), Deltacoronavirus(deltaCov), and Gammacoronavirus (gammaCov)- on the basis of their phylogenetic relationships and genomic structures([Udugama et al., 2020](#_ENREF_11)).

The alphacoronaviruses and betacoronaviruses infect only mammals.The gammacoronaviruses and deltacoronaviruses infect birds, but some of them can also infect mammals. Alphacoronaviruses and betacoronaviruses usually cause respiratory illness in humans ([Boettler et al., 2020](#_ENREF_3))

**PATHOGENESIS**

The severe symptoms of COVID-19 are associated with an increasing numbers and rate of fatalities specially in the epidemic region of China. Coronaviruses are enveloped single-stranded RNA viruses that are zoonotic in nature and cause symptoms ranging from those similar to the common cold to more severe respiratory, enteric, hepatic, and neurological symptoms([Adhikari et al., 2020](#_ENREF_1)), Other than SARS-CoV-2, there are six known coronaviruses in humans: HCoV-229E, HCoV-OC43, SARS-CoV, HCoVNL63, HCoV-HKU1, and MERS-([Cossarizza, De Biasi, Guaraldi, Girardis, & Mussini, 2020](#_ENREF_4)). 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 ([Rothan & Byrareddy, 2020](#_ENREF_9)). 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.

**HISTOPATHOLOGICAL FEATURES**

COVID-19 is an acute resolved disease but it can also be deadly, with a 2% case fatality rate. Severe disease onset might result in death due to massive alveolar damage and progressive respiratory failure. As of Feb 15, about 66 580 cases have been confirmed and over

1524 deaths. However, no pathology has been reported due to barely accessible autopsy or biopsy [Xu et al. (2020)](#_ENREF_13).

If it is considered that COVID-19 may have been related to death by these criteria, the choice of either to perform a full postmortem or an examination is limited only to retrieving the samples required to verify COVID-19 infection. This decision must be made according to the individual case and should include the requirements of the coroner or any pertinent individuals. A staged postmortem may also be considered. This involves taking only diagnostic samples initially and later considering or a more complete autopsy after the results of these diagnostic tests are available. This staged technique is recommended if possible.

*Macroscopic features*: the macroscopic features of COVID-19 are likely to be in the chest and may include pleurisy, pericarditis, lung consolidation and pulmonary oedema. Lung weight may be increased above normal. It should be noted a secondary infection may be superimposed on the viral infection that can lead to purulent inflammation more typical of bacterial infection([Hanley, Lucas, Youd, Swift, & Osborn, 2020](#_ENREF_7)).

*Microscopic findings:* a recent article described the early histopathological features in COVID-19 in two patients who underwent surgical resections for lung adenocarcinoma but were later discovered to have had COVID-19 at the time of the operation. The findings were non-specific

and included oedema, pneumocyte hyperplasia, focal inflammation and multinucleated giant

cell formation while no hyaline membranes were seen. Given that these patients were asymptomatic with respect to COVID-19 at the time of the operation, these are likely to reflect only early changes of acute lung injury in the infection([Hanley, Lucas, Youd, Swift, & Osborn, 2020](#_ENREF_3)).Samples were taken by postmortem biopsy, and a description of the gross postmortem findings is not given, although multiple ground glass opacities were noted on chest X-ray. The microscopic findings included diffuse alveolar damage with exudates The inflammation was predominantly lymphocytic, and multinucleated giant cells were seen alongside large atypical pneumocytes, although no definitive viral inclusions were noted. Microvesicular steatosis with mild inflammation was noted in the liver, although it was unclear whether this was related to the virus or iatrogenic.

**CURRENT POTENTIAL THERAPIES**

It appears that no vaccine will be available for at least one year, likely a little longer. Phase 1 trials for safety and immunogenicity in human populations are likely within 3 months. In terms of therapeutics there is no known effective pharmaceutical agent. Putative agents include

antivirals; Griffithsin, a spike protein inhibitor, nucleoside analogues eg. remdesivir, ribavirin and protease inhibitors such as lopinavir/ritonavir. Immunomodulatory and other host targeted agents include interferon, chloroquine and immunoglobulins. Corticosteroids will potentially

have benefit for immune mediated lung damage late in the course of disease([Fisher & Heymann, 2020](#_ENREF_6)).

