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CURRENT SCENARIO ON COVID-19: A REVIEW

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ABSTRACT

A severe respiratory disease was recently reported in Wuhan, Hubei province, China. As of 25 January 2020, at least 1,975 cases had been reported since the frst patient was hospitalized on 12 December 2019. Epidemiological investigations have suggested that the outbreak was associated with a seafood market in Wuhan.The objective of this review article was to have a preliminary opinion and current scenario about the disease, the ways of treatment, and prevention in this early stage of COVID-19 outbreak.

KEYWORDS: COVID-19, Coronaviruses, outbreak, review.

INTRODUCTION

Coronaviruses (CoV) belong to the genus Coronavirus in the Coronaviridae. All CoVs are pleomorphic RNA viruses characteristically containing crown-shape peplomers with 80-160 nM in size and 27-32 kb positive polarity. Recombination rates of CoVs are very high because of constantly developing transcription errors and RNA Dependent RNA Polymerase (RdRP) jumps. With its high mutation rate, Coronaviruses are zoonotic pathogens that are present in humans and various animals with a wide range of clinical features from asymptomatic course to requirement of hospitalization in the intensive care unit; causing infections in respiratory, gastrointestinal, hepatic and neurologic systems**.**Many measures should be taken, such as timely publication of epidemic information for elimination of the source of infection, early diagnosis, reporting, isolation, supportive treatments and for avoiding unnecessary panic**.** SARS-CoV first emerged in 2002–2003 in Guangdong, China as an atypical pneumonia marked by fever, headache and subsequent onset of respiratory symptoms such as cough and pneumonia, which may later develop into life-threatening respiratory failure and acute respiratory distress syndrome.

Litrature of CoV

Coronaviruses were first discovered in the 1930s when an acute respiratory infection of domesticated chickens was shown to be caused by infectious bronchitis virus (IBV)Estola T (1970). Arthur Schalk and M.C. Hawn described in 1931 a new respiratory infection of chickens in North Dakota. The infection of new-born chicks was characterized by gasping and listlessness. The mortality rate of the chicks was 40–90. Fabricant J (1998) Fred Beaudette and Charles Hudson six years later successfully isolated and cultivated the infectious bronchitis virus which caused the disease.(Decaro N *et, al*,2011). In the 1940s, two more animal coronaviruses, mouse hepatitis virus (MHV) and transmissible gastroenteritis virus (TGEV), were isolated.(McIntosh K, *et al*.1974) It was not realized at the time that these three different viruses were related.

Infection in humans

Coronaviruses vary significantly in risk factor. Some can kill more than 30% of those infected, such as MERS-CoV, and some are relatively harmless, such as the common cold. Coronaviruses can cause colds with major symptoms, such as fever, and a sore throat from swollen adenoids.Coronaviruses can cause pneumonia (either direct viral pneumonia or secondary bacterial pneumonia) and bronchitis (either direct viral bronchitis or secondary bacterial bronchitis).The human coronavirus discovered in 2003, SARS-CoV, which causes severe acute respiratory syndrome (SARS), has a unique pathogenesis because it causes both upper and lower respiratory tract infections.

Reviewed by (Yvonne Xinyi Lim 2016 *et,al*). Human coronaviruses (HCoVs) are known respiratory pathogens associated with a range of respiratory outcomes. In the past 14 years, the onset of severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) have thrust HCoVs into spotlight of the research community due to their high pathogenicity in humans. The study of HCoV-host interactions has contributed extensively to

our understanding of HCoV pathogenesis. In this review, we discuss some of the recent findings of host cell factors that might be exploited by HCoVs to facilitate their own replication cycle. We also discuss various cellular processes, such as apoptosis, innate immunity, ER stress response, mitogen-activated protein kinase (MAPK) pathway and nuclear factor kappa B (NF- B) pathway that may be modulated by HCoVs.

Four human coronaviruses produce symptoms that are generally mild:
• Human coronavirus OC43 (HCoV-OC43), β-CoV
• Human coronavirus HKU1 (HCoV-HKU1), β-CoV
• Human coronavirus 229E (HCoV-229E), α-CoV
• Human coronavirus NL63 (HCoV-NL63), α-CoV

Three human coronaviruses produce symptoms that are potentially severe:
• Middle East respiratory syndrome-related coronavirus (MERS-CoV), β-CoV
• Severe acute respiratory syndrome coronavirus (SARS-CoV), β-CoV
• Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), β-CoV

Infection in other animals
Coronaviruses have been recognized as causing pathological conditions in veterinary medicine since the 1930. Reported by Bande F *et,al* (2015).Coronaviruses primarily infect the upper respiratory and gastrointestinal tract of mammals and birds. They also cause a range of diseases in farm animals and domesticated pets, some of which can be serious and are a threat to the farming industry. In chickens, the infectious bronchitis virus (IBV), a coronavirus, targets not only the respiratory tract but also the urogenital tract. The virus can spread to different organs throughout the chicken.

