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Clinical and demographic profile of COVID-19 patients- A cross-sectional study from a tertiary care medical college hospital from South India

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ABSTRACT

Background: Acute respiratory illness with fever and respiratory symptoms such as cough and shortness of breath comprise the main clinical presentations of Corona virus disease (COVID-19).Clinical manifestations in COVID-19 shows significant regional variations.

Objective of the study: To study the demographic and clinical profiles of laboratory confirmed COVID-19 patients in South India

Methods: In this cross sectional study,patients diagnosed with COVID-19 by reverse transcriptase-polymerase chain reaction (RT-PCR) test were taken up for the study.History of fever,throatpain,cough,breathlessness,malaise were taken.Blood pressure,respiratory rate,oxygen saturation were recorded.Data on co-morbid illnessness like diabetes,hypertension,renal disease were also noted .All these were correlated to assess the clinical course of COVID-19

Results: Of the total 518 patients,257(49.6%) patients were in the age group of 46 to 65 years and 309 (59.7 %) patients were males. History of fever was present in 349(67.38%) patients and cough was present in 291 (56.17%) patients. Throat pain and running nose was present in 291 (56.2%)and 110 (21.23%) patients respectively. Heart rate was between 60 and 100 beats per minute in 472 (80.3%) of patients and 102 (19.7%) patients had respiratory distress with respiratory rate $\geq$24. Oxygen saturation was between 90-93% in 57 (9.85%) patients and 87(16.8%) patients were on oxygen support with 21(4.1%) patients on non-invasive ventilation. A total of 291(56.2%) patients were treated with steroids. Diabetes mellitus was present in 214(41.3%), hypertension in 150 (29%) patients. Case fatality rate was 2.1%

Conclusion: Severe disease and lower oxygen saturation was associated with older age and co-morbid diseases particularly diabetes

KEYWORDS: COVID-19, clinical profile, RT-PCR, fever, diabetes, oxygen saturation

INTRODUCTION:

Severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) causing corona virus disease 2019 (COVID-19) has rapidly evolved from an epidemic outbreak in Wuhan, China into a pandemic infecting more than 1 million individuals all over the world. [1]Severe acute respiratory illness with fever and respiratory symptoms such as cough and shortness of breath comprise the main clinical presentations. Certain co-morbidities such as cardiovascular risk factors, diabetes and cancer have been associated with poor outcomes. [2] The clinical presentations of COVID-19 disease has significant regional variations. [3]To prevent the mortality due to Covid-19 it is important to know the clinical profile of patients admitted with SARS-CoV-2.In this study, the demographic profile, clinical presentations and short-term clinical outcomes of confirmed COVID-19 patients from a hospital in South India was analyzed.

Materials & Methods:

The study was done as a cross-sectional study in Trichy SRM medical college hospital & research centre,Tiruchirapalli,Tamilnadu,South India. The study was done during June 2020 to January 2021 after obtaining proper institutional ethical committee approval. All consecutive patients of both gender presenting with fever, cough, throat pain, difficulty in breathing were taken up for nasopharyngeal swab and subjected to testing by reverse transcriptase-polymerase chain reaction (RT-PCR) .All those patients who were diagnosed with COVID-19 by RT-PCR positivity were included in the study. Patients with history of fever but RT-PCR negative were excluded from the study. A detailed history with regards to fever, throat pain, cough,breathlessness,malaise were taken. Pulse rate, blood pressure, respiratory rate ,oxygen saturation

(SpO2) were recorded. Data on co-morbidity like diabetes mellitus,hypertension,coronary artery disease,renal disease,bronchial asthma were also noted . All these were correlated to assess the clinical course of COVID-19.

