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A retrospective analysis of clinical parameters of deceased patients with coronavirus disease

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Abstract
Background: Corona virus is known to human kind since 1930. It was first discovered in domesticated chicken with symptoms of pulmonary infection. **Aims and objectives:** To compare the demographic, clinical, laboratory, and radiological features of corona virus patients. **Material and Methods:** The present retrospective study was carried out in the Department of Medicine, MGM Hospital,Kamothe,Navi Mumbai. A total of 50 patients were observed during the study period of 3 months i.e. 1st April-1st July 2020. **Results:** A total of 50 confirmed corona positive patients, having moderate to severe illness / critically ill admitted to MGM Hospital were examined. Out of 50 patients, 8 patients died (mortality rate 16%) and 42 patients recovered and discharged from the hospital. **Conclusion:** Only few patients with confirmed covid-19 & having elderly age group with other comorbid illnesses, presented with critical condition at the time of presentation, died within 15-20 days.
Keywords: Corona virus, Clinical parameters, Deceased.

Introduction

Coronaviruses are important pathogens of humans and animals that can cause diseases ranging from the common cold to more severe and even fatal respiratory infections. In December 2019 a new strain of coronavirus, officially named severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2), was first isolated from three patients with coronavirus disease 2019 (covid-19) by the Chinese Center for Disease Control and Prevention,3 4 connected to the cluster of acute respiratory illness cases from Wuhan, China[1-4].

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As of 25th October 2020, the number of patients infected with SARS-Cov-2 has exceeded 32,508,532 globally, and more than 989,247 have now died of covid-19 with 23,995, 226 recovered[5-7].In this study, we did a comprehensive evaluation of deceased patients of confirmed covid-19 who were admitted to the isolation side of MGM Hospital, which is one of the designated hospitals assigned for patients severely or critically ill with covid-19.Thus, the present study was conducted to compare the demographic, clinical, laboratory, and radiological features of corona virus patients.

Material and methods

The present retrospective study was carried out in the Department of Medicine, MGM Hospital,Kamothe ,Navi Mumbai. This study is a epidemiological, clinical, laboratory, and radiological characteristics study in which treatment and outcome data from electronic medical records and files for deceased patients were included. Various parameters such as

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demographics, medical history, exposure history, underlying chronic diseases, symptoms and signs, laboratory findings, computed tomographic scans of the chest, and treatment (including antiviral therapy, antibiotics, corticosteroid therapy, and oxygen support) during the hospital admission were observed. A total of 50 patients were observed during the study period of 3 months i.e. 1st April-1st July 2020. Administrative permission of medical Superintendent was taken to access files and electronic data.All the deceased patients were observed to delineate the clinical characteristics from coronavirus disease 2019 (covid-19). Various biochemical parameters such as complete blood count, renal function tests, liver function tests, electrolytes, C-reactive, LDH, IL-6, D-dimer and ABG were noted. To assess radiological parameters Chest X ray and HRCT were observed. At the time of admission clinical condition, various co-morbidities illnesses were noted,

Inclusion criteria
1.   Laboratory confirmed RT-PCR positive subjects.
2.   Both male and female above 18 years of age.

Exclusion criteria
1.   Subjects with negative RT-PCR
2.   Missing data on clinical characteristics.
3.   Missing data on laboratory measurements.
4.   Paediatric age group.(below 18 years)

Methodology
During the study period i.e. from 1st April-1st July 2020, a total of 50 confirmed corona positive patients, having moderate to severe illness / critically ill admitted to MGM Hospital were examined. Out of 50 patients, 8 patients died (mortality rate 16%) and 42 patients recovered and discharged from the hospital.

All patients were diagnosed having covid-19 and classified as being moderately, severely, or critically ill. All the recovered patients with covid-19 completely resolved their symptoms and signs with significant improvement in pulmonary and extrapulmonary organ dysfunction and they not needed any supportive care, with confirmed viral clearance by repeated tests for SARS-Cov-2 before their discharge from the hospital.

Statistical analysis
At the end of the study, the data was collected and analysed statistically. Categorical variables presented as numbers/percentages and continuous variables as mean and standard deviation.

Results

Out of 50 confirmed corona positive patients, who admitted to MGM Hospital, kamothe, Navi Mumbai, 8 patients died (mortality rate 16%) and 42 patients recovered and discharged from the hospital. Mean age of 40-60 years age group patients was 49.6±14.9 years and in >60 years age group, it was 80±2.1 years. A total of 5 male and 3 female patients died. Male sex was more predominant in deceased patients than in recovered patients. Smoking history was observed in 5 patients of deceased group and 26 patients of recovered group. Hypertension, cardiovascular disease, and cerebrovascular disease were most common among deceased patients. Only few patients had a cigarette smoking history. Fever and cough were the most common symptoms at disease onset in both deceased patients as well as recovered patients (Table 1).

