IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 19, Issue 11 Ser.6 (November. 2020), PP 16-23
www.iosrjournals.org

Epidemiological and Clinical Profile Of Covid 19 Patients in a Tertiary Care Hospital: A Retrospective Analysis

Dr Vandana Sinha[1], Dr Partha Pratim Kalita[2], Dr Anup Jyoti Dutta[3], Dr Pranab Barua[4], Dr Prerit Sarma[5], Dr Himadri Dutta[6], Dr Pinku Sarma[7]

1. *Medical Director, ICU and Critical Care, AyursundraSuperSpeciality Hospital, Assam, India*
2. *Consultant, Department Of Medicine, AyursundraSuperSpeciality Hospital, Assam, India*
3. *Consultant, ICU and Critical Care, AyursundraSuperSpeciality Hospital, Assam, India*
4. *Director, Department of Accident and Emergency, AyursundraSuperSpeciality Hospital, Assam, India*
5. *Consultant, Department of Accident and Emergency, AyursundraSuperSpeciality Hospital, Assam, India*
6. *Consultant, Department of Microbiology, AyursundraSuperSpeciality Hospital, Assam, India*
7. *Consultant, Department of Radiology, AyursundraSuperSpeciality Hospital, Assam, India*

Abstract
Background*: An unidentified pneumonia outbreak was first observed in Wuhan, the capital of Hubei Province, China, in December 2019. WHO officially named the virus Severe Acute RespiratorySyndromeCoronavirus-2(SARS-CoV-2)and the disease, Coronavirus Disease 2019 (COVID-19), and on Mar 11, 2020, declared COVID-19 as pandemic Hence, we aimed to perform a systematic review of the epidemiological and clinical characteristics of COVID-19 patients admitted in a tertiary care hospital in North East India.*
Methods*: We retrospectively analysed 375 cases admitted at AyursundraSuperSpeciality Hospital, Guwahati between July 6th to September 10th, 2020.*
Results*: We included a total of 375 patients with 60.27% being male. Thepredominant symptoms were fever (86.4%), cough (68.53%), and fatigue/myalgia (38.13%) and other symptoms including dyspnea,chest pain, and sore throat. We also found patients with GI symptoms like diarrhea (8.53%) and nausea/vomiting (44.53%).Comorbidities were found in 162 (42.2%) patients with the most common being hypertension (23.73%) followed by diabetesmellitus (13.07%).At admission, 56.37% presented with lymphopenia and 36.27% had elevated D-dimers. Severe-critical patients were 5.06% with a median time from onset to critical disease of 8.5 days. 24% of the patients required oxygen therapy. The case fatality rate was 1.6% with median time from onset to death of 16 days.*
Conclusion*: Patients with coexisting comorbidities are at higher risk and need more utilization of health care resources. As this virus is spreading globally, all countries have to join hands and prepare at all levels of human resources, infrastructure, and facilities to combat the COVID-19 disease.*
Keywords: *COVID19, fever, cough, D-dimer, SARS-CoV2*

Date of Submission: 06-11-2020 Date of Acceptance: 19-11-2020

I. Introduction

COVID-19 is an emerging infectious disease that has exerted a tremendous impact on public health and socioeconomic development. Confirmed cases have been reported in 196 countries, areas or territories. As of March 25, 2020, 375,498 cases including 16,362 deaths were reported worldwide [1]. Coronavirus is an enveloped, non-segmented, positivesense single-stranded RNA virus with genome size ranging from 26 to 32kilobases (the largest known viral RNA genome) [2]. COVID-19 is mainly transmitted by droplets and contact with contaminated surfaces or objects, showing human-to-human transmission, family aggregation spread, and nosocomial infection [3]. It is worth noting that COVID-19 has a diverse clinical presentation, ranging from asymptomatic infection to mild respiratory illness to more severe complications of pneumonia, Acute Respiratory Distress Syndrome requiring intensive care unit (ICU) admission, and mechanical ventilation. We investigated epidemiological and clinical features, disease severity, diagnosis, treatment, clinical outcomes, and follow-up of COVID-19 in a tertiary care centre in North East, with the hope of assisting other large urban centres in planning for the high risk of extensive SARS-CoV2 transmission. The eff ective management of this epidemic highlights the benefits of early and aggressive control measures.

