

Clinical Profile of Patients with COVID 19 Disease Follow up After Three months of Recovery

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Abstract

Background: The world experienced the largest pandemic in the form of COVID 19 disease, the winter peak of which is still going on in this month of December 2020 in many countries throughout the world. The WHO defined this Corona virus disease as COVID 19 which began in the Wuhan city of China in late 2019. Cumulatively as of 15 November 2020, 53.7 million confirmed cases and 1.3 million deaths have been reported to WHO. The virus mainly involves the upper and lower respiratory tract but can effect other organs of the body too. Although most patients recover, some may have severe disease in the form of hyper inflammatory phenotype and later these patients go on to become the so called Long COVID. The patients with co morbidities tend to have severe phenotype and take time to recover. This group of COVID 19 patients come back with symptoms after some time and needs work up, treatment and rehabilitation.

Material and Methods: The patients who came to our outpatient department since 1st october to 30th November with respiratory complaints, after three months of recovery were worked up for any new lung infection, new episode of VTE (venous thrombo embolism) and at the same time looked for sequelae like pulmonary fibrosis, pulmonary hypertension and peripheral DVT (Deep Venous Thrombosis). Patients underwent routine workup

for infection, renal function along with CT chest (computed tomography) and 2DECHO. A 6 MWT (minute walk test) was done on all patients to look for desaturation of more than 4%. Infection was treated and any sequelae if observed were managed accordingly and patients were referred to rehabilitation centre for management.

Results: Shortness of breath on exertion and central chest discomfort were commonest symptoms persisting followed by fatigue, anxiety and palpitations. CT changes were seen in 31% and 28% had 6MWT positive. PAH and new VTE was observed in one each and two patients had peripheral DVT.

Conclusion: Follow up of patients with COVID 19 disease must be done and looked for any lung parenchymal and vascular sequelae. The sequelae has to be appropriately managed and an early referral to rehabilitation is to be done to reduce the burden of long term morbidity in these patients.

Keywords: Pandemic COVID 19 disease CT

Introduction

In 2020 the world has witnessed the largest pandemic due to COVID 19 after the Spanish flu of 1918. The COVID 19 infection is caused by novel Corona virus which is an enveloped RNA virus. The cluster of cases started at the end of 2019 in the Wuhan city of china and later spread through out the world causing the global pandemic. The

WHO designated the coronavirus disease as COVID 19 disease in FEB 2020. (1)

The virus causing Covid 19 belongs to beta corona virus group similar to SARS virus (severe acute respiratory virus) and is named as SARS COV 2. (2) The Corona virus was detected in 1960's from respiratory tract of patients with common cold.(3) This virus is transmitted from bats which are the primary source of infection and enters the human body by binding to ACE 2 receptors on epithelial cells of the respiratory tract and type II alveolar cells in the lungs.(4) Globally the rates of new COVID-19 cases and deaths continued to increase, with almost 4 million new cases and 60000 new deaths recorded. Cumulatively as on 15 November 2020, 53.7 million confirmed cases and 1.3 million deaths have been reported to WHO. The disease is restricted to upper respiratory tract and conducting airways in patient who generate good innate immunity and is usually mild and the disease that involves the areas of lungs meant for gas diffusion is usually severe and requires monitoring and treatment. The clinical spectrum can range from simple asymptomatic carrier to hyper inflammatory phenotype with ARDS and respiratory failure. (5)(6)(7)(8) The mode of transmission is by droplet from person to person resembling influenza and incubation period is 14 days. Most develop symptoms within 4 to 5 days. Severe illness is seen in patients with co morbidities like coronary artery disease, hypertension, chronic kidney disease, smokers, chronic obstructive pulmonary disease and obesity. The clinical presentations, diagnostics and treatments have been extensively studied but data on follow up and sequelae is yet to come in this global pandemic of COVID. The clinical characteristics as shown by D Wang et al in their study of 136 patients had revealed that the common symptoms were fever (98.6%), fatigue (69.6%) and dry cough (59.4%). Lymphopenia was seen in 70.3% and CT chest scans showed bilateral

GG (ground glass) in all patients. (9) COVID disease involves the lungs, the most severe form is seen as ARDS(adult respiratory distress syndrome) in the hyper inflammatory phenotype due to the cytokine storm. The radiological presentation included GG opacities in all the lobes of lungs, sub pleural interstitial shadows, crazy paving and consolidation. The severe form of the disease leads to DAD (diffuse alveolar damage) and early fibrosis. Y wang et al had shown that temporal changes in CT scans had peaked during 6 to 11 days of infection and various shadows included GG opacities and linear opacities predominantly seen in the sub pleural regions. (10) One more important involvement is that of pulmonary vessels with thrombus formation and there are reports of increased incidence of Venous Thromboembolism as well. F A Klok in their study found 31% of COVID patients admitted to ICU had thrombotic events. (11) D Whichman in their autopsy study found that 58% of patients had DVT in whom venous thrombo embolism was not suspected before death (12) Although the hallmark sequelae of COVID 19 disease are seen involving the respiratory system, neurological and cardiac sequelae are already reported. The lung sequelae presents as either lung fibrosis and PAH (pulmonary artery hypertension) due to thrombotic disease. This pattern of lung parenchymal fibrosis is rare in other forms of ARDS including ARDS due to H1N1. The neurological complications included stroke (ischaemic and hemorrhagic) and encephalomyelitis and GBS (Guillain barre syndrome). The cardiac complications include myopericarditis, atrial and ventricular tachyarrythmias. (13,14,15) Of late the term LONG COVID is being defined considering the sequelae of COVID 19 involving various organs. The sequel of COVID 19 can be post acute and chronic.

