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THE POST COVID SPECTRUM: A DESCRIPTIVE ANALYTICAL STUDY OF POST COVID OUTPATIENT FOLLOW UP CASES AT A TERTIARY CARE HOSPITAL OF SOUTHERN MAHARASHTRA

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ABSTRACT

Introduction: As of 4th March 2022, India had reported over 42 million COVID-19 cases with some patients experiencing new, recurring or ongoing symptoms related to COVID-19 even several weeks after the acute phase of infection, commonly termed as post- acute sequelae of SARS-CoV-2 infection (PASC). Some people with PASC may also experience a confusing syndrome of relapsing-remitting symptoms. A simple and widely available measure of assessment, the number of ongoing symptoms, could help predict a future risk and severity and thereby deserves further attention. The concordance of the severity of physical and mental health impairment in long COVID highlights the need for close integration between physical and mental health care for patients with PASC. **Methodolgy:** The study was conducted over the patients admitted and further discharged and followed up at a dedicated covid center, a tertiary care hospital of southern Maharashtra. Informed consent was taken and a descriptive analytical study in the form of a clinical profile, with regards to age and sex, occupation, presenting complaints, CT severity score, comorbidities, etc; was conducted. Total 274 patients were included in the study. **Results:** Follow up at 15 days after discharge and monthly thereafter was done. There was a male preponderance of 68.61%. Maximum patients were in the age group of 40-60 years (42.33%) followed by 36.86% patients in 20-40 years age group. Of 274 patients included in the study, 100 had preexisting comorbidities with maximum i.e. 32 patients having diabetes mellitus. 22 patients had an initial CTSS of more than 30/40. The most common complaint seen on follow up was fatigue (43.43% of cases) followed by breathlessness in 25.54% of patients. **Conclusion:** Considering the vast spectrum of post covid manifestations right from physical upto mental health, this study highlights the importance of a timely follow up and appropriate intervention and the necessity to recognize as well as attribute the respiratory as well as non-respiratory manifestations in the post covid era to long covid syndrome.

KEYWORDS: COVID, POST COVID, LONG COVID, PASC, BREATHLESSNESS, FATIGUE, CTSS.

INTRODUCTION

SARS-CoV-2 is one of the most virulent pathogens causing severe acute respiratory illness along with MERS and swine flu in humans. Patients with SARS-CoV-2 infection may have mild-to-asymptomatic illness, however some rapidly progress to acute respiratory distress syndrome (ARDS), multi-organ dysfunction syndrome (MODS) and death. Some patients may also experience new, recurring or ongoing symptoms related to COVID-19 several weeks even after the acute phase of infection. These symptoms are referred to, by many different names, including long COVID, long-haul COVID, Chronic COVID, Post-COVID syndrome and Post-acute COVID-19 syndrome, as well as Post-Acute Sequelae of SARS- CoV-2 infection (PASC). The risk factors predisposing to the development of PASC are yet to be fully ascertained since some patients who remained asymptomatic in the acute COVID- 19 phase have gone on to experience PASC symptoms whereas some survivors of even severe disease remained free from symptoms beyond three weeks.[1]

The symptoms of PASC may include cough, breathlessness, fever, sore throat, chest pain, palpitations, cognitive deficits, myalgia, neurological symptoms, skin rashes, and diarrhoea; some may also have persistently low oxygen saturation.[2,3] Since SARS-CoV-2 infection was recognised in late 2019, the academic and clinical emphasis has been on respiratory manifestations. Increasing evidence exists for direct multiorgan effects,[4,5] and indirect effects on other organ systems and disease processes, such as cardiovascular diseases and cancers, through changes in healthcare delivery and patient behaviours.[6,7]

Long covid, or post-covid syndrome is defined by the National Institute for Health and Care Excellence (NICE)[8] as "signs and symptoms that develop during or after an infection consistent with covid-19 which continue for more than 12 weeks and are not explained by an alternative diagnosis."

MATERIALS AND METHODS

274 patients were included in the study who were previously COVID positive and were admitted in hospital and were compliant with follow up. Follow up was done after 7 and 15 days of discharge followed by monthly follow up. Characteristics such as Age, Sex, Occupation, presenting complaints, previous CTSS, Comorbidities, CXR findings, Treatment given, Investigations, etc. were considered for excel sheet analysis, thereby a descriptive analytical study.

Informed consent was taken from patients and their relatives.

