

## Post Covid-19 Complications - A Review

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### ABSTRACT

Severe Acute Respiratory Syndrome – Corona Virus 2 (SARS-COV 2) is a highly contagious infectious disease, which was turned into global pandemic in the early 2020. Post covid-19 complications are not fully understood, but they are reporting at 12-13 weeks of recovery from covid-19. One in ten people who are recovered from covid-19 experience symptoms after 13 weeks. The pathology of covid-19 is characterized by cytokine storm that leads to thrombosis, multiple organ dysfunction and endothelial inflammation. The main aim of this review is to provide an overview of the post covid complications which may help the health care professionals in implementing the better management strategies.

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### Introduction

Severe Acute Respiratory Syndrome-Corona Virus 2 (SARS-COV 2) is a highly contagious infectious disease, which was turned into global pandemic in the early 2020. It was more than just a respiratory syndrome [1]. In addition to common respiratory symptoms i.e. fever, shortness of breath, cough and body pains, covid-19 infected patients may also experience some atypical symptoms like tiredness, loss of smell and taste, fast beating (pounding heart) and difficulty in thinking (brain fog). Most of the patients could be recovered partially or completely except from some minor complications.

Milder cases are less likely to cause post covid-19 complications when compared to moderate and severe cases. Co-morbidities and old age also increase in the risk. Some evidence suggests that recurrence of symptoms were presented only with severe infection. Post covid complications are not fully understood, but they are reporting at 12-13 weeks of recovery from covid-19. One in ten people who are recovered from covid-19 experience symptoms after 13 weeks [2].

Patients who were with severe infection, Acute Respiratory Distress Syndrome (ARDS) and respiratory failure are the most common complications. Even patients with covid-19 recovered physically, they are susceptible to mental distress and Post Traumatic Stress Disorder (PTSD). The pathology of covid-19 is characterized by cytokine storm that

leads to thrombosis, multiple organ dysfunction and endothelial inflammation [3].

SARS-COV 2 uses the Angiotensin Converting Enzyme-2 (ACE-2) receptors to infect the host cells, through which it can cause pulmonary and extra pulmonary infections. The over expression of human ACE-2 receptors leads to dissemination of virus over the vascular system and causes injury in lungs, kidneys, GI tract and liver. The main aim of this review is to provide an overview of the post covid complications in the current scenario.

### Renal complications

Evidence suggests that binding of SARS COV-2 with ACE-2 receptors, leads to over expression and causes damage to endothelium of renal tubules. The incidence of renal failure after recovery from covid infected patients is 0.1%. However, reduced glomerular filtration rate (GFR) has reported with 12 months follow up. Increased serum creatinine and urea nitrogen has reported at 8 months follow up [3].

### Haematological complications

The hyper inflammatory state of SARS COV-2 infection after recovery is unknown. Patients with elevated D-dimer levels greater than the normal and co-morbidities like cancer had increased leukocyte and lymphocyte count [4]. It promotes the excess production of endogenous chemical substances and leads to altered vascular haemostasis.



### Gastro-intestinal complications

GI complications are generally uncommon in covid-19 recovered patients. Clinical manifestations such as anorexia, acid reflux and constipation have been reported in patients even after negative with swab test. SARS COV-2 has the potential to affect micro biome of the gut and causes depletion of beneficial bacteria in the villi of small intestine [4].

### Nervous system complications

The most reported complications were headache, confusion, dizziness and impaired consciousness. Insomnia and Post Traumatic Stress Disorder (PTSD) were reported in 30-40% of covid-19 survivors. This is due to deoxygenated red blood cells leads to hypoxic state in the nervous tissues [5]. This also triggers the coagulation cascade causing thrombotic complications in the nervous system.

### Dermatological complications

The most predominant complication reported after recovery from covid-19 is hair loss at approximately 20%. A few months after recovering from covid-19, many people experience this shedding of hair which may last for 4-9 months [5].

### Cardiovascular complications

Co-morbidities, age and gender increases the risk of cardiovascular complications. Dyspnoea, tachycardia and palpitations are the common complications in covid-19 recovery patients. This is due to increased viral particles in the cardiac fibres of the myocardium of heart [6].

### Pulmonary Complications

Hypoxia, chest pain and dyspnoea are the common complications. The accumulation of inflammatory fluid in the alveolar space causes decrease in the breath [6]. Increased modified British medical research council (m-MRC) grade and decreased forced expiratory volume (FEV1) have been noticed at follow up of covid-19 recovery patients.

### Conclusion

The predictions of post covid-19 complications are too early, as we are at the early stages of pandemic. It remains to be clarified the negative effects on the people, who have been recovered from covid-19. However, improved factual information of post covid complications may help the healthcare professionals in implementing the better management strategies.

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