

Disease Severity Caused by Microbial Infections and Biology of COVID-19 & Omicron Viruses and Management through Drug's

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Abstract

Viruses are the group of infectious particles and some of them possess the more complex structures due to which their growth proliferated at the extreme level as compared to the bacterial infections. Pharmacokinetics of some drugs needed to further more in order to explore them in the medical events or sometimes drug research increase the chances of treatment of infectious disease during the course of replicating cycle. Among them, coronaviruses are appearing on different form of variants. These are Beta, Delta, and Omicron variants and each type have different sequence of the amino acids. Due to colonization of the virus particles in the particular tissues, many of the immune cells show response against variety of viral proteins. Severity of viruses attack to the cardiovascular systems causing the borne of different cardiovascular diseases. Different traditional methods for molecular diagnosis of infectious particles but not reliable, but through molecular sequencing of certain mutation associated with lungs tissues may evoke the viral spikes proteins. Due to severe attack on the lung tissues, blood rushes and flow increases in the form of infectious particles. Vaccinations and antibodies are used for control their growth but some of the necessary measures in order to control the viral infections.

Keywords: Viruses, variants, cardiovascular systems, antibodies, medications, viral infections.

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INTRODUCTION

Viruses are the group of infectious particles and some of them are more complex structures due to which their growth proliferated at the extreme level as compared to the bacterial infections. Among them, coronaviruses are appearing on different form of variants. Each of the variant has its own genome region composed of specific sequence of amino and special proteins and binding capacity to the host cells [1]. It resulted the growth of abnormalities in the respiratory system, blood carrier system, liver and kidneys. Common factors including the infectious droplets may fall to n the air and accumulate in indoor places, especially where many people are gathered and there is poor ventilation. There is need to control the infectious

rate caused by viruses through proper medications and vaccines [1, 2].

Coronaviruses share some common features and many of them appear to be more effects on the human body causing the destruction of liver and hearts cells. These are Beta, Delta, and Omicron variants and each type have different sequence of the amino acids that linked to the body cells. Sometimes, dermatological manifestations also occurred in those patients sufferer of COVID -19 causing the skin lesions through layer damaging mechanism [3, 18, 19]. Many of medical complication besides the outcomes of vaccines development and antibodies for treatment and medical observations. However, some preventive measures are

needed for controlling the vast expanding growth of viruses.

Disease severity and Microbial infections

Coronaviruses are the group of infectious viruses that causing the disease circulate at cellular and molecular level. Throughout the course of infection, it appears to damage to the different parts of the body as well as organs. Due to colonization of the virus particles in the particular tissues, many of the immune cells shows response against variety of viral proteins [1]. The major system affected by the COVID-19 is the cardiovascular once the viral particles targeted the pulmonary cells that resulted the fibrosis, problems of breathing, severe acute respiratory syndrome, necrosis through vascular endothelial cells. Some arteries that associated with functioning of heart, serious damage to the out walls causes the bleeding in blood veins systems. Therefore, many of the heart diseases needed

to comprehend and understand the effects of COVID-19 [11, 16, 17].

Various immune events occur through the attack of SARS-CoV-2 that resulted to the serious complications to the respiratory system. These complications included the serious damage to soft tissues of the heart that disrupt the supply of oxygen to the heart tissues. It causes myocarditis in which heart tissues cannot survive due to attack of viral spike proteins. These proteins share the structural and molecular features with other proteins arrhythmias [2]. Severity of viruses attack to the cardiovascular systems causing the borne of different cardiovascular diseases (CVDs) that increase the risk of mortality specially in those patients with previous history of heart attack or other heart disease [3]. These complications may progress throughout the body through blood carrier system that ultimately causing damaging effects to the brain cells.

Table 1: Shows the infectious agent of viral particles and significance

Infectious agent/event	Significance	Type of cell	Biological system
Coronaviruses	Throughout the course of infection, it appears to damage to the different parts of the body as well as organs.	Immune cells	Cardiovascular, liver, kidneys and respiratory system, fibrosis, problems of breathing,
SARS-CoV-2	These complications included the serious damage to soft tissues of the heart that disrupt the supply of oxygen to the heart tissues.	Myocardial cells	Cardiovascular system
Biological events	Due to severe attack on the lung tissues, blood rushes and flow increases in the form of infectious particles to the other organs	Lungs cells	entered to the wall tissues, damage occurs at extremely and circulates to the body
Detection	PCR analysis and molecular sequencing	Organoids	Monoclonal antibody

As some of the complications associated with the attack of COVID-19 infection such as cytopathic viral injury that causes capillary damage or sometime, clotting may increase the risk of cardiovascular diseases. Other heart related complications to the cardiovascular system are arterial thrombosis embolic disease. There is need to study the rigorous effects of COVID-19 infection for both short term and long terms prior to attack of other organs [4]. It has high replication rate, so the chance to attack of myocardial cells and survival rate may ornate through medical treatments. Through the chemical drugs that have been used for the treatment of cardiovascular disease, major risks exist due to release of active metabolites in the blood stream. Therefore, pharmacokinetics of some drugs needed to further more in order to them in the medical events or sometimes drug research increase the chances of treatment of infectious disease during the course of replicating cycle [5, 11].

