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Original research article

A descriptive study of COVID 19 patients outcome at tertiary hospital, Latur, Maharashtra

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Abstract

Background: The novel coronavirus is referred to as "severe acute respiratory syndrome coronavirus 2" (SARS-CoV-2) potentially resulting in "coronavirus disease" (COVID-19). While the peak of SARS-CoV-2 infection declined in September 2020, India witnessed a massive second surge of COVID-19 cases since March 2021. Present study was aimed to study of outcome of COVID 19 at a tertiary hospital from Maharashtra region.

Material and Methods: Present study was hospital-based cross-sectional descriptive study, conducted in COVID-19-positive patients who presented themselves during the outbreak from 1st June 2020 to 24th May 2022.

Results: In present study period 52550 cases underwent fever OPD screening, among them 13302 cases were positive (25.31% positivity). Majority of cases were from 12-45 years age group (70.08%), male (59.4%). Among 13302 cases, there was 9.19% mortality (1223 cases). Majority cases were discharged after successful treatment (58.19%) while stable patients were advised home Isolation (14.52%) or they were shifted to Covid Care Center (17.00%) & few were transferred to higher center (1.09%). In present study, out of 1223 deaths majority were from Jan 2021 To Dec2021 (58.63%) followed by June 2020To Dec 2020 (39.25%) & least in Jan 22 To May 22 (2.13%). Among patients admitted in our facility (n=9109), majority patients were hospitalized for ≤ 8 days (64.91%).ICU care was required for 1198 cases (13.15%). Among cases respiratory support required of different types such as oxygen by nasal prongs/non-rebreathing mask (16.88%), non-invasive ventilation (12.12%) & invasive mechanical ventilation (9.95%).

Conclusion: Early detection and treatment for severe and critically ill patients are crucial issues requiring urgent investigation.

Keywords: COVID 19, clinical outcome, SARS-CoV-2 infection, mortality

Introduction

The novel coronavirus is referred to as "severe acute respiratory syndrome coronavirus 2" (SARS-CoV-2) potentially resulting in "coronavirus disease" (COVID-19). COVID-19 infection is highly contagious & mortality is noted cases with high severity of the disease[1].

Most of the people infected with the COVID19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Old age (> 60 years) people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness[2].

Some patients progressively develop serious complications, including sepsis, acute respiratory failure, metabolic acidosis, heart failure, kidney injury, hypoxic encephalopathy and eventually die of the illness[3]. Cytokine storm and systemic inflammatory response syndrome contribute to the pathogenesis of multiple organ failure and coagulation activation in critical patients with COVID-19[4, 5].

While the peak of SARS-CoV-2 infection declined in September 2020, India witnessed a massive second

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surge of COVID-19 cases since March 2021, with different parts of the country in different phases of the surge[6]. Although more excess deaths have occurred among older age groups, relative to past years, adults aged 25-44 years have experienced the largest average percentage increase in the number of deaths from all causes from late January through October 3, 2020[7]. The age distribution of COVID-19 deaths shifted toward younger age groups from May through August[8].Present study was aimed to study of outcome of COVID-19 at a tertiary hospital from Maharashtra region.

Material and Methods

Present study was hospital-based cross-sectional descriptive study, conducted in Department of Community Medicine, at Vilasrao Deshmukh Government Institute of Medical Sciences, Latur, and Maharashtra, India. Study period was from June 2020 to May 2022. Study was approved by institutional ethical committee.

Present study was descriptive study of epidemiological features of COVID-19-positive patients who presented themselves to this center during the outbreak from 1st June 2020 to 24th May 2022. Patients with acute respiratory illness, all hospitalized patients with severe acute respiratory illness (fever and cough and/or shortness of breath) patients with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms were considered for present study.

A written informed consent was obtained from all participants or their relatives & confidentiality of respondent's information was maintained and information was used only for research purpose. The interviews were conducted by the trained staff of department of Community Medicine after taking informed consent.

Patients with suspected COVID-19 were evaluated clinically followed by RTPCR/ RAT. Once patients were confirmed as COVID-19 positive by the RT-PCR, they were shifted to isolation ward (to tertiary hospital/ CCC) OR if stable with no morbidity advised home isolation. Patient related data (sociodemographic, duration of stay, family background, co-morbidities, biochemical/radiological investigations, treatment details & clinical outcome etc.) was collected from interview & later from the patient records available from the ward in predesigned pro forma. Outcome of patient was recorded as recovery and discharge, absconded, discharge-against-medical-advice, transferred-out, still-admitted and death.

Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Frequency, percentage, means and standard deviations (SD) was calculated for the continuous variables, while ratios and proportions were calculated for the categorical variables. Statistical analysis was done using descriptive statistics.

Results

In present study period 52550 cases underwent fever OPD screening, among them 13302 cases were positive (25.31% positivity). Majority of cases were from 12-45 years age group (70.08%), followed by > 60 years age group (15.85%) &45-59 years age group (14.07%). Mean age was 38.9 ± 17.7 years. Male (59.4%) were more than females (40.6%). Common comorbidities were diabetes mellitus (12.19%), Hypertension (9.76%), Thyroid disorders (4.89%), Obesity (1.66%), Cardiovascular (IHD) (1.65%), Chronic Obstructive Pulmonary Disease (COPD) 1.29%), Chronic Kidney Disease (0.89%) &Chronic Liver Disease (0.69%).

Table 1: Baseline characteristics

Parameters	No. of cases (n=13302)	Percentage
Age (years)		
12-45	9322	70.08%
45-59	1871	14.07%
> 60	2109	15.85%
Mean ± SD	38.9 ± 17.7 years	
Gender	0	
Male	7901	59.40%
Female	5401	40.60%
Comorbidities		
Diabetes mellitus	1621	12.19%
Hypertension	1298	9.76%
Thyroid disorders	651	4.89%
Obesity	221	1.66%
Cardiovascular (IHD)	219	1.65%
Chronic Obstructive Pulmonary Disease (COPD)	171	1.29%
Chronic Kidney Disease	119	0.89%
Chronic Liver Disease	92	0.69%

(*- multiple may present)

Among 13302 cases, there was 9.19% mortality (1223 cases). Majority cases were discharged after successful treatment (58.19%) while stable patients were advised home Isolation (14.52%) or they were

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shifted to Covid Care Center (17.00%) & few were transferred to higher center (1.09%).

Table 2: Clinical outcomes of COVID-19 cases

Parameter		No. of cases (n=13302)	Percentage
Discharge	Pure Discharge	7741	58.19%
	Home Isolation	1931	14.52%
	Shifted to CCC	2262	17.00%
	Transferred	145	1.09%
Deaths	Positive	1223	9.19%
Total positive		13302	

In present study, out of 1223 deaths majority were from Jan 2021 To Dec2021 (58.63%) followed by June 2020To Dec 2020 (39.25%) & least in Jan 22 To May 22 (2.13%).

Table 3: Distribution of deaths

Time period	No. of cases (N=1223)	Percentage
June 2020To Dec 2020	480	39.25%
Jan 2021 To Dec2021	717	58.63%
Jan 22 To May 22	26	2.13%
Total	1223	

Among patients admitted in our facility (n=9109), majority patients were hospitalized for ≤ 8 days (64.91%).ICU care was required for 1198 cases (13.15%). Among cases respiratory support required of different types such as oxygen by nasal prongs/non-rebreathing mask (16.88%), non-invasive ventilation (12.12%) & invasive mechanical ventilation(9.95%).

Table 4: Hospital stay and clinical support needed (n=9109)

Characteristic	No. of patients	Percentage
Hospital stay		
≤ 8 days	5913	64.91%
9-10 days	1278	14.03%
11-12 days	1002	11.00%
>12 days	916	10.06%
Respiratory support received		
Oxygen by nasal prongs/ non-rebreathing mask	1538	16.88%
ICU care	1198	13.15%
Non-invasive ventilation	1104	12.12%
Invasive mechanical ventilation	906	9.95%

Discussion

Increasing age, male gender, patients presenting with symptoms of fever, cough, breathlessness, smoking, alcohol consumption, comorbidities were significantly associated with mortality among COVID-19 patients[9].Drugs like steroids, hydroxychloroquine, protease inhibitors like lopinavir and ritonavir, favipiravir, remdesivir and immunosuppressants are being used to manage the symptoms of COVID-19. Nevertheless, there is still no established treatment option for SARS-CoV-2[10].

Oxygen desaturation is the hallmark of progression. Patients with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease and cancer are more likely to develop serious illness. These patients may develop viral pneumonia, with resultant dyspnea and hypoxemia which may progress to respiratory or multisystem failure and even death[11].