Table 1:Baseline parameters of patients (n=50)

Parameters	Deaths (n=8)	Recovered (n=42)
Age		
40-60 (Mean age 49.6±1.49)	3(37.5%)	35(83.33%)
>60 (Mean age 80±2.1)	5(62.5%)	7(16.66%)
Sex		
Male	5(62.5%)	27(64.28%)
Female	3(37.5%)	15(35.71%)
Close contact with positive patients	5(62.5%)	30(71.42%)
Smoking history	5(62.5%)	26(61.90%)
Health care workers	0	4(9.52%)
Pregnant women	0	2(4.76%)
Comorbid illness		
Hypertension	2(25%)	12(28.57%)
Diabetes	1(12.5%)	16(38.09%)
Cardiovascular disease	1(12.5%)	4(9.52%)
Chronic heart failure	2(25%)	2(4.76%)
Lung disease	0	5(11.90%)

Malignancy	1(12.5%)	2(4.76%)
Hepatitis B	0	1(2.38%)
HIV	0	0
Cerebrovascular disease	1(12.5%)	2(4.76%)
Chronic kidney disease	2(25%)	6(14.28%)
Gastrointestinal disease	1(12.5%)	2(4.76%)
Presenting signs / symptoms		
Cough	1(12.5%)	18(42.85%)
Fever	1(12.5%)	22(52.38%)
Anorexia	2(25%)	5(11.90%)
Fatigue	2(25%)	7(16.66%)
Dyspnoea	1(12.5%)	3(7.14%)
Breathlessness	3(37.5%)	24(57.14%)
Sputum	2(25%)	5(11.90%)
Diarrhoea	2(25%)	2(4.76%)
Nausea	1(12.5%)	8(19.04%)
Vomiting	1(12.5%)	7(16.66%)
Abdominal pain	2(25%)	2(4.76%)
Headache	1(12.5%)	1(2.38%)

Table 2:Laboratory findings of patients (n=50)

Parameters	Deaths (n=8)	Recovered (n=42)
White blood cells		
$<4\times10^9$/L	1 (12.5%)	7 (16.66%)
<4-10×10^9/L	3 (37.5%)	25 (59.52%)
$>10\times10^9$/L	4 (50%)	19 (45.23%)
Aspartate aminotransferase (>40 U/L)	4 (50%)	20 (47.61%)
Albumin (<32g/l)	4 (50%)	9 (21.42%)
Blood gas analysis		
<7.35	2 (25%)	6 (14.28%)
7.35-7.45	5 (62.5%)	34 (80.95%)
$\geq$7.45	1 (12.5%)	2 (4.76%)

Table 2 shows laboratory findings observed in the study population. White blood cells $<4\times10\times10^9$/L was found in 3(37.5%) deceased patients and in recovered patients, it was 25(9.52%) patients. Aspartate amino-transferase was found to be comparable among both the groups i.e. 50% in deceased patients and 47.61% in recovered patients. Albumin (<32g/l) was observed in 4(50%) deceased patients and in 9(21.42%) recovered patients. Blood gas analysis >7.45 observed in 1(12.5%) deceased patient and 2(4.76%) recovered patients.

Table 3:Laboratory findings of total study population (n=50)

Parameters	Mean	Standard deviation
Hb		
>11	13.45	1.65
<11	9.06	1.11
TLC >4000	17211.8	5202.53
Platelets		
>1 lacs	2.45	0.45
<1 lacs	59182.16	41619.68
Total bilirubin		
>1	2.1	1.07
<1	0.64	0.165
SGOT	83.48	42.28

SGPT	109.88	95.61
Albumin	2.64	0.53
Creatinine		
>1.2	5.86	2.49
<1.2	0.84	0.15
Urea		
>40	124.37	76.45
<40	32.33	2.05
Sodium		
>135	137	0.81
<135	128.03	4.66
Potassium >3.5	4.65	0.98

Table 3 demonstrates laboratory findings of the total study population which showed mean Hb 13.45±1.65 in patients having >11 g/dl haemoglobin and 9.06±1.11 in <11 g/dl. Mean TLC was 17211.8±5202.53, mean platelets was 2.45±0.45 in patients having >1 lacs and patients having <1 lacs, it was 59182.16±41619.68.

Table 4:Complications (n=50)

Parameters	Deaths (n=8)	Recovered (n=42)
ARDS	5(62.5%)	21(50%)
Sepsis	2(25%)	8(19.04%)
Hyperkalemia	1(12.5%)	7(16.66%)
Acidosis	2(25%)	9(21.42%)
Acute kidney injury	1(12.5%)	5(11.90%)
DIC	2(25%)	9(21.42%)
Shock	3(37.5%)	12(28.57%)
Cardiac failure	3(37.5%)	11(26.19%)
TREATMENT HISTORY		
Antibiotics	6(75%)	29(69.04%)
Antiviral therapy	7(87.5%)	14(33.33%)
Interferon therapy	3(37.5%)	12(28.57%)
OXYGEN TREATMENT		
Invasive	2(25%)	9(21.42%)
Non-invasive	4(50%)	7(16.66%)
High flow nasal cannula	2(25%)	5(11.90%)
Mechanical ventilation	1(12.5%)	8(19.04%)

Table 4 shows various complications which occurred during the study period and further, their treatment history.

Discussion

Corona virus is known to human kind since 1930. It was first discovered in domesticated chicken with symptoms of pulmonary infection[8].Previous important outbreaks were SARV Cov 2003 in which more than 8000 people were infected with 10% mortality [9] and MERS Cov 2012 (Middle east respiratory syndrome) which emerged from bat through intermediate host Camel[10].Transmission rate of Covid 19 is very high and main mode of transmission is human to human transmission. Droplets, Fomites and body fluids are contagious and spread the disease by coming in direct contact.There is no specific vaccine or antiviral drugs available. Various drugs like hydroxyl chloroquine, steroids, anti viral like Remdesivir, favipiravir are tried and recommended in few conditions.

Conclusion

In the present study, only few patients with confirmed covid-19 & having elderly age group with other comorbid illnesses, presented with critical condition at the time of presentation, died within 15-20 days. SARS-Cov-2 infection most commonly occurred in patients with pulmonary and systemic inflammation

which leads to multi-organ failure / dysfunction in high risk populations.

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