Breathing and suffocations complications

Although, coronaviruses attack to the major organs of the body, but most promising attack on the respiratory system that causes the lung injury [5]. Due

to severe attack on the lung tissues, blood rushes and flow increases in the form of infectious particles to the other organs but the occurrence of different symptoms in replications in the host tissues causes the attack to the immune cells due to high replication rate [6]. Different experiments performed in order to elucidate the effects of Covid-19 on the lungs endothelial cells such as pluripotent stem cells that showed affected to the endothelial cells also damaging to blood cell walls due to more colonization of viruses in the particular blood vessel. When they entered to the wall tissues, damage occurs at extremely and circulates to the body [7].

Patients with common symptoms of COVID-19 needed the intensive care through the medical machines in the form of ventilators that regulated the supply of oxygen to the lungs. As for normal breathing, without injury the complications associated more in injured patients also developing the other symptoms like depression and anxiety that affect the functioning of lymphatic system. It is difficult to predict the different long-term outcomes COVID-19 virus but the appropriate diagnosed of viruses and proper medications inhibited the growth their and further

attacks on different organs of the body [8, 13]. Short terms complications can cause the different immunological effects although the occurrence of different symptoms.

Asymptomatic SARS-CoV-2 infections are sometimes appears more dangerous than as less number of symptoms appears and it is further needed to explore the progress of infections that leads to pneumonia that serious complications in those patients sufferer from multiple infections and high risk of attack to the articular tissues [9-10]. As the disease severity high in those patients with confections, it is important to diagnose the clinical characteristics of the novel coronavirus disease which would help improve our understanding of the disease's pathogenesis. The right kind of medications through laboratory and pathological infestation's might adhere the further replicating and attack to the normal tissues [11].

SARS-CoV-2 viruses are the major group of infectious viruses with comprised of single stranded RNA that targeted the populations of human as well as animals. Due to their large attacking diversity to the organisms, they can affect the different functions of respiratory tract by blocking them through mucous like abnormal secessions, liver by disrupting the cells that help to boost the production of blood cells; kidneys can be damages to more colonization [12-13]. Modular and biological antibodies have been adhere to the molecular

targets for treating the novel coronaviruses but each variant shares some of the common systems effects related to the biological systems [16-18].

The other variants of the Corona viruses family are Omicron that also targeted the lungs cells. As a result of this attacks on organoids, protein called TMPRSS2 expressed in the lungs tissues [14]. It resulted the attack on the nose as well as on throat cells. It depends on the expression TMPRSS2, the higher the expression can increase the risk of infectious diseases that weakens the immune systems of the body while on the other hand, adequate expression of this proteins lowers the infectious diseases causes the immune systems of the body to fight and boost immune cells.

There is need to address the measures that will be effective in mitigating transmission of Omicron. There are some aspects of transmission of Omicron in those of vaccination and can cause mutational effects. Different traditional methods for molecular diagnosis of infectious particles but not reliable, but through molecular sequencing of certain mutation associated with lungs tissues may evoke the viral spikes proteins. Humoural- and cell-mediated response provided by vaccination. S gene as the clinical finder's and many of the clinical biomarkers suggested in order to control the attack of omicron variant but PCR analysis and molecular sequencing might helpful to control the severe effects [15-17].

