



Clinical Profile and Outcomes of Patients Admitted with COVID-19 Infection –Report from a Tertiary Hospital

Authors

**Harharpreet Kaur^{1*}, Manpreet Singh², Kiranjit Kaur³, Arvinder Kaur⁴,
Randhir Singh⁵, Nehal Patel⁶**

¹Professor and Head, Medicine Department, MM Medical College, Kumarhatti, Solan

²Professor, ENT, Department and Medical Superintendent, MM Medical College, Solan

³Professor & Head, Biochemistry Deptt, MM Medical College, Kumarhatti, Solan

⁴Senior Resident, Department of Medicine, MM Medical College, Kumarhatti, Solan

^{5,6}Junior Resident, Department of Medicine, MM Medical College, Kumarhatti, Solan

*Corresponding Author

Dr Harharpreet Kaur

Professor Medicine, MM Medical College, Kumarhatti, Distt. Solan, Himachal Pradesh, India

Abstract

Introduction: Coronavirus disease (COVID-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Symptoms may be mild which do not need hospital admission. However some patients progress to acute respiratory failure, Adult Respiratory Syndrome (ARDS)/sepsis and require intensive care. There is paucity of data regarding the clinical course of the disease.

Aims and Objectives: To study the clinicodemographic characteristics, associated comorbid conditions and outcomes of COVID 19 patients admitted in a tertiary hospital.

Methods: 185 consecutive patients with confirmed diagnosis of COVID-19 who were admitted from September 2020 to 31st December 2020 in a tertiary hospital were studied. Only patients with moderate and severe disease were admitted. Rests were advised home quarantine. They were given medical treatment as per Indian guidelines and besides the patient profile their clinical course, oxygen requirement and need for ventilator support and outcomes were studied.

Results: Age ranged from 30-86 years. 62% of patients were between the age of 51-70 years. 68.1% patients were males and 31.9% were females. 91.4% patients were admitted with shortness of breath (SOB). Other complaints included fever (10.3%) and cough (18.4%). 68% of the subjects had associated comorbid conditions. Diabetics constituted 49.2% and hypertensives 41.1% of these cases. 59% of patients were stabilised on low flow oxygen/without oxygen, 8% required high flow oxygen, 29% needed non invasive ventilation and 3% had to be mechanically ventilated. 57% of patients who required noninvasive ventilation were diabetics. Significantly higher comorbidity was present among patients with severe disease as compared to those with moderately severe disease. (Pearson chi² (1)=22.9781 Pr =0.000). 83% of all admitted patients recovered completely. 70% cases who received non invasive ventilation recovered and had no residual complication. 5% were referred or left the hospital. The hospital stay ranged from 1 to 36 days. Mortality was 12%. 3 patients who expired reported very late and were referred from other centres.

Conclusion: The patients who were admitted with COVID-19 were elderly with a male predominance. Comorbidity was significantly associated with severe disease. Recovery rate is good with early and aggressive ICU care.

Keywords: COVID-19, Patient profile; Comorbidities, Severe Disease; Outcomes.

Introduction

Patients with SARS-CoV-2 infection may be asymptomatic but can also develop serious complications requiring hospitalization and admission to intensive care unit (ICU). It is believed that the clinical course is affected by underlying health conditions or comorbidities. Our study aimed to examine the demographic characteristics, clinical profile, associated comorbid conditions, the disease progression, clinical course and most importantly the outcomes of such patients who were hospitalized in our institution.

Methods

This study was a retrospective study, and 185 consecutive patients with confirmed diagnosis of COVID-19 who tested positive on real-time reverse transcriptase polymerase chain reaction (RT-PCR) assay for SARS-CoV-2 on a throat and/or a nasopharyngeal swab who were admitted to MM Medical College & hospital, Solan, Himachal Pradesh, India from September 2020 to 31st December 2020 were enrolled. Besides these patients those with high CT score and antenatal mothers with any medical complaints were also studied.

COVID -19 patients were classified into mild, moderate, severe and critical as per Govt of India COVID-19 treatment guidelines. Mild with no evidence of hypoxemia with SpO₂ above 94% were advised home quarantine. Only moderate, severe and critical patients having evidence of hypoxemia or shortness of breath or high grade fever were admitted to the hospital.

- **Moderate** -The patients were classified as moderate if SpO₂ was 94%-90% in room air and the patient had no signs of severe disease and was stable with low flow oxygen.
- **Severe** patients were those with SpO₂: < 90% room air RR: >30/min.
- **Critical**-were those with ARDS and sepsis

They were given standard treatment as per Indian guidelines. Our admitted patients were managed

according to the following protocol in our institution. They could be divided in general into 4 categories and 2 groups.

