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REVIEW ON POST COVID COMPLICATIONS AND THEIR MANAGEMENT

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ABSTRACT:

COVID-19 is a severe respiratory disease caused by a newly identified human coronavirus (HCoV) and severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). The virus was first discovered in December 2019, in China, and in march 2020, World Health Organization (WHO) declared it a global pandemic due to its wide spreading.

Patients who are recovered from covid-19 are experiencing post-covid complications. The majority of people experience pulmonary, hematological, neurological, and cardiac-related complications. In this review, an overview of post-covid complications and their management was explained.

KEYWORDS:

COVID-19, Severe Acute Respiratory Syndrome (SARS), Middle East respiratory syndrome (MERS), cardiovascular complications, pulmonary complications, renal complications, Haematological complications, neuropsychiatric conditions, Endocrine complications, Diabetic ketoacidosis(DKA), Diabetes mellitus (DM), Hyperthyroidism, Gastrointestinal and hepatobiliary conditions, Dermatological conditions, secondary infections, Multiple inflammatory syndromes in children (MIS-C), Venous thromboembolism (VTE), Renal replacement therapy (RRT), Acute kidney injury (AKI)

INTRODUCTION:

The COVID-19 pandemic is a global outbreak of coronavirus, it is an infectious disease caused by the SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) virus.

Coronaviruses are a family of viruses that can cause respiratory illness in human beings. They are called “corona” because of crown-like spikes on the surface of the virus. Severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and the common cold are examples of coronaviruses that cause illness in humans.

The first cases of a new strain of coronavirus SARS-CoV-2 or the novel coronavirus (nCoV) were first detected in Wuhan, China in December 2019, later the virus spread rapidly to other countries all around the world. This led WHO to declare a public emergency of international concern on 30 January 2020, and to characterize the outbreak as a pandemic on 11 March 2020.

The virus can spread from an infected person’s mouth or nose in small liquid particles when they cough, sneeze, speak, or breathe. These particles range from large respiratory droplets to small aerosols

1. Pulmonary conditions and their management after COVID-19

The people who survived from covid-19 have recorded a greater number of pulmonary symptoms, from dyspnoea to complicated fibrotic lung injury and ventilation weaning. The most prevalent chronic symptom is dyspnoea with 42-66% prevalence at 60-100 days follow-up.

A provisional finding of a radiological and symptomatic change in a sample of COVID-19-recovered patients shows that the post-COVID-19, Corticosteroid treatment could be effective in some patients.

ARDS caused by severe COVID-19 and influenza A (H1N1) infection, lung transplantation was previously done for fibroproliferative lung disease. Anti-fibrotic treatments are being tested in clinical trials to suppress pulmonary fibrosis after COVID-19.

2. Hematologic conditions and their management after COVID-19

The prevalence of venous thromboembolism (VTE) was reported in 5 % of patients who recovered from COVID-19. While exact proof is lacking, provided with sustained primary thromboprophylaxis (up to 45 days), prolonged hospital discharge (up to 6 weeks), and those managed as outpatients could have a better risk-benefit ratio in SARS-CoV-2 infection.

Anticoagulation agents such as direct oral anticoagulants and low-molecular-weight heparin are preferred in post-COVID-19 infection.

Similar to triggered VTE, anticoagulation drugs are prescribed for those with imaging-confirmed venous thromboembolism (up to 3 months).

3. Cardiovascular conditions and their management after COVID-19

A Chinese study reported that 20% of COVID-19 recovered patients at 60 days' follow-up documented chest pain while 9% and 5% of COVID-19 recovered patients showed continuing palpitations and chest pain respectively at 6 months follow-up.

Assessment with ECG (Electrocardiogram) and ECHO (Echocardiogram) can be considered at 4-12 weeks for serial clinical and imaging for cardiovascular problems after an acute infection.

Preventing Competitive activities or physical exercise up to 6 months before Myocarditis is resolved by cardiac MRI or troponin normalization. Despite the initial theories about the possibility of covid-19 and increased levels of ACE and RAAS inhibitors are useful in people with cardiovascular disease. Sudden stoppage of raas inhibitors may be dangerous. patients on low-dose beta blockers regulate their heart rate and reduce adrenergic activity. Special attention is needed for patients using medications such as anti-arrhythmic agents with fibrotic pulmonary changes following covid 19.

4. Neuropsychiatric conditions and their management after COVID-19

Recurrent malaise, diffuse myalgia, sleep disturbance, and depressive symptoms are recorded in covid 19 survivors. Other covid 19 post-acute manifestations are migraine-like headaches and late-onset headaches linked to elevated cytokine levels.

10% of patients reported the loss of taste and smell with recurrent headaches in a study and 30-40% of patients reported severe depression and anxiety. Standard treatment like a consultation with a physician can be useful for neurological conditions such as migraine.