In study by Dhikale PT *et al*.,[12] out of the 6195 patients, 450 (7.26%) died. Age >40 years, diabetes mellitus, cardiovascular diseases, hypertension, chronic kidney diseases were found to be significant predictors of death after adjusting for potential confounders. These high risk groups should be given special attention for screening and treatment.

In a multicenter observational study, Gunjan Kumar *et al*.,[13] studied 12059 and 6903 reflecting in-patients from the first and second waves, respectively. Mean age of the patients was significantly lower in the second wave [48.7 ± 18.1 yrs vs. 50.7 ± 18.0 yr., P<0.001] with higher proportion of patients in the younger age group intervals of <20, and 20-39 yr. Approximately 70% of the admitted patients were ≥ 40 yrs of age in both waves of the pandemic. The proportion of males were slightly lower in second wave as compared to the first [63.7% vs. 65.4%). Commonest presenting symptom was fever in both waves. In the second wave, a significantly higher proportion (48.6% vs. 42.8%) complained of shortness of breath, developed ARDS (13% vs. 7.9%) required supplemental oxygen (50.3%) vs. 42.7%), and mechanical ventilation (15.9% vs. 11.1%).Mortality also significantly increased in the second wave [OR: 1.35 (95% CI: 1.19, 1.52)] in all age groups except in <20 yr. The second wave of COVID-19 in India was slightly

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different in presentation than the first wave, with a younger demography, lesser comorbidities, and presentation with breathlessness in greater frequency.

Radha Yadav *et al*.,[14] studied data from 18,600 people screened for COVID-19 in Mumbai during the outbreak's initial phase, March 7 to June 30, 2020. Males aged >60 years having both diabetes and hypertension were at the highest risk of COVID-19 infection. People having both diabetes and hypertension in >20 years, diabetes and hypertension independently in 20-39 and >60 years, chronic renal disease in 20-39 years age groups had significantly higher risk of COVID-19 infection than those without comorbidity. Quarantined people had significantly lower positive odds (OR=0.59) than non-quarantined people.

Pandit RA *et al*.,[15] studied 514 patients (74.3% males and 25.6% females) admitted in ICU due to Covid 19 related illness. 9.72% (n = 50) patients expired, 78% (n = 39) were males. Mean age was 57 ± 14 years. 65.7% were of age > 50 years, of which 71.5% were males. Males at 20% higher risk for death than women. There was 18% less risk of mortality in female vs male with comorbidities (RR 0.82, 95% CI 0.67-1.12, p = 0.32 NS). Risk for mortality in diabetics was significantly increased by 116% vs. nondiabetics. (RR 2.16, p = 0.0055, 95% CI 1.28-3.67). Highly significant risk of mortality in age group >50 years (3.13 times higher) vs age ≤50 years. (RR 3.18, 95% CI 1.71–8.64, p = 0.0003). 50.2% had moderate ARDS at admission. High flow nasal cannula was used in 47.2%. There is 5.79 times more likelihood to be on the ventilator with moderate to severe ARDS vs mild ARDS (RR = 5.79, 95% CI 3.10–11.05, p <0.0001). Risk for death was six times higher for patients on ventilator vs not on ventilator (RR = 6.08, 95% CI 3.49–10.59, p <0.0001). The mean number of days on ventilator for patients who underwent tracheostomy (n = 49) was 14 days as compared to 6.6 days in patients who were extubated (n = 57) (p <0.0001). P/F ratio had negative correlation with number of days of hospitalization (Pearson r -0.391, 95% CI -0.46– -0.31, p <0.0001). 67% less chances of mortality in patients on steroids (RR = 0.33, 95% CI 0.19-60, p = 0.0012). Mean duration of ICU stay (days) was 8 (± 5, range 29, 95% CI 7.5-8.4).

It is pertinent to identify the clinical and demographic characteristics of patients considering the novelty and substantial heterogeneity of the illness across the world. COVID-19 has a broad spectrum of clinical manifestations ranging from asymptomatic cases to death. The accurate prediction of mortality in COVID-19 and the identification of contributing factors would allow for targeted strategies in patients with the highest risk of death. Early detection of patients who are likely to develop critical illness & high risk of mortality is of great importance and may aid in delivering proper care and optimizing use of limited resources.

Conclusion

Early detection and treatment for severe and critically ill patients are crucial issues requiring urgent investigation. Older patients and those with underlying comorbidities are at higher risk of disease progression; therefore, health care providers should monitor these patients closely until clinical recovery is achieved.

Conflict of Interest: None to declare.

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