RESULTS

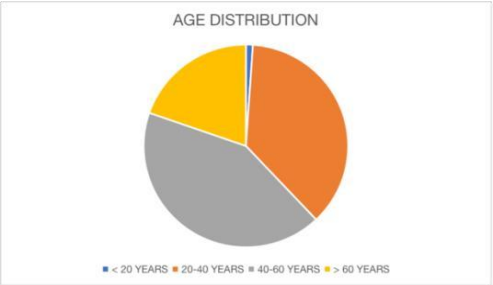

Fig. 1: Showing Age distribution of post Covid follow up cases.

Considering the age distribution of post covid patients, maximum were in the age group of 40- 60(n=116) followed by 101 patients in the age group of 20-40 years.

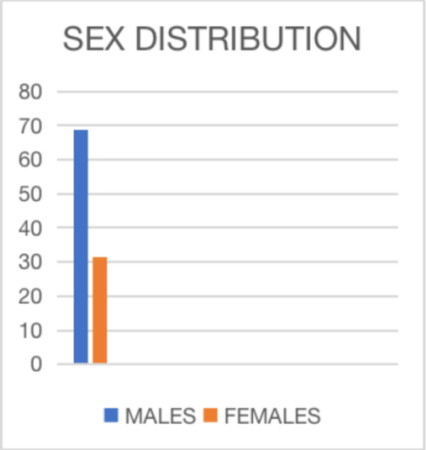

Fig. 2: Showing Sex distribution of post Covid follow up cases.

There was a male preponderance in the post covid follow up cases with 188 males and 86 females.

There were 40 healthcare workers included in the study and the remaining 234 being non health care workers.

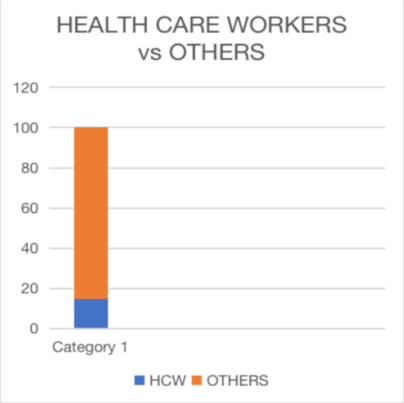

Fig. 3: Showing HCW vs OTHERS of post Covid follow up cases.

The most common complaint noted on follow up was fatigue, seen in 119 patients followed by breathlessness in 70 patients. Cough as a presenting complaint was seen in 58 cases.

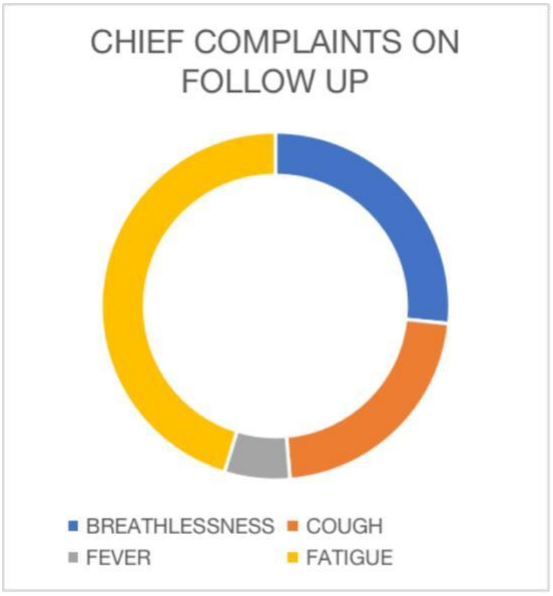

Fig. 4: Showing Presenting complaints of post Covid follow up cases.

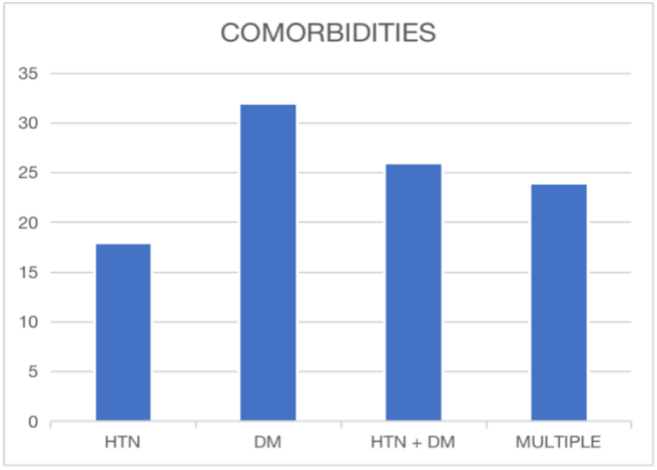

Fig. 5: Showing Comorbidity Distribution of post Covid follow up cases.