Tu *et al*. (2004) examined 56 masked palm civets including 38 from four farms in different regions of Guangdong Province and 18 from the Xinyuan Live Animal Market in Guangzhou, Guangdong Province in January 2004. They found anti-SARS-CoV antibodies in 78% of the market animals (14 out of 18), while only one out of the four farms contained animals with anti-SARS-CoV antibodies with a prevalence of 40% (4 out of 10). SARS-CoV antibody levels in farmed animals were lower than those from the market. Suryaman G.K. *et al*. (2019) an examination on Avian coronavirus has a wide range of hosts, from chickens and turkeys to wild birds. This virus causes an economically and, possibly, environmentally, important loss in the poultry industry. Therefore, research into the avian coronavirus in various species of birds is required. The Eclectus parrot (Eclectus roratus) is an endemic bird to Indonesia and Northern Australia and often kept as pets. At present, there has been limited information about avian coronavirusinfection among birds. This study aimed to determine the presence of and to characterize avian coronavirus isolated from Eclectus parrots in Indonesia.

Many researchars studied about (Cristina Horhogea *et al*., (2018);Yeong-Jun Song (2018); Alfano F *et al*., (2018);Rajendran Lakshmanan (2018).

CoV-2019 Confirmed Cases Report (Date & Country wise)
Since, 31 December 2019 and as of 30 April 2020, 3 130 800 cases of COVID-19 have been reported, including 2,27,051 deaths. The first three cases detected were reported in France on 24 January 2020 and had onset of symptoms on 17, 19 and 23 January respectively (Bernard Stoecklin S, *et all*, 2020). The first death was reported on 15 February in France. As at 21 February, nine countries had reported cases are Belgium (1), Finland (1), France (12), Germany (16), Italy (3), Russia (2), Spain (2), Sweden (1) and the UK (9 – not included further),(Gianfranco Spiter *et,,all.*2020). On 24 Feb. 2020, (Afghanistan, Bahrain, Iraq, Kuwait and Oman), 29 Feb. 2020, (Ecuador, Ireland, Luxembourg, Qatar), 4 March, 2020(Faroe Islands, French, Guiana, Hungary, Poland, Slovenia), 6 March, 2020 (Bhutan), 20 March, 2020 (Papua New Guinea), 24 March, 2020 (Laos, Libya), 26 March, 2020 (Anguilla), 30 March, 2020 (Botswana), 2 April, 2020 (Malawi), 5 April, 2020 (South Sudan), 10 April, 2020 (Yemen), 11 April, 2020 (Saba), 16 April, 2020 (Bonaire).

CoV-2019 confirmed Cases have been reported on day of april 30. Africa: 36 743 cases; the five countries reporting most cases are South Africa (5 350), Egypt (5 268), Morocco (4 321), Algeria (3 848) and Cameroon (1 832). Asia: 502 955 cases; the five countries reporting most cases are Turkey (117 589), Iran (93 657), China (83 944), India (33 050) and Saudi Arabia (21 402). America: 1 293 607 cases; the five countries reporting most cases are United States (1 039 909), Brazil (78 162), Canada (51 587), Peru (33 931) and Ecuador (24 675). Europe: 1 288 663 cases; the five countries reporting most cases are Spain (212 917), Italy (203 591), United Kingdom (165 221), Germany (159 119) and France (128 442). Oceania: 8 136 cases; the five countries reporting most cases are Australia (6 746), New Zealand (1 129), Guam (145), French Polynesia (58) and Fiji (18).Other 696 cases have been reported from an international conveyance in Japan.(European Centre for Disease Prevention and Control-(ECDC) CoV-report 2020).
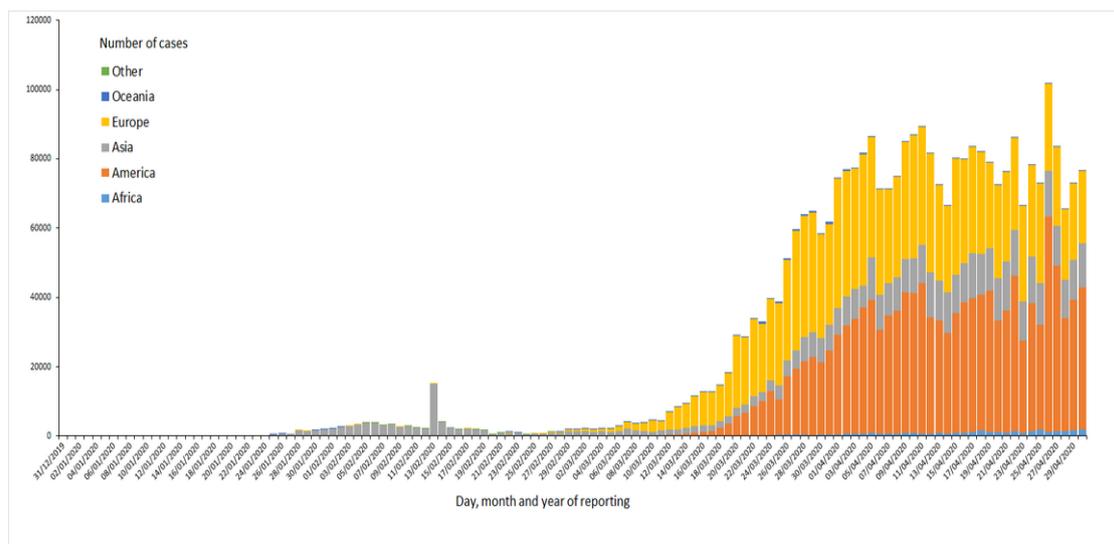
Figure 1: Distribution of COVID-19 cases worldwide, as of 30 April 2020.

Mode of Spreading

CoVs have been defined as a novel respiratory tract virus in the samples collected from the individuals who present symptoms of respiratory tract infection in 1962.The transmission primarily occurs when an infected person sneezes and through the respiratory droplets produced just as the spread of influenza and other respiratory pathogens. These droplets can settle in the mouth or nasal mucosa and lungs of people with inhaled air. After the first outbreak, secondary cases began to be reported after approximately ten days. Moreover, while these After the first outbreak, secondary cases began to be reported after approximately ten days. Moreover, while these history of contact with humans there. Confirmed genes. The resulting complex Wuhan show that human-to-human transmission can ocdrives.

The major clinical manifestations in these coronavirus infections include fever, chills, cough, shortness of breath, generalized myalgia, malaise, drowsy, diarrhea, confusion, dyspnea, and pneumonia. These coronavirus infections cause more severe diseases amongst children, old age individuals, pregnancy, people with chronic debilitating diseases such as diabetes mellitus, cardiovascular diseases, and malignancy. The global health authorities should take immediate measures to prevent the outbreaks of such emerging and re- emerging pathogens across the globe to minimize the disease burden locally and globally (S.A.et al,2012)

Symptoms

For confirmed COVID-19 cases, reported illnesses have ranged from people with little to no symptoms to people being severely ill and dying. Symptoms can include (on admission to hospital) (Nanshan Chen, 2020).

- Fever (>80% of the patients)
- Cough (>80%)
- Shortness of breath (31%)
- Muscle ache (11%)

The disease may also occur with mild symptoms only, including: low-grade fever, cough, malaise, rhinorrhoea, sore throat without any warning signs, such as shortness of breath or difficulty in breathing, increased respiratory secretions (i.e. sputum or haemoptysis), gastrointestinal symptoms such as nausea, vomiting, and/or diarrhoea and without changes in mental status (i.e. confusion, lethargy). (World Health Organization, 2020) Preliminary data report 11% lethality among hospitalised patients. Complications occurred in 33% of the patients, and included: acute respiratory distress syndrome (ARDS) (17%), acute renal injury, acute respiratory injury, septic shock and ventilatorassociated pneumonia. (Nanshan Chen, 2020).

Treatment

Currently, there is no specific medicine or vaccine for COVID-19 and no medicines or vaccines have been fully tested for safety and efficacy. At present, antiviral therapy is mainly used, as well as symptomatic and supportive treatment based on the clinical condition of the patient. Supportive treatments include oxygen therapy, hydration, fever/pain control, and antibiotics in the presence of bacterial co-infection. According to the diagnosis and treatment plan recommended by the Chinese health authorities, the antiviral drugs that can be tested for treatment mainly include αInterferon (aerosol inhalation therapy), lopinavir/ritonavir, ribavirin, chloroquine phosphate, umifenovir and others. Authorities suggested further evaluation of the efficacy of the currently recommended trial drugs in clinical applications.

For mild cases in the community, patients are advised to stay home in isolation, except for patients who may be at higher risk of developing severe forms of the disease, including older adults (>65 years old in some countries, >70 in others), people with underlying conditions (such as cardiovascular diseases, diabetes, respiratory diseases

such as COPD, or cancer) and patients with compromised immunity (congenital or acquired).

Prevention

The basic principles to reduce the general risk of transmission of acute respiratory infections include the following:

• Avoiding close contact with people suffering from acute respiratory infections.

• Frequent hand-washing, especially after direct contact with ill people or their environment.

• Avoiding unprotected contact with farm or wild animals.

• People with symptoms of acute respiratory infection should practice cough etiquette (maintain distance, cover coughs and sneezes with disposable tissues or clothing, and wash hands).Within health care facilities, enhance standard infection prevention and control practices in hospitals, especially in emergency departments.

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