The sequelae after four weeks of recovery are considered as post acute and those after twelve weeks are defined as chronic. Various studies have shown that there is only a partial recovery of symptoms in COVID 19 patients even after three months of recovery, thus the need of follow up, recognition of symptoms, work up and the need of rehabilitation in these patients have to be emphasised. Xiong et al found that 49.6% of patients who recovers from COVID disease still had one or the other symptom like fatigue, myalgia etc even after three months of discharge from hospital.(16) The LONG COVID need a holistic approach to assessment and management of various issues. These include assessment and management of breathlessness, referral to rehabilitation, need for oxygen, requirement of referral for psychological assessment, diagnosis of new thrombo embolic disease, post viral cough and assessment for sarcopenia.(17,18,19,20) Steroids have been used in COVID 19 treatment after its proven efficacy in decreasing the mortality in moderate and severe COVID 19 disease.

Even after the extensive use of steroids significant number of patients tend to develop lung fibrosis that have been shown to improve or remain static over a period of time. Various studies have shown persistence of lung fibrosis on CT , abnormal lung function tests and elevated D dimers in patients who recovered from COVID disease.(21) Carvalho-Schneider C et al had shown that about two third of recovered patients had symptoms of anosmia, dyspnea and asthenia.(22) Fergus W Hamilton et al in their study concluded that 74% of recovered patients had persistent symptoms and suggested a holistic approach focussing on rehabilitation of these patients. (23) Complete guidelines for pulmonary guidelines in adults are developed by Charlotte E Bolton and his colleagues (24)

Aims and objectives

To study the clinical profile including age, distribution, comorbidities, persistent symptoms and laboratory parameters in COVID 19 patients who came for follow up after three months of recovery.

Material and Methods

Patients with COVID 19 disease who came three months after recovery were taken into the study. The patients who came with complaints including cough, breathlessness and leg swelling were enrolled. These patients were enrolled between 1st October and 30 th November. These patients were either RT PCR confirmed or diagnosed based on clinics radiological findings and were treated at home or hospital These patients were worked up for airway infection, pneumonia, venous thromboembolism, peripheral DVT and lung fibrosis. The patients underwent CBP, D DIMER, CT chest, CRP and a 6 MWT. The CT chest scan was compared with initial CT scans and looked for shadows that varied from sub pleural linear opacities to parenchymal fibrotic shadows. 2DECHO was done to look for any pulmonary hypertension. The baseline Spo2 was recorded and then the patient was asked to walk for 6 minutes and then observed for a drop in Spo2 of more than 4%. The patients were worked up for a new infection and a new embolic episode and deep venous thrombosis. At the same time looked for any sequelae to COVID 19 disease such as pulmonary hypertension, lung fibrosis and persisting symptoms like fatigue and breathlessness.

Results

32 patients were followed up after 3 months of recovery from COVID 19 disease treated at home or hospital. 56% were males and 44% were females. 44% were in the age group of 40-60 yrs, 31% were in age group 60-80 yrs and 25% were among 20-40 yrs. The majority of patients in our study had mild disease 56% and 2% had severe

disease. Common co morbidities observed were diabetes mellitus (44%), hypertension (50%), coronary artery disease (38%), chronic obstructive pulmonary disease (25%), smoking (31%) and obesity (31%). Among the symptoms that persisted in patients were shortness of breath (31%) and central chest discomfort 31% and next common symptom was fatigue observed in 25%. CT chest changes were observed in 31% and 6MWT was positive 28% . A new VTE was observed in one patient and one patient had PAH. Two patients had peripheral DVT.

Limitations

DLCO (diffusion lung capacity) could not be done in follow up patients due to financial constraints and CT scans were done at different centres as per the convenience of patients and many reports available with patients were not scored.

Conclusion

In correlation with various studies our observation also showed persistence of symptoms like fatigue , shortness of breath, palpitations and chest discomfort in significant number of patients who recovered from COVID 19 disease.The follow up patients were worked up for sequelae and were found to have lung changes on CT and pulmonary and peripheral thrombosis. Few patients had psychological disturbances also. A positive 6 MWT guided us for the need of CT scan chest which revealed parenchymal fibrosis. D dimer, venous doppler, 2DECHO and CTPA (pulmonary angiogram) helped in ruling out pulmonary thrombus, peripheral thrombus and pulmonary hypertension. Patients were appropriately treated and referred on time to rehabilitation centre for management. Our study as also shown by previous studies, concludes that patients with covid 19 disease needs a follow up visit after 3 months and appropriate management may reduce morbidity significantly in these group patients

Table 1

	Sex Distribution	In 32 Covid Patients
Male	14	44%
Female	18	56%

Table 2

	Age Distribution	In 32 Covid Patients
20-40 Years	8	25%
40-60 Years	14	44%
60-80 Years	10	31%

Table 3

	Disease Severity in 32 patients	
Mild Disease	18	56%
Moderate Disease	12	22%
Severe Disease	2	16%

Table 4

	Comorbidities	In 32 Covid Patients
DM	14	44%
HTN	16	50%
CAD	12	38%
COPD	8	25%
SMOKING	10	31%
OBESITY	10	31%

Table 5

	Persisting Symptoms In	32 Covid Patients
Fever	1	3%
Shortness Of Breath	10	31%
Central Chest Discomfort	10	31%
Anxiety And Depression	4	13%
Palpitations	2	6%
Fatigue	8	25%

Table 6

	Work Up Of	32 Covid Follow Up Patients
Elevated CRP	5	16%
Changes On CT Chest	10	31%
PAH	1	3%
VTE	1	3%
Peripheral Venous Thrombosis	2	6%
Elevated D Dimer	4	13%
6 Mwt Positive	9	28%

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