RESULT

In our study of the total 518 patients,257(49.6%) patients were in the age group of 46 to 65 years(Table 1) and 309 (59.7 %) patients were males(Table 1). Fever and cough were the most common presentations. History of fever was present in 349(67.38%) patients and 160(30.9%) patients had fever for 1-3 days duration. History of cough was present in 291 (56.2%) patients and 177(34.2%) had cough for 1-3 days duration . Throat pain and running nose was present in 291 (56.2%) and 110 (21.23%) patients respectively. 102 (19.7%) patients had respiratory distress with respiratory rate $\geq$24 . Twenty (3.9%) patients had abnormal blood pressure during the hospital stay . Heart rate was more than 100 beats per minute in 40(7.7%) patients and Oxygen saturation was between 90-93% in 57 (9.85%) patients .12(2.3%) patients had a SpO2 of less than 90 %.and 87(16.8%) patients were on oxygen support with 21(4.1%) patients on non-invasive ventilation. A total of 291(56.2%) patients were treated with steroids and 210(40.5%) patients with remdesivir, favipiravir was used as treatment in 210(40.5%) patients and tocilizumab was used in 18(3.47%) patients. Total no of deaths were 11(2.1%) . Duration of hospital stay was 7-10 days in 232 (44.8%) patients . History of diabetes mellitus was present in 214(41.3%) and history of hypertension was present in 150 (29%) patients . History of chronic kidney disease was present in 13 (2.5%) and bronchial asthma in 22(4.2%) patients (Table 5). Duration of hospital stay was more than 14 days in 40 patients of which diabetes was present in 30 (75%) and hypertension in 18 (45%) patientsTables 1, 2, 3, 4 and 5

Characteristics	Count (%)
Age (years)	
15-45	185(35.7%)
46-65	257(49.6%)
66-75	63(12.2%)
>75	13(2.5%)
Sex	
Male	309(59.7%)
Female	209(40.3%)
Fever	
0 days	169(32.6%)
1-3 days	160(30.9%)
4-7 days	137(26.4%)
>7 days	52(10%)
Cough	
0 days	227(43.8%)
1-3 days	177(34.2%)
4-7 days	89(17.2%)
>7 days	25(4.8%)
Symptoms	
Throat pain	291 (56.2%)
Running nose	110 (21.23%)
Malaise	196 (37.84%)
Loss of smell	74 (14.28%)

Table 1: Characteristics of COVID 19 Patients

DISCUSSION

Our study was done as a hospital based cross-sectional study in a tertiary care hospital,Tiruchirapalli,South India. Our hospital is one among the few ear marked for management of COVID-19 of all severities by the local administration. Our hospital treated COVID-19 patients from both rural and urban areas around tiruchirapalli. In our study of the total 518 patients, 49.6% patients were in the age group of 46 to 65 years and 59.7 % patients were males. These findings were similar to the previous studies where COVID -19 was common in advanced age and male gender when compared to younger age group and female gender. [2–5]The reason for males affected more might be due to the fact that males go outside more during the lockdown period and might also be due the reason that they get little more severe disease than females and that they get hospitalised more. [3] Fever and cough were the most common presentations. History of fever was present in 67.38% patients at the time of admission and 30.9% patients had fever for 1-3 days duration. History of cough was present in 56.17% patients and 34.2% had cough for 1-3 days duration. These common presentations of fever and cough were comparable with the previous studies. [3, 5–7] Malaise was present in 37.84% of patients in our study though it was reported only in 8% of patients in a study from Bangladesh [7] and 38.8% of patients in a study from China. [8]Respiratory distress with respiratory rate $\geq$24 /minute was present in 19.7% patients who were classified to have moderate to severe disease. [3]Oxygen saturation (SpO2) dropped below 94% in 16.8% in our study when compared to 36% in the study from Dhaka. [7] In our study we observed that lower SpO2 or severity of the COVID-19 was associated with advanced age and presence of coexisting illness, similar to the earlier studies from Bangladesh [7],Pakistan [9] and north India. [10]Diabetes mellitus was the most common coexisting illness in our study which was present in 41.3 % of our patien .ts [3, 10, 11]. Heart rate was more than100 beats per minute in 7.7 % of patients in our study while the

