



ORIGINAL RESEARCH PAPER

Internal Medicine

AN INITIAL EXPERIENCE ON THE EPIDEMIOLOGICAL CHARACTERISTICS, CLINICAL PROFILE AND THE OUTCOME OF COVID-19 PATIENTS AT A DEDICATED COVID HEALTH CENTRE IN INDIA.

KEY WORDS: coronavirus, epidemiology, clinical, risk factors, outcome

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ABSTRACT

The covid-19 pandemic unfolding yet rigorously, we are at a point where countries are experiencing the recovery phase, lockdown or subsequent surges.

As we march towards the anticipated second wave in Maharashtra, in spite of fewer numbers yet, let us have an insight into how we started off with the pandemic.

This article focuses on the initial experience with epidemiological characteristics, clinical profile as well as the outcome of covid-19 patients in a developing nation, India.

AIMS: To study the epidemiological profile, clinical features and radiological presentation of laboratory confirmed Covid-19 patients presenting to a Dedicated Covid Health Centre and analyse the dynamics of the outcome of the patients with the variables.

Settings and Design: This is a prospective observational study of the first 169 covid-19 infected patients confirmed with RT-PCR and admitted to DY Patil hospital, Navi Mumbai from April 2020 to May 2020.

METHODS AND MATERIAL: Epidemiological, clinical, laboratory, radiological data were obtained from electronic medical records and history given by covid-19 infected patients on the day of admission. The data was evaluated and the outcome of death or discharge was analysed with the variables.

Statistical analysis used: The variables were described by categories, comparing the frequencies with the chi-square test and the Yates test or Fisher's exact test, as appropriate. Statistical significance was established at $p \leq 0.05$.

RESULTS: The mean age of population was 42.8 years with male predominance. The most common symptoms were fever (72.2%) followed by dyspnoea (39.64%). The chest x-ray findings on admission varied from normal (26.6%) to ARDS (8.87%). However the most common presentation was multifocal haziness (50.2%). The patients with comorbidities, of which DM was the most common (26.04%), followed by hypertension (19.53%) had a poor outcome. Among the first 169 patients, 140 were discharged without any residual symptoms and 29 (17.1%) died of multiple organ failure.

CONCLUSIONS: The covid-19 infection is a pandemic disease with similar epidemiological and clinical profile in world populations. This study is critical for furthering our understanding of the virus and provide the robust information needed to feed forecasting models.

INTRODUCTION:

As the Coronavirus spreads globally, India has recorded nearly a million cases as of november 2020 with Maharashtra having the highest among them (11), D Y Patil hospital, Navi Mumbai reported its first covid case in April 2020.

COVID-19 or Severe Acute Respiratory Syndrome Coronavirus (SARSCoV-2) is a single, positive-stranded RNA virus, identified as the cause of the current pandemic. [10, 11]. Adults of middle age and older are most commonly affected, and older adults are more likely to have severe disease with increased mortality (12-14). A multitude of social and economic criteria also govern the extent of the coronavirus disease spread in the population. COVID-19 is classified based on the severity of the presentation [18]. mild, moderate, severe, and critical [19]. The most common symptoms of patients include fever (98.6%), fatigue (69.6%), dry cough, and diarrhea [19]. Risk factors for severe illness includes advanced age and underlying medical comorbidities. Particular laboratory features have also been associated with worse outcomes: Lymphopenia, Elevated liver enzymes, LDH, inflammatory markers D-dimer, (PT), troponin, (CPK), Acute kidney injury [16-17]. Imaging findings Chest radiographs may be normal or abnormal in early or mild disease ranging from consolidation and bilateral peripheral ground glass opacities.

This study seeks to evaluate and analyze the current clinical epidemiological and radiological characteristics of patients

with a definitive diagnosis for COVID-19 and the outcome of the patients whether discharged or deceased. Besides the biological and epidemiological factors, a multitude of social and economic criteria also govern the extent of the coronavirus disease spread in the population. The temporary positive relationship between Covid-19 cases and regional socio-economic status (SES) at the beginning of the Covid-19 outbreak may reflect 1) a higher degree of international travelers, 2) more social contacts, and/or 3) better testing capacities in higher SES regions. (18)

The aim is to contribute to the knowledge of the factors that are hindering their control and provide a base for further research on the current pandemic.

Subjects And Methods:

Design and type of study

Observational, analytical, prospective study, composed of a random sample of 169 patients, from April 2020 to June 2020, carried out at D Y Patil hospital, a Dedicated Covid Health Centre. The inclusion criteria were: adults with definitive diagnosis of COVID-19, by means of a RT-PCR (Reverse transcription polymerase chain reaction).

Ethical considerations. : Authorization was obtained from the Hospital Ethical Committee.

Statistical analysis: The variables were described by categories, comparing the frequencies with the chi-square

test and the Yates test or Fisher's exact test, as appropriate. Statistical significance was established at $p \leq 0.05$.