1. FAVILAVIR

China has approved the use of the antiviral drug favilavir to treat symptoms of COVID-19. The drug was initially developed to treat inflammation in the nose and throat. Although the results of the study haven’t been released yet, the drug has supposedly shown to be effective in treating COVID-19 symptoms in a clinical trial of 70 people([Elfiky, 2020](#_ENREF_5)).

1. LOPINAVIR AND RITONAVIR

Lopinavir and ritonavir

Lopinavir and ritonavir are sold under the name Kaletra and are designed to treat HIV. In South Korea, a 54-year-old man was given a combination of these two drugs and had a significant reduction. in his levels of the coronavirus. According to the World Health Organization (WHO), there could be benefits to using Kaletra in combination with other drugs.

Based on the fact that COVID-19 is a viral infection, the use of antiviral medicinal plants might be useful in its prevention and management. Working with the symptoms of COVID-19 infection, which includes fever, cough, body pain, flu, cold and shortness of breath, Idayat Gbadamosi, an associate professor at the University of Ibadan, proposed that “plants with antimalarial effect, cough remedy, herbal analgesic, and medicinal plants” could be useful in the prevention of the COVID-19 infection.

1. **Remdesivir**

Remdesivir may be the most promising antiviral drug for treating COVID-19. It has in vitro and in vivo antiviral activity against a wide array of RNA viruses including SARS and MERS([Wang et al., 2020](#_ENREF_12)). It was much better at inhibiting the coronavirus that causes MERS in cell culture and improving respiratory symptoms. The drug has shown consistent promise in disabiling coronaviruses in the laboratory too. Researchers led by Vanderbilt University’s Mark Denison and the university of North Carolina at Chapel Hill’s Ralph Baric showed in 2017 that remdesivir(GS-5734) could inhibit coronaviruses that cause both SARS and MERS in human lung cells. it was also found that the drug reduced viral load and improved functions in a mouse model of SARS. A year later, members of the same research team published another studY showing that Remdesivir’s effectiveness relies on coronaviruses having an intact RNA-dependent RNA polymerase. “We were looking for compounds that could broadly inhibit coronaviruses and the RNA-dependent RNA polymerase is, if not the most conserved protein in coronaviruses, definitely within the top two, so that makes it a good target for broad-spectrum antivirals,” says Maria Agostini, a postdoc in the Denison lab. New work Götte and colleagues publication on February 24 in the *Journal of Biological Chemistry* also indicates that the drug, which they refer to an as an analog inhibitor, exerts these effects on the MERS coronavirus polymerase via delayed RNA chain termination.

**Herbs for respiratory tract infections:**

Herbs for the management of respiratory tract infections include Spondias mombin (yellow mombin), Garcinia kola, Calotropis procera (apple of Sodom), Nymphaea lotus (water lily) and Abrus precatorius (water lily). The remedies are prepared as leaf juice, infusion, decoction and traditional soup for therapeutic purposes. As an example, an infusion of bitter kola and garlic in clean water are used for the management of respiratory tract infections.

**THE FUTURE OF COVID-19 ON PUBLIC HEALTH**

Health agencies are unsure how to model this and estimates vary depending

on the variables being used. For instance, SARS was essentially spread later in the disease from patients with more significant clinical pictures, and it was contained by infection control measures particularly in hospitals. The limited spread to family members of health workers and the community was contained by usual outbreak control measures including early identification

and management of persons with infection, tracing of contacts with monitoring for onset of fever and/or symptoms, and active engagement of communities. Most modelling suggests that the severity of illness is more like influenza than SARS, and there is concern among the public health community because the transmissibility of COVID-19 is not yet fully understood, and

the potential for it to become endemic like other respiratory pathogens is unknown([Sun, Lu, Xu, Sun, & Pan, 2020](#_ENREF_10)). The covid-19 has now achieved a pandemic status. The government is trying to manage the problem from a biomedical and psychological point of view which has disrupted pour daily activities. On April 3, 2020, the CDC issued a recommendation that the general public, even those without symptoms, should begin wearing face coverings in public settings where social-distancing measures are difficult to maintain in order to abate the spread of COVID-19

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