Characteristics	Age 15-45 No. (%)	Age 46-65 No. (%)	Age 66-75 No. (%)	Age >75 No. (%)
Sex				
Male	99(53.5)	168(65.3)	33(52.3)	9(69.2)
Female	86(46.5)	89(34.7)	30(47.7)	4(30.8)
Duration of stay, (P<0.001)				
<7 days	80(43.2)	73(28.5)	10(15.8)	1(7.9)
7-10 days	68(36.8)	121(47)	37(58.7)	6(46.1)
11-14 days	34(18.4)	35(13.7)	9(14.2)	4(30.7)
>14 days	3(1.6)	28(10.8)	7(11.3)	2(15.3)
Respiratory distress, (P< 0.001)				
Present	21(11.4)	56(21.7)	23(36.5)	2(15.4)
Absent	164(88.6)	201(78.3)	40(63.5)	11(84.6)
Total (%)	185(100)	257(100)	63(100)	13(100)

Table 4: Age distribution of cases by sex, duration of hospital stay, presence of respiratory distress

Clinical	
Respiratory distress	102(19.7%)
Abnormal BP during stay	20(3.9%)
Oxygen support	87(16.8%)
Mechanical ventilation	21(4.1%)
Heart rate /minute	
<60	6(1.2%)
60-100	472(91.1%)
>100	40(7.7%)
Oxygen saturation (SpO2%)	
<90	36 (6.95%)
90-93	51(9.85%)
>93	431(83.2%)

Table 2: Clinical characteristics and COVID-19 (n=518)

study done by Shiv Lal Soni etal had 15.8 % having heart rate of above 100 beats per minute. [10]Loss of smell and taste was noted in 21.35% of our patients when ccompa-redto 15.7% from a earlier study from korea [12] Tocilizumab

Treatment & outcome	No. (%)
Drugs	
Steroids	291(56.2%)
Heparin	297(57.3%)
Favipiravir	331(63.9%)
Remdesivir	187(36.1%)
Tocilizumab	18(3.47%)
Outcome	
Death	11(2.1%)
Discharge	507(97.9%)
Duration of stay	
<7 days	164(31.6)
7-10 days	232(44.8)
11-14 days	82(15.8)
>14 days	40(7.8)

Table 3: Treatment & Outcomeand COVID-19 (n=518)

Characteristics	Hospital stay <7 days No. (%)	Hospital stay 7-10 days No. (%)	Hospital stay 11-14 days No. (%)	Hospital stay >14 days No. (%)
Diabetes Mellitus, P <0.001				
Yes (n=214)	54(32.9)	93(40)	37(45.1)	30(75)
No (n=304)	110(67.1)	139(60)	45(54.9)	10(25)
Hypertension, P Value=0.05				
Yes (n=150)	39(23.7)	71(30.6)	22(26.9)	18(45)
No (n=368)	125(76.3)	161(69.4)	60(73.1)	22(55)
Past History, P Value =0.464				
Acute Kidney Injury	1 (0.6)	2(0.9)	0	1(2.5)
Bronchial Asthma	6 (3.7)	12 (5.2)	2 (2.4)	2(5)
Coronary artery disease	1 (0.6)	1 (0.4)	0	0
Chronic kidney disease	2 (1.2)	9 (3.9)	11.2	1(2.5)
Hypothyroidism	0	1 (0.4)	11.2	00

Table 5: Duration of hospitalstay in relation to Co-morbidities

was used in 3.47% of our patients who showed features of cytokine storm. [10, 13] Remdesivir was used in 36.1% of patients and favipiravirin 63.9% patients [10, 14, 15].All those patients who recieved favipiravir had mild form of COVID-19. [15] These patients were also treated with remdesivir and corticosteroids. [10, 13, 14] The number of patients who required mechanical ventilation was 4.1% in our study when compared to 10.84% in a study done by Rajiva etal. [11] Case fatality rate in our study was 2.1% similar to the previous studies [10, 11]although a study by Elavarasi etal showed a case fatality rate of 19.5% in COVID-19. [14]Most of the patients (44.8%) were discharged after 7-10 days hospital stay. Diabetes and hypertension were the most common reason for the prolonged stay of more than 14 days in our study [10]. Bronchial asthma was present in 4.2% but these patients recovered as similar to those without bronchial asthma and were discharged after 7-10 days hospital stay. [16]

Conclusion: The clinical and demographic characteristics and outcome of patients with COVID-19 infection varies across different age groups and gender. Severe disease and lower oxygen saturation was associated with older age and co-morbid diseases particularly diabetes. Our study will guide the treating physician about the varied presentations and outcomes of COVID-19

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