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COVID-19: A Correlation between Pathogenic Progress Stages and Bodily Organic Change States in Human Body

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Abstract

The innate cause of SARS-CoV-2 virus (Coronavirus) is to affect the mucus membranes of the human body, especially bronchus, lungs and lining membrane of digestive system. In an advanced condition, it affects liver, kidneys and nervous system. A full length of the disease expansion, it can be shared in 5 (five) states on account of the pathogenic progress stages (PPS), and the bodily organic change states (OCS) that could be divided into 4 (four) sequential parts. The t three states are - infecto-inflammatory state, functional failure state, morphological deterioration state and a closing state consists of recovery or death. A correlation between PPS and OCS had been done here. An early recovery and nearer to "0" casualty from COVID - 19 can be made by adapting three important measures in the COVID pandemic; these are as follows – first, the medicinal treatment should be deducting immune losing medicines (health friendly) for the immune-progression; second, pre-state oriented treatment (POT) for avoiding organ destruction and third, home isolation is preferable, and hospitalization for serious cases.

Keywords: SARS-CoV-2, pandemic, PPS, OCS, POT, home isolation,

Introduction

COVID -19 is a catastrophic disease now a days which is caused by SARS-CoV-2 virus (coronavirus). It causes several devastating conditions in different parts of the human body. Mainly it affects the mucus membranes of respiratory and digestive system with other acute manifestations of the disease.[1 - 2] Patients usually die with the collapse of respiratory passages and infection of type II alveolar cells, then consequently interferes with the production of the surfactant.[3]

It is known that the disease is acute respiratory disease syndrome (ARDS), but some people experience multi-organ dysfunction. SARS-CoV-2 can cause gastrointestinal symptoms, such as vomiting, diarrhea, or abdominal pain during the early phases of the disease;[4] nerve and brain problems in the early stages of infection. It can cause headache, anosmia, dysgeusia etc. and the complication are disturbance of consciousness and seizures in case of severe COVID-19.[5] In a hepatic research, Thomas Marjot *et.al*. discussed about the Patients with pre-existing chronic liver disease having particularly high rates of hepatic decompensation and death following SARS-CoV-2 infection[6] and Patients with COVID-19 may have various degree of renal dysfunction, characterized by elevation of BUN, creatinine (Cr), and renal structural changes.[7] According to the disease symptoms it can be formatted into 3 to 5 stages. Robert J Manson divided the COVID -19 symptoms into three stages, as – 1) asymptomatic state, 2) upper airway and conducting airway response, and 3) hypoxia, ground glass infiltrates and progression to ARDS.[8] There are other categories for stages of the COVID – 19. Deccan Herald mentioned about three stages of infection by SARS-CoV-2. Here the stages are explained as – phase 1: early infection phase, phase 2: pulmonary phase and phase 3: hyper-inflammatory phase.[9] In both cases, there is a gap of study for other organic complications, apart from pulmonary. On the other

hand, humans mainly elderly people get affected with COVID - 19 who have diabetes, heart disease or an organ involving disease (i.e. brain, liver or kidney etc.), the SARS-CoV-2 easily affect the organ and worsen the existing disease. In accordance to the process of disease infection, Lisa A Kisling and Joe M Das classified into five stages: underlying, susceptible, subclinical, clinical, and recovery/disability/death.[10] It is an appreciable classification to set in case of Coronavirus disease progress, although there are some individualistic parameters present in the process.

Method

Organic change states (OCS) are the deterioration of the human bodily organs, functionally and morphologically, and the stages of the pathogenesis (PPS) are dependent on the escape of the virus. The treatment procedure of the COVID -19 patients are ordained to reach "0" casualty situation confirmed by pre-state oriented treatment (POT) and to restore health as it was with raising immune system.

Result and Discussion In an infectious disease, two conditions are simultaneously run together. One, the virus or bacteria's progression, and second, dissipation of the human's bodily organ. Here we have mentioned them as – pathogenic progress stage (PPS) and bodily organic changes state (OCS). After invasion of a coronavirus in human body, gradually it completes its lifecycle by combating with the bodily immune system. Chief complaints of the disease COVID -19 are described under the heading of different stages mentioned in the Table below.

Table: A correlation between PPS, OCS and chief complaints in COVID – 19.