5. Renal conditions and their management after COVID-19

From the 30% of critical covid patients, 5-6% of all hospitalized patients are affected with AKI demanding RRT (Renal Replacement Therapy), especially with those severe infections requiring mechanical ventilation. Even though the prevalence of dialysis-dependent AKI at discharge is poor. The renal function improvement is not clear.

In the past, better outcomes are seen from covid 19 recovered patients with compromised renal function in the post covid 19 infectious process benefited the nephrologist in AKI survivor clinics.

6. Endocrine conditions and their management after COVID-19

Development of diabetic ketoacidosis is seen for weeks to months. Patients who are not having diabetes mellitus after the signs of covid 19 resolved. Recently diagnosed DM patients do not have risk factors for type 2 diabetes.

Auto-immune thyroid diseases such as Hashimoto's thyroiditis or graves disease are also exacerbated in covid 19. Hyperthyroidism caused by SARS-COV-2 and related disruptive thyroiditis is controlled by corticosteroids.

7. Gastrointestinal and hepatobiliary conditions and their management after COVID-19

Gut microbiota can be changed after covid 19 favouring opportunistic infections. Influence on the progression of respiratory infections by gut microbiota has been recognized previously in influenza and other respiratory infections. Faecalibacterium prausnitzii anaerobe-producing butyrate is associated with good health and was shown to be linked to disease severity in covid 19 irreversible.

Research on post covid 19 effects on GI at hepato-biliary systems is still going on.

8. Dermatologic conditions and their management after COVID-19

In a worldwide sample of 716 individuals with covid 19, there is an estimated delay of 79 days in adults from the onset of the upper respiratory symptoms.

Dermatic symptoms are observed after 64% or concurrently with 15% of other post covid 19 symptoms. After 6 months only 3% of patients have skin rash after the recovery from covid 19 which resulted in a Chinese trial.

The most common dermatological complaint was hair loss and about 20% of patients reported that it was caused by viral infections or stress factors.

9. Secondary infections associated with post-COVID-19 and their management

The rare and deadly fungal illnesses are affected by people having compromised immune systems causing mucormycosis known as zygomycosis or phycomycosis.

Sinuses and the maxillary sinus are both affected often by Ethmoids

Extensive usage of steroids and antibiotics for the treatment of covid 19 or in recovered covid 19 patients leads to 8% of secondary bacterial or fungal infections. And it also leads to the inducing or worsening of fungal illness due to the use of steroids and broad-spectrum antibiotics.

The treatment of choice of antifungals is Amphotericin-B deoxycholate with liposomal formulations and surgical debridement of the fungal-infected region. Posaconazole is an alternative to Amphotericin treatment.

10. Multiple inflammatory syndromes in children (MIS-C)

Multiple organ dysfunction, fever diarrhea, vomiting, and dermatological disorders like rashes are defined by MIS-C. children with post covid complications happen to have neurological and cardiovascular complications due to increased inflammatory markers.

Immunoglobulin I.V., supportive glucocorticoids, and a low dosage of Aspirin are used as a treatment for MIS-C currently.

CONCLUSION:

1. The most prevalent chronic symptom is dyspnoea in pulmonary conditions and Corticosteroid treatment could be effective in some patients.

2. venous thromboembolism (VTE) is most prevalent in haematological conditions and Anticoagulation agents such as direct oral anticoagulants and low-molecular-weight heparin are preferred in post-COVID-19 infection.

3. Palpitations and chest pain are more common, and RAAS inhibitors are useful in people with cardiovascular disease. Special attention is needed for patients using medications such as anti-arrhythmic agents with fibrotic pulmonary changes following covid 19.

4. Recurrent malaise, diffuse myalgia, sleep disturbance, depressive symptoms, and other post-acute manifestations are migraine-like headaches and late-onset headaches linked to elevated cytokine levels. Standard treatment like a consultation with a physician can be useful for neurological conditions such as migraine.

5. In renal conditions RRT is used in patients affected with AKI.

6. Auto-immune thyroid diseases such as Hashimoto's thyroiditis or graves' disease are also exacerbated in covid 19. Hyperthyroidism caused by SARS-COV-2 and related disruptive thyroiditis is controlled by corticosteroids. Diabetic ketoacidosis is also seen in patients who do not have DM.

7. Research on post covid 19 effects on GI at hepato-biliary systems is still going on.

8. The most common dermatological complaint was hair loss and it is caused by viral infections or stress factors.

9. The rare and deadly fungal illnesses are affected by people having compromised immune systems causing mucormycosis known as zygomycosis or phycomycosis. The treatment of choice of antifungals is Amphotericin-B deoxycholate with liposomal formulations and surgical debridement of the fungal-infected region. Posaconazole is an alternative to Amphotericin treatment.

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