RESULTS:

The mean age in the discharged patients was 42.89 ± 13.90 and that in dead patients was 58.38 ± 16.01 years. There was male predominance in the study male: female ratio was 2.6:1. Mean BMIs in discharged and dead patients were 24.26 ± 3.57 and $24.75 \pm 3.06 \text{ kg/m}^2$. Among demographic variables, the age of the patient was most significantly associated with outcome of Covid 19. The socioeconomic status had no significance on the outcome.

Table 1: Epidemiological characteristics and outcome of the patients

Demographic Variables	Discharged (N=140)	Deaths (N=29)	P value
AGE	42.89 ± 13.90	58.38 ± 16.01	$<< 0.0001$
SEX male	101	21	0.9763
female	39	8	
BMI	24.26 ± 3.57	24.75 ± 3.06	0.4923

In semiological characteristics, fever was the most common presenting symptom occurring in 122(72.2%) followed by dyspnoea in 67(39.64%) cases. The least common were nausea and vomiting in 7(4.12%) patients. Depending upon the clinical features and physical findings covid-19 patients were divided into mild (47), moderate (76), severe (46) cases.

Among these fever, dyspnoea and chest pain were significantly associated with the patient outcome.

Table 2: semiological characteristics and outcome of the patients

Clinical features	Discharged (N=140)	Deaths (N=29)	P value
Fever	107	15	0.0069
Cough	77	17	0.747
Expectoration	11	2	0.859
Dyspnoea(MMRC Grade)	50	17	0.022
Chest pain	4	9	$<< 0.0001$
Nausea	4	3	0.066
Vomiting	4	3	0.066
Diarrhoea	14	2	0.603
Myalgia	46	6	0.196
Fatigue	25	6	0.72
Anosmia	35	4	0.192
Ageusia	37	4	0.148

Personal habits like smoking alcohol and tobacco were not significantly associated with the outcome of the patient

Table 3: Personal habit and outcome of the patients

Personal habit	Discharged (N=140)	Deaths (N=29)	P value
Smoking	17	1	0.317
Alcohol	17	1	0.317
Tobacco	13	1	0.468

In comorbidities, diabetes was the most common comorbidity in (26.04%) patients followed by hypertension in 33(19.53%) cases. The least common was previous history of stroke in 2(1.18%) patients. Among these hypertension, diabetes and chronic kidney disease were significantly associated with the patient outcome

Table 4: Comorbidities and outcome of the patients

Comorbidities	Discharged (N=140)	Deaths (N=29)	P value
HTN	21	12	0.001
DM	31	13	0.011
CKD	1	3	0.016
IHD	10	3	0.469
Stroke	1	1	0.314

COPD	1	2	0.076
Others	11	3	0.710

Among laboratory investigation, Hb, WBC, Platelet count, PCV, Lymphocyte count, Bilirubin, albumin, CRP and Creatinine were significantly associated with the final outcome of the patient.

Table 5: Investigations and outcome of the patients

Investigations	Discharged (N=140)	Deaths (N=29)	P value
HB	12.69 ± 2.15	11.46 ± 3.18	0.0113
WBC	7.15 ± 3.8	13.48 ± 7.08	$<< 0.0001$
PLT	215.31 ± 84.75	250.76 ± 79.48	0.0399
PCV	37.08 ± 10.66	33.18 ± 8.74	0.0669
Lymphocyte	28.58 ± 10.35	13.43 ± 6.67	$<< 0.0001$
T Bili	0.75 ± 0.57	1.06 ± 0.83	0.0155
D Bili	0.21 ± 0.19	0.45 ± 0.53	$<< 0.0001$
Albumin	3.83 ± 0.47	3.32 ± 0.38	$<< 0.0001$
SGOT	51.95 ± 103.37	86.93 ± 153.99	0.1326
SGPT	41.71 ± 45.66	55.72 ± 80.90	0.1988
Creatinine	0.97 ± 0.34	2.4 ± 3.44	$<< 0.0001$
CRP	62.72 ± 67.67 (43)	167.12 ± 110.11 (21)	$<< 0.0001$

Chest X-ray of the patients, was statistically significantly with the outcome.

Table 6: Investigations and outcome of the patients

Investigations	Discharged (N=140)	Deaths (N=29)	P value
CXR			0.00005
Normal	45	0	
GGO	85	14	
ARDS	2	15	
Consolidation	7	0	
Pleural effusion	3	0	
EKG			0.000001
Normal	114	11	
Abnormal	26	18	

DISCUSSION:

Present study was prospective observational carried in a dedicated covid health care centre.

In our study mean age in the discharged patients was 42.89 ± 13.90 and that in deceased was 58.32 ± 16.01 years. Similarly in the study done by Chen N et al[2] (55.5 ± 13.1 years), Huang C et al[3] (49 ± 9 years).

Majority of the cases were between 30-74 years with increased mortality in older age people. This is similar to the study done by Wu Z et al [1] where majority cases were between 30-79 year and older population was associated with increased mortality.