No.	Pathogenic Progress Stages (PPS)	Organic Changes States (OCS)	Chief Complaints
01	Invasion Stage – (Due to negligible quantity of the virus found)	Infection State	No signs or symptoms are found.
02	Latency Stage - (Due to minimum quantity of the virus found)	Inflammatory State	Fever with chilliness and shivering, malaise, heaviness of head with heat, profuse thirst for warm water, tongue white coated, and loose and white stool with odor.
03	Prodromal Stage - (Due to prime quantity of the virus found)	Functional failure State & Morphological Deterioration State Starts	GI tract infection produces canine hunger with thirst at morning, grinding of stomach till eating something. Every morning loose and black slimy stool with high temperature. Temperature rises whole the day. Sensitive to light and sound. Sense of smell lost. Severe weakness with aversion to eat protein. Can't eat solid foods. Pain in all bones, difficult to move. Dyspnea and frequent respiration, then chest pain.

04	Decline Stage - (Due to decreasing quantity of the virus found)	Morphological Deterioration State Ends	Oxygen level decreases. Chest function collapse with cellular destruction. Mucus membrane of stomach and abdomen destructed caused no sense of appetite. Partial memory loss, with disable to perform any mental work.
05	Convalescence Stage - (Due to lifecycle of the virus is end)	Closing State - Recovery or Death	When most of all functions especially lungs are destroyed, patient dies. Recovery stage starts from the very beginning. Reducing functional and morphological changes is the key of recovery.

The bodily organic changes states (OCS) are ordained with the expansion of the disease progress. These are described as –

1. Infectious State – when the SARS-COV-2 affect the mucus membranes of the nasal mucosa or buccal cavity, until produced no symptoms. The time is very short, an hour to a day; depends upon immunity of the affected person.
2. Inflammatory state – symptoms arises due to voluminous infection, symptoms are – fever, malaise, headache, thirsty and anxiety. Severe inflammation lasts for 4 to 6 days, but it runs throughout the disease course.
3. Functional Failure state – bodily affected organs are malfunctioning, produces the symptoms of digestive system are as – loss of smell and appetite comes from an irritating stomach. Black or white loose motion by partial loss of functional activity referred after inflammation of lining membrane of intestines and secreting more mucus. Intestinal dysfunction induces changes in intestinal microbes, and an increase in inflammatory cytokines.[4] After a period of 3-6 days it loses its functional activities.
   Same functional activities happened in respiratory system. First inflammation in the respiratory passages and alveoli with dyspnea, shortness of breath and oxygen deficiency. Later on, Amy H Attaway et.al. diagnose 15-30% will go on to develop COVID-19 associated acute respiratory distress syndrome (CARDS) for people hospitalized with COVID-19.[11]
4. Morphological Deterioration State – in digestive system, it loses its tonicity due to losing more and more mucus. In respiratory system, the Oxygen level decreases in blood circulation confirms the collapse of chest function with alveolar damage with fibrin rich hyaline membranes.[12 - 13]
5. Closing State – it separates into two opposite states, one is recovery and another is death. Recovery stage starts from the very beginning. Reducing functional and morphological changes is the key of recovery. Disease symptoms disappear with the elimination of virus, then the recovery is ensured. Otherwise, the patient dies with obstruction of the respiratory passage and severely damaged lung alveoli with a broken down immune system. Damage tissues repairmen and deterioration of viral count is the sign of recovery; otherwise, death is confirmed.

The pandemic data of COVID-19 of the world on March 2021 refers to 98.7 M (100%) cases up to 23rd January 2021. Within them, 54.6 M (55.32%) has been recovered and 2.1 M (2.13%) died in different

hospitals and clinics.[14] But in the 98.7 M identified cases 42 M [98.7 M-(54.6 M + 2.1 M)] are cured (42.55%) by auto-immunity. Here we have three types of measures to reduce casualties, collectively these measures are called pre-state oriented treatment (POT). These are – firstly, the body immunity has to boost and immune loosing medicines should be avoided. Secondly, medicines should be provided for bodily organ protection before the viral attack, which can assure 0% death in the pandemic. Thirdly, home isolation is better than hospital in the backdrop of contamination. The POT program is ensured with no fighting/killing medicines, but only inhibit the virus to protect the human body.

Conclusion

The lifecycle of the virus SARS-CoV-2 confirms five different derangement states in human body. And the auto immunity is the main key role to stop the virus. So, no medicine should be given which can reduce the immunity. Life-saving measures should be taken from the initial stage of the patient. The treatment of the patient is better at home rather than hospitals.

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