(Group 1)

1. Those who were by and large stable with low flow oxygen (upto 10 litres per minute via nasal prongs or mask)) or even without oxygen and could be categorized into the moderately severe group. (Group 1)

Group 11

2. Those requiring high flow oxygen (more than 10 litres per minute requiring mask with reservoir bag)
3. Those requiring non invasive ventilation (NIV)
4. Those requiring mechanical ventilation

The category 2,3 and 4 were clubbed into Severe/critical group or the Group 11. The particulars of the patients were noted. Chi-square test (χ^2) was used for checking statistical significance of the association using Strata software.

Results

The age group of the patients is given in Table 1. Most of the patients were between the ages of 51-70 years. Thus the older age individuals are at greater risk of requiring hospitalisation.

Sex 126(68.1%) patients were males and 59(31.9%) were females showing that Covid19 infection affects the males more often.

Symptoms-169 (91.4%) patients were admitted with shortness of breath (SOB). Other symptoms were cough in 34 patients (18.4%), sore throat in 21(11.4%), fever in 19 (10.3%) Thus majority of patients in our study were admitted with SOB.

We admitted only patients who had high grade fever, low oxygen saturation or shortness of breath. Those with mild symptoms like cough etc were not admitted therefore the percentage of patients with these symptoms is comparatively less in our study as compared to those with SOB.

Respiratory support The patients requiring respiratory support are given in Table 2.

Comorbid Conditions Associated comorbid conditions are enlisted in Table 3 which shows that majority of the admitted patients had some or the other comorbidity. 30 patients (57%) of patients who required noninvasive ventilation were diabetics. There was significant correlation between comorbidity and patients with severe disease (Group 2) as compared to moderately severe disease (Group 1) (Pearson chi² (1) = 22.9781 Pr = 0.000). (Table 4)

Outcomes- are depicted in Fig 1. 154 pts (83%) of all admitted patients recovered completely. 5% were referred or left the hospital. 38/54 patient (70%) cases who received non invasive ventilation recovered and had no residual complication. 4 patients were discharged while on oxygen. 1 patient needed intermittent oxygen 1 month after discharge. Rest had recovered completely though some complained of general weakness.

Mortality was 12% (22 patients). 3 patients who expired reported very late and were referred from

other centres. Out of those who were mechanically ventilated patient there was no survivor who included a pregnant lady out of 38 antenatal women (not included in medical patients) who were asymptomatic and underwent normal (24) or caesarian section (14) and were discharged without complication.

Hospital stay ranged from 1 to 36 days. The hospital stay is shown in fig 2

4 patients not included in the list were Rt-PCR negative but high CT severity score on CT scan but recovered after supportive treatment and oxygen without need for ventilation.

Table 1 Age Distribution

Age group	No. of cases	Percentage
< 40	19	10.3%
41-50	32	17.3%
51-60	61	33.0%
61-70	53	28.6%
> 70	20	10.8%
Total	185	100.0%

Table 2 Respiratory Support

	No. of cases	Percentage
Patients stable on low flow oxygen/without oxygen (Group 1)	110	59%
Patients requiring high flow oxygen	15	8%
Patients requiring non invasive ventilation	54	29%
Patients requiring mechanical ventilation	6	3%