Majority of patients (32) had DM as a preexisting comorbidity followed by HTN and DM both in 26 cases. 18 patients had isolated HTN and 24 patients had multiple comorbidities.

Table 1: Correlation between previous CTSS and Presenting complaints and comorbidities.

No of follow up cases	Previous CTSS	Previous spo2 on admission	Presenting complaints on follow up (in order of severity)	Follow up spo2	Comorbidities association
22	More than 30/40	Less than 90%	Breathlessness, fatigue	80-90%	(Maximum) diabetes mellitus (20)
37	20-30/40	More than 90%	Dry cough, fatigue, breathlessness on exertion	>90%	-
215	<20/40	More than 90%	Fatigue, dry cough	>90%	-

On monthly follow up, as depicted in table 1, it was clearly noted that the patients who had an initial CTSS of more than 30/40 were the ones who had persistent breathlessness on follow up and a SpO2 of 80-90%. Co-existence of DM was also common in this subgroup of patients.

Those with a CTSS of 20-30/40 with maintained SpO2 above 90% (majority cases) had follow up complaint of dry cough and fatigue more as compared to breathlessness. However, the patients (maximum) (215 patients) with an initial CTSS of less than 20/40 had the most common complaint of fatigue.

Table 2: PTE in post covid patients.

No of follow up cases	Complaints	D-Dimer	CTPA	Advise
7	Breathlessness Chest pain	more than 3000ng/ml	5 cases s/o PTE. (Haemodynamically stable, ECG WNL) 2 WNL	ANTICOAGULATION STARTED

It was also noted during the follow up study that 7 patients had an unusually raised D-Dimer levels which were further worked up for Pulmonary Thromboembolism, of which 5 cases had CTPA evidence of PTE but none were hemodynamically unstable and thereby were started on oral anti-coagulation and followed up accordingly.

DISCUSSION

India has reported over 42 million COVID-19 cases as of March 4, 2022.[9] COVID-19 being primarily a respiratory infection, the persistent respiratory complaints in such patients can be attributable to the persistent radiological findings in such patients. Such opacities may be indicative of fibrosis that some of the patients with COVID-19 pneumonia go on to develop later during the course of the illness.[10,11] The mechanisms underlying long-term persistence of symptoms are unknown. PASC has been postulated by some researchers to be due to persistent inflammation beyond the acute phase of the illness associated with dysregulated immunity and multiorgan dysfunction. Yet another theory advocates that PASC is a result of virus-induced pathophysiological changes that take place within various organ systems.[12]

With obesity being associated with both non-recovery and severity of long COVID, whether weight reduction using combined pharmacological and non-pharmacological approaches can ameliorate long COVID warrants further investigation. Beyond diet and lifestyle interventions, GLP-1 analogues have been reported to achieve clinically important weight reduction in adults.[13]

In a study conducted by P Modi et al: Clinical profile of 116 patients undergoing post-COVID follow-up - A prospective study; it was noted that fatigue (32.8%), breathlessness (23.3%), and cough (18.1%) were the most common post-COVID symptoms and 46.6% of patients had comorbidities.

As evident in our study, fatigue was the most common complaint followed by breathlessness which is in agreement with similar studies conducted by Goërtz et al. in which fatigue and dyspnoea were the most prevalent symptoms during the infection and at follow-up.[14] Similar findings were observed in the study conducted by Carfi et al., where 87.4% reported persistence of at least one symptom, particularly fatigue and dyspnoea after the recovery from acute COVID-19 infection.[15]

COVID-19 is considered a hypercoagulable state, leading to venous thromboembolism in patients with severe disease, and this was also seen in our study. With regards to early initiation of anticoagulation therapy, Tang et al also observed beneficial effects of early initiation of low molecular weight heparin among the 449 severe COVID-19 patients with markedly elevated D-dimers with a significantly improved 28 day overall survival among the users versus non-users.[16]

CONCLUSION

To summarize the study and to ensure an effective impact in the general population, to clear off one thing is, respiratory complaints in the post-COVID era need to be evaluated in detail considering the vast spectrum of post covid manifestations including not only respiratory complaints but also other psychosocial impacts.

The findings also necessitates the need of the hour for complex interventions and goal directed management, targeting both physical and mental health impairments to ameliorate the symptoms. One thing recognised off this and other studies along the similar lines is the identification and urgent management of the post covid complaints considering the post-acute sequelae of SARS-CoV-2 infection (PASC).

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