There was male predominance in the study with M:F ratio of 2.6:1 similar to the study of Huang C et al[3] (2.7:1) and mortality was also high in men with male:female ratio of 2.2:1 similar to the study of Jian-Min et al[4] with ratio of 2.4:1.

Mean BMI in discharged and deceased patients was 24.26 ± 3.57 and $24.75 \pm 3.06 \text{ kg/m}^2$. BMI of the patient was not associated with the outcome of the disease.

In clinical features, fever was the most common presenting symptom occurring in 72.2% followed by dyspnoea in 39.64%, other noted were cough with expectoration, chest pain, nausea and vomiting, diarrhea, myalgia, fatigue, anosmia, ageusia. Other studies of confirmed covid-19 patients have reported similar range of clinical findings [5].

In comorbidities, diabetes was the most common comorbidity in (26.04%) patients followed by hypertension in 33(19.53%)

cases. The least common was previous history of stroke in 2(1.18%) patients. Among these hypertension, diabetes and chronic kidney disease were significantly associated with the patient outcome. Similar to the finding of the study done in United States.[6,7]

Personal habits like smoking ,alcohol and tobacco were not significantly associated with the outcome of the patient. Studies done across the world does show increased susceptibility to the disease in smokers and its association with the severity of the disease.

Considering the comparison between socio economic status and outcome of the covid 19 disease there was no significant correlation between the two. People from all the strata of the society were affected with no connection between the socio economic status and outcome of the disease.

Among laboratory investigation, Hb,WBC, Platelet count,PCV, Lymphocyte count, Bilirubin, albumin, CRP and Creatinine were significantly associated in concordance with studies done by Huang C ,et al[3], Zhou F, et al [8].

The transaminases level were not significantly associated with the final outcome of the patient.

Chest X-ray of the patients, was statistically significantly associated with the whether the patient was improved and discharged or succumbed to death.

73.3% patients had abnormal chest xray findings with peripheral haziness predominantly in lower lobe being the most common.(50.2%),similar to Liqa et al.(9).

CONCLUSION:

The covid-19 infection is a pandemic disease with similar epidemiological and clinical profile in world populations. This study is critical for furthering our understanding of the virus and provide the robust information needed to feed forecasting models.

REFERENCES:

- 1 Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *JAMA*. 2020;323(13):1239
- 2 Chen N, Zhou M, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet*. 2020;395(10223):507. Epub 2020 Jan 30.
- 3 Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;395:497.
- 4 Jian-Min Jin, Peng Bai , et al. Gender differences in patients with COVID-19 : Focus on severity and mortality. *Public health* 2020.00152.
- 5 Guan WJ, Ni ZY, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med*. 2020;382(18):1708. Epub 2020 Feb 28.
- 6 Petrilli CM, Jones SA, et al. Factors associated with hospital admission and critical illness among 5279 people with coronavirus disease 2019 in New York City: prospective cohort study. *BMJ*. 2020;369:m1966. Epub 2020 May 22.
- 7 CDC COVID-19 Response Team. Preliminary Estimates of the Prevalence of Selected Underlying Health Conditions Among Patients with Coronavirus Disease 2019 - United States, February 12-March 28, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(13):382. Epub 2020 Apr 3.
- 8 Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* 2020;395:1054.
- 9 Chest x-ray findings and temporal lung changes in patients with COVID-19 pneumonia Liqa A. Rousan, Eyhab Elobeid, Musaab Karrar & Yousef Khader *BMC Pulmonary Medicine* volume 20, Article number: 245 (2020)
- 10- N. Zhu, D. Zhang, W. Wang, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N. Engl. J. Med.* (2020) Google Scholar
- 11- J. Fang, L. Deng, L. Zhang, Y. Cai, C.W. Cheung, Z. Xia. Review of the clinical characteristics of coronavirus disease 2019 (COVID-19). *J. Gen. Intern. Med.* (2020) Google Scholar
- 12- Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *JAMA* 2020.
- 13- Richardson S, Hirsch JS, Narasimhan M, et al. Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. *JAMA* 2020.
- 14- Onder G, Rezza G, Brusaferro S. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy. *JAMA* 2020.
- 15- Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* 2020;395:1054.
- 16- Liang W, Guan W, Chen R, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. *Lancet Oncol* 2020;21:335.

- 17- CDC COVID-19 Response Team. Preliminary Estimates of the Prevalence of Selected Underlying Health Conditions Among Patients with Coronavirus Disease 2019 - United States, February 12-March 28, 2020. *MMWR Morb Mortal Wkly Rep* 2020.
- 18- Cascella M, Rajnik M, Cuomo A, Dulebohn SC, Napoli RD: Features, Evaluation and Treatment Coronavirus (COVID-19). *StatPearls Publishing, Treasure Island, FL; 2020.*
- 19- Wang Y, Wang Y, Chen Y, Qin Q: Unique epidemiological and clinical features of the emerging 2019 novel coronavirus pneumonia (COVID-19) implicate special control measures [Epub ahead of print]. *J Med Virol.* 2020, 10.1002/jmv.25748