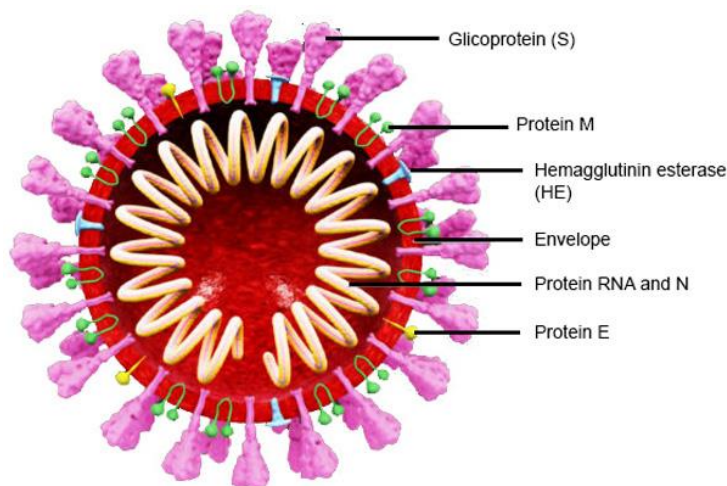


Fig-1: Shows the morphology structure of coronaviruses

Neutralization efficiency of the SARS-CoV-2 against the beta, delta, and omicron variants have been affected human population [17, 18]. The omicron variant of COVID-19 is spreading more rapidly than other strains of the virus because it has more mutations than any other variant so far. Monoclonal antibody infusions, among the most effective treatments to prevent serious illness from COVID. Time it takes for an infected person to develop symptoms after an exposure may be shorter for omicron than for previous variants. Omicron appears to have a growth advantage

over Delta. The most common covid-19 symptoms have been cough, fever, fatigue, and loss of taste and smell [1, 7, 9]. Omicron variant was much quicker at getting into the bronchus or tubes that run through the upper airways and lungs but much slower at infiltrating the lung tissue itself. However, as the Omicron variant is so new, more data is needed to understand how Omicron has spread so rapidly across [19-21].

It also causes the new common trend of upper respiratory symptoms issues like sore throats and

nausea over symptoms like shortness of breath or a loss of taste and smell. Omicron manifests itself in similar fashion to prior covid-19 strains, as well as the flu, appears that Omicron is settling higher up in the respiratory tract and not getting deep into the lungs. Smoking impairs lung function, making it more difficult for the body to fight off respiratory disease due to the new coronavirus [20-24]. Another risk associated with using smokeless tobacco products, like chewing tobacco, is that the virus can be spread when the user spits out the excess saliva produced during the chewing process. It also damages to liver by elevated levels of alanine aminotransferase and aspartate aminotransferase. Increased levels of liver enzymes can mean that a person's liver is at least temporarily damaged. Although not specific for liver disease, it can be used in combination with other enzymes to monitor the course of various liver disorders [11, 14, 17, 18].

SARS-CoV-2 Omicron variant encodes the many amino acids among on which, fifteen are linked to receptor-binding domain. These variants are holding the spike (S) protein and have ability of binding to the human lung cells. Strong binding to the human lung cells suggested the mechanism behind the proliferation for convalescent and vaccinated individuals. Different broadly antibodies might comprehend the effects of neutralized Omicron through recognition of antigenic sites S2X2593 and S2H974. But the exact mechanism remain unclear needed to explore the role of other different antibodies in targeting the omicron variant [16, 25-27].

Omicron variant also affected by variations in the S1/S2 junction that can be disrupt through cleavage of the amino acid sequence. Some biological accents have been occurred during attacking patterns of coronaviruses. Omicron and Delta variants exhibited fusion activity that different from each other on the basis of specific proteins and fusion events. Some proteins of omicron variant are difficult to hydrolyze while on the other hand, proteins of the delta poses the high fusion efficiency. Omicron variant also less severe due to low fusion efficiency but further study needed in order to explore the targeting of viral proteins in order to stop their replacing them with suitable biological markers [18, 22, 27]. Coronaviruses die very quickly when exposed to the UV light in sunlight. Like other enveloped viruses, SARS-CoV-2 survives longest when the temperature is at room temperature or lower, and when the relative humidity is low. Several other factors depend on host activities and liver efficiency to detoxify the harmful chemical compounds from the body. Abnormalities in body cells may exhibit the patterns of illness [26-29].

One of the major proteins in replicating of omicron is open reading frame encoding the spike protein that can tightly binds to the angiotensin-converting enzyme 2. Strong binding of open reading

frame encoding the spike protein with angiotensin-converting enzyme 2 increase the rate of replication while on the other hand, weak binding of open reading frame encoding the spike protein with angiotensin-converting enzyme 2 impaired the replication [18, 21, 30-32]. Many antibodies have been employed as therapeutic for target of many potently neutralizing monoclonal [22, 33, 34]. Angiotensin converting enzyme inhibitors and angiotensin II receptor blockers has been used in order to target the spike proteins [1, 35].

CONCLUSION

Different viruses have special proteins involved in targeting of host immune cells and sometimes induced autoimmunity in which immune system of the body fails to distinguish invaders and kills its normal cells. As a result, certain medications have been used in order to control the rate in viral infectious particles due to high replication rate. Vaccinations and antibodies are used for control their growth but some of the necessary measures are needed in order to control the infections burden.

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