Table 3

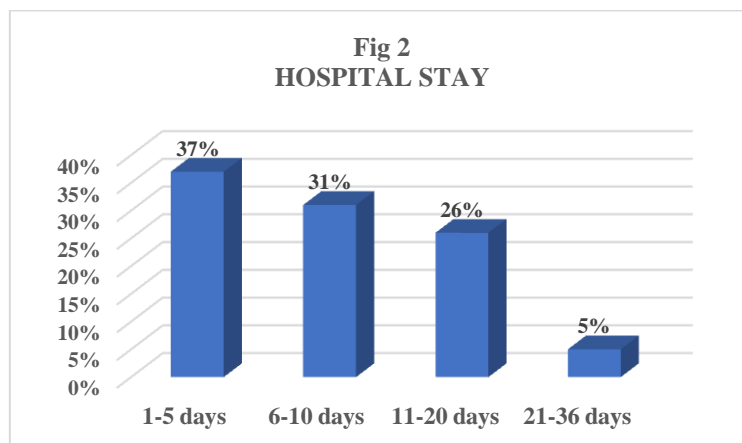
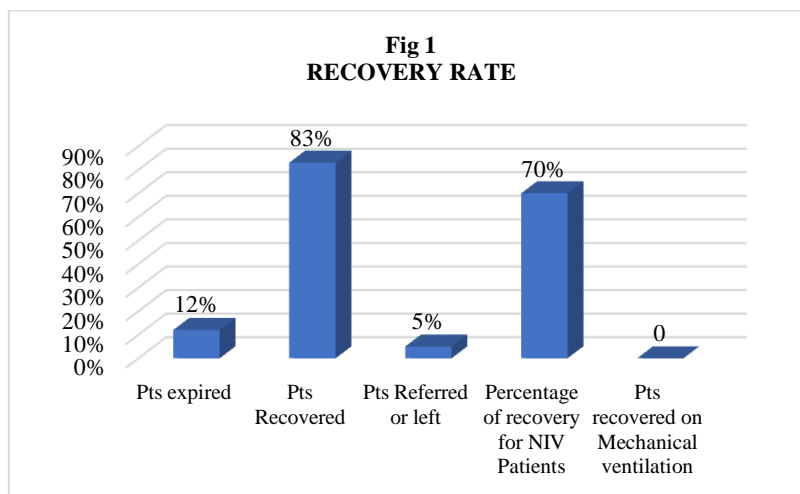
COMORBIDITY	No. of cases	Percentage
Overall Comorbidity	126	68%
Diabetes Mellitus	91	49.2%
Hypertension	76	41.1%
Chronic obstructive airway disease	13	7.0%
Obesity	20	11%
Alcoholism	6	3.0 %
Anemia	1	0.5%
Appendicular lump	1	0.5%
Atrial Fibrillation	1	0.5%
CA Breast/Ca prostate	2	1%
Coronary artery disease/chest pain	3	2%
Chronic kidney disease	2	1.0 %
Epistaxis	1	0.5%
Hypothyroidism	6	3.2%
Severe infection	3	2.0%
Pregnancy	1	0.5 %

Table 4

	A	Comorbidity		Total
		Absent	present	
Severe disease (Group 2)	0	9 12.00	66 88.00	75 100.00
Moderate disease (Group 1)	1	50 45.45	60 54.55	110 100.00
Total		59 31.89	126 68.11	185 100.00

Pearson chi2(1) = 22.9781 Pr = 0.000

Showing Correlation between Comorbidity and Severity of Disease



Discussion

In our study more of older individuals were hospitalised in conformity with other reports according to which the greatest risk for severe illness from COVID-19 is among those aged 85 or older.^{1,2} Male sex was preferentially targeted by the COVID -19 infection also shown by some of other Indian studies.^{3,4}

126 (68%) of our patients who were hospitalized had some or the other comorbidity.(Table 3) Keeping in mind the prevalence of diabetes as around 11.9 % in India ,91 (49.2%) of our admitted cases had diabetes. 34 out of 54 (57%) patients who required noninvasive ventilation (and thus severe disease) were diabetics. Thus diabetics needed hospitalization and also ICU care more

frequently. Similarly hypertension was an important comorbidity present in 42% of our patients. (Table 3) Two of these patients had only mild hypertension. 2 patients had associated malignancy. 6 also gave history of hypothyroidism and 13 of COPD. (Table 3)

In a meta-analysis study on COVID-19 comorbidities by Paudel et al⁵ of a total of 1786 patients the most common comorbidities identified in these patients were hypertension (15.8%), cardiovascular and cerebrovascular conditions (11.7%), and diabetes (9.4%). The less common comorbidities were malignancy (1.5%), respiratory illnesses (1.4%) and renal disorders (0.8%). Our group had higher percentage of diabetes and hypertension as they were all admitted patients with moderate to severe disease. One pregnant patient developed severe ARDS and was intubated. She underwent caesarian section but could not be saved. She had additionally severe septicemia with a TLC of 22000. It is to be noted that 38 pregnant patients were admitted during this period for delivery. They were not included in the list of medical patients. All were asymptomatic and underwent caesarian section⁽¹⁴⁾ and the rest had normal delivery and were discharged without recording any complication.

12% of all patients expired. The overall mortality reported by different studies was 10.5%, (Indian study)³ USA (21.1%)⁶ and UK (26%)⁷.

29% of severe group (ICU) expired. Quah et al⁸ reported a mortality of 25.7% among ICU patients.

83% of all admitted patients recovered which included patients with moderate and severe disease. 38 out of 54 patients (70%) who received non invasive ventilation recovered. 5% were referred or left. 1 patient out of the NIV group was on intermittent oxygen one month after discharge. Rest were doing well with no residual symptoms. Some complained of weakness though. No patient in the group who had to be mechanically ventilated recovered. It is to be noted that most of these patients reported very late.

Conclusion

Elderly individuals especially of male sex and comorbidities such as diabetes and hypertension were risk factors for hospitalisation and progression to severe disease. Early aggressive ICU care particularly non invasive ventilation plays an important role in management of COVID-19 patients with severe disease along with drug therapy. Knowledge of the factors affecting the outcome and disease progression can serve as guideline for more efficient management of COVID-19 patients in future.

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