II. Methods

COVID-19 confirmed patients admitted in the Emergency Department of AyursundraSuperSpeciality Hospital from July 6th to September 10thwere included. Epidemiological history, clinicalmanifestations,laboratorytestresults,andimaging test results were retrospectively collected from medical records. The study was approved by ASH Ethics Committee.

Diagnosis and admission process

Real-time reverse transcriptase polymerase chain reaction (RT–PCR) assay for confirming SARS-CoV-2 infection were conducted according to WHO protocols. Patients with positive nucleic acid test results were transferred to ASHfor further treatment using negative pressure ambulances.

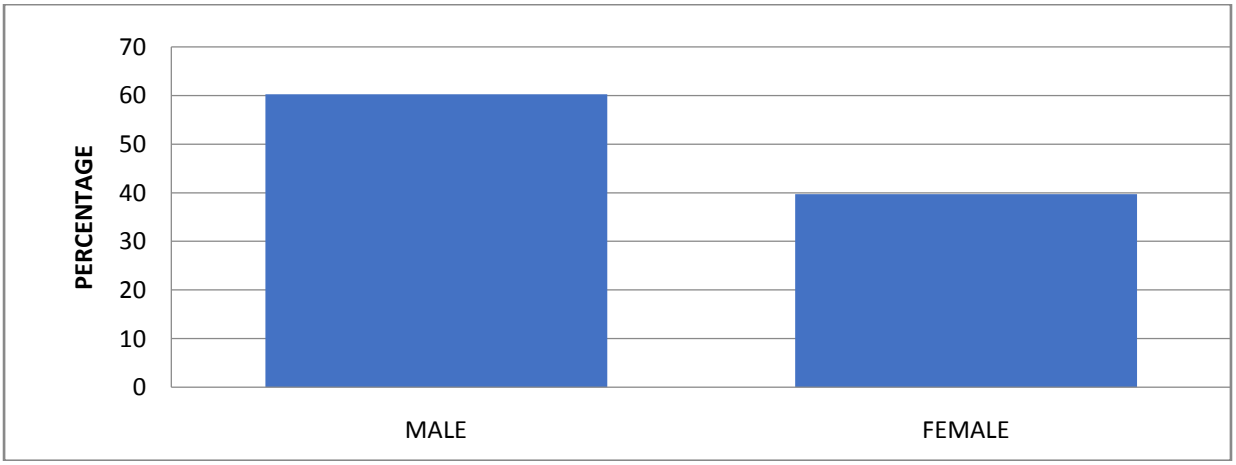
Follow-up after discharge

Patients were followed-up at 2- and 4-weeks post-discharge to ascertain if any contacts had respiratory symptoms or fever. Blood counts, liver and kidney function, and nucleic acid tests were completed on oro- or nasopharyngeal swabs or in sputum. Chest computed tomography (CT) was provided as needed.

III. Results

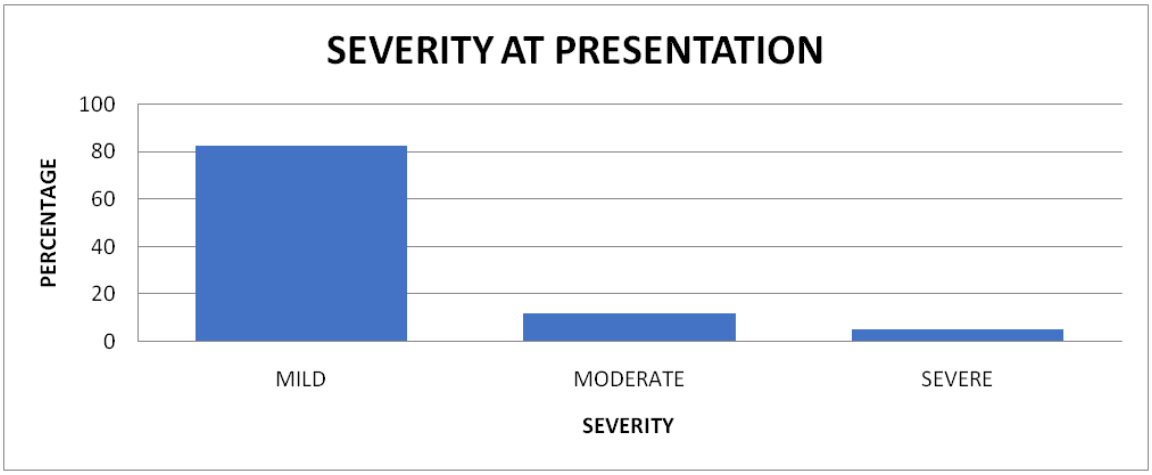
1. Out of 375 confirmed COVID-19 patients, there was higher percentage of male patients (226 (60.27%)) than female (149 (39.73%))

