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Mini Review

# COVID-19

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## Introduction about COVID-19

### COVID-19 : SARS-CoV-2

a) The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is an RNA virus.

b) Genetically located within the genus Beta coronavirus.

c) Beta coronavirus uses a glycoprotein (spike protein).

d) This spike protein binds to angiotensin –converting enzyme 2(ACE 2) receptor.

### RNA sequence of COVID-19

a) Its RNA sequence and that of the bat coronavirus are more than 80% similar.

b) There is a strong theory that the pangolin acted as an intermediate between bats and humans.

## Infection Route of COVID-19

a) Human-to-human transmission through droplets is the primary route of transmission.

b) A number of research results suggesting the possibility of airborne transmission have recently been published.

c) There are reports that SARS-CoV-2 was cultured in secretions such as feces or urine.

d) It is not clear whether transmission through feces or urine can actually occur or not.

## Infectivity of COVID -19

a) COVID-19 patients become contagious 2-3 days before the onset of symptoms.

b) Infectivity usually lasts 5-7days after infection.

## IgG & IgM detection of COVID-19

a) 100% of COVID-19 patients tested positive for IgG about 17-19 days following the onset of symptomatology.

b) There was an increase in SARS-CoV-2 specific Ig G and Ig M antibody titers after the three weeks following the onset of symptomatology.

## Clinical Symptoms and Clinical Processes and Complications of COVID-19 Disease

a) Asymptomatic (50%), mild-to-moderate (40%), severe, including respiratory failure (10%)

b) Severe forms with respiratory failure can occur in patients of any age, regardless of the presence or absence of pre-existing diseases.

c) Cough (50%), high fever (40%: 38°C or higher), headache (35%), dyspnea (30%), sore throat (20%), diarrhea (20%), nausea and vomiting (15%)

d) Loss of smell, loss of taste, fatigue, decreased appetite, hemoptysis, dizziness, runny nose, nasal congestion, chest pain, conjunctivitis, skin changes, etc.

e) Respiratory complications: lung fibrosis due to pneumonia and ARDS

f) Cardiovascular symptoms and complications: elevated blood pressure, elevated cholesterol , elevated glucose , acute myocardial injury, arrhythmia, myocarditis, heart failure, acute coronary syndrome, atherosclerotic event and venous thromboembolism

g) Acute kidney injury: due to Continuous high fever and continuous dehydration and poor oral intake

h) Gastrointestinal complications: poor oral intake, indigestion, diarrhea, nausea and vomiting, elevated hepatobiliary function parameters and pancreatic enzyme levels.

i) Cytokine release syndrome: ARDS, sepsis, DIC, multiple organ failure pattern

j) Nervous system-related symptoms and complications: Continuous high fever and dehydration, Ischemic stroke, encephalitis, meningitis, impaired consciousness, Ataxia, convulsions, neuralgia.

## COVID -19 Disease Patterns and Severity Risk Factors in Patients with Pre-Existing Diseases

a. Elderly patients with many underlying diseases are considered to have a high mortality rate because they cannot endure the pulmonary symptoms and clinical manifestations of COVID-19 (high fever, high blood pressure, severe dehydration, breathing difficulty, thromboembolic events etc.).

b. Patients with pre-existing diseases such as high blood pressure, diabetes, hyperlipidemia generally suffer of a worsening of these diseases which then become difficult to control and require additional medication.

c. In many instances patients develop newly diagnosed disease in the course of their COVID-19 infection, such as high blood pressure, diabetes, hyperlipidemia, which need continual follow up even after recovery from COVID-19.

d. Other, well controlled chronic underlying diseases such as solid cancers, hematologic diseases, autoimmune diseases, etc. do not have much influence on the worsening of COVID-19.

e. Obesity is a risk factor for severe respiratory failure regardless of age or underlying disease.

## Clinical Courses of COVID-19 Disease

a. Each person has a different incubation period (7-10 days) depending on the individual's immunity,

b. The duration of the illness and the transition period of the corona virus test to be negative lies between 14 to 21 days.

c. The clinical features and complications experienced by each person are different.

## Stages of COVID-19

a) The first stage of COVID-19 is characterized by an upper respiratory infection, nausea, vomiting and sometimes diarrhea.

b) The second stage is characterized by the onset of dyspnea and pneumonia.

c) The third stage is characterized by a hyper-inflammatory state that determines the local and systemic consequences from arterial and venous vasculopathy in the lung, ranging from thrombosis of the small pulmonary vessels to serious lung lesions leading to ARDS and DIC by a cytokine storm.

d) The fourth stage is either death or recovery.

e) Mortality is associated with advanced age, the presence of comorbidities, worsening of respiratory failure, a high level of D-dimer and C-reactive protein .

## Treatment of COVID-19 Disease

a) Early treatment is important , especially within 7 days after the onset of symptoms. Early administration of monoclonal antibody (Regdanvimab) and antiviral agent (Veklury) is very important.

b) Popular treatment (fluid treatment, antibiotic treatment, antipyretic analgesic, and anti-inflammatory drugs, etc.) for symptom relief and normalization of test values, control of abnormal findings

c) Public medications are also helpful to overcome mild to moderate COVID-19 disease.

d) Monoclonal Antibody (Regdanvimab) is effective in preventing a progression to a severe disease pattern within the 7 days after the onset of symptoms for patients older than 50, even when oxygen saturation is maintained above 95%.

e) Monoclonal Antibody (Regdanvimab) is effective in preventing a progression to a severe disease pattern within the 7 days after the onset of symptoms for patients under the age 50, with a diagnosed pneumonia (by CT scan)

f) The antiviral drug (Veklury) has been proven effective when administered as early as possible in case of pneumonia (confirmation by CT scan) and an oxygen saturation level below 94 %.

g) Corticosteroid (Dexamethasone 6mg) once a day intravenously or orally for ten days.

h) Based on the research conducted so far, monoclonal antibodies and corticosteroids are useful to counteract and prevent a cytokine storm and they have appeared to improve clinical outcomes in patients in a critical stage of COVID-19

## Comment

This review is only for until Delta COVID- 19 period. Omicron COVID-19 virus is definitely changed with last virus.

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