	NUMBER OF PATIENTS	PERCENTAGE
MALE	226	60.27
FEMALE	149	39.73



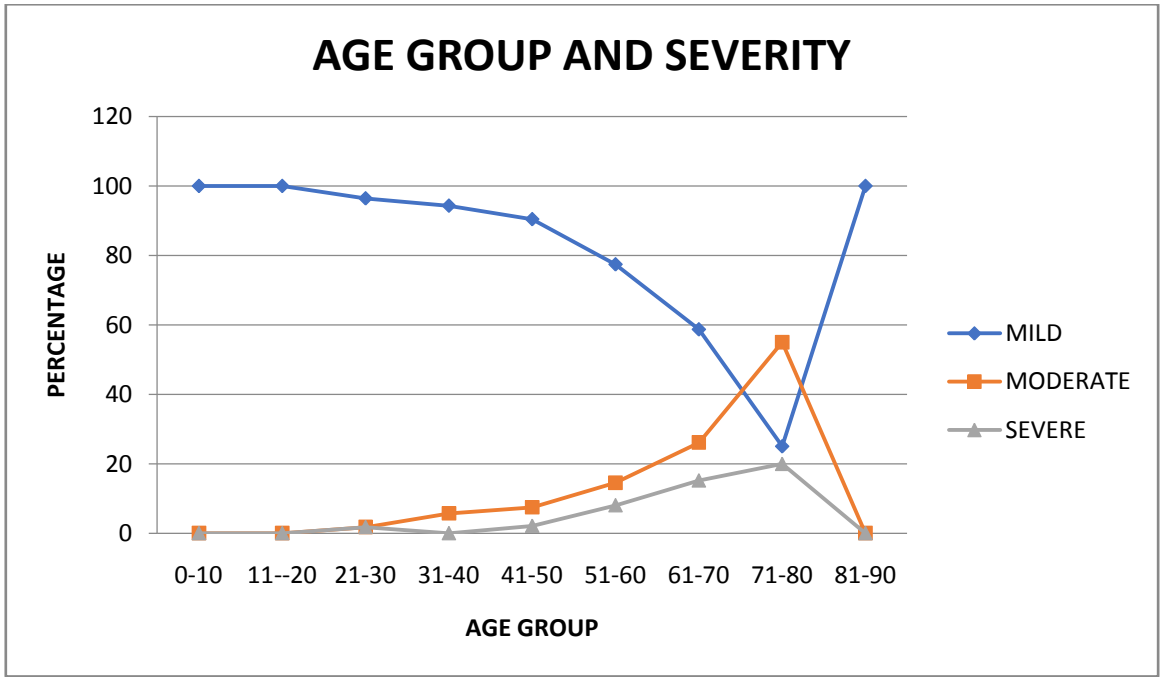
2. Of the confirmed cases, 82.93% were mild(SpO2> 94% on room air), 12% were moderate(SpO2 90-94% on room air) and 5.06%(<90% on room air) were severe at presentation.

SEVERITY	NUMBER OF PATIENTS	PERCENTAGE
MILD	311	82.93
MODERATE	45	12
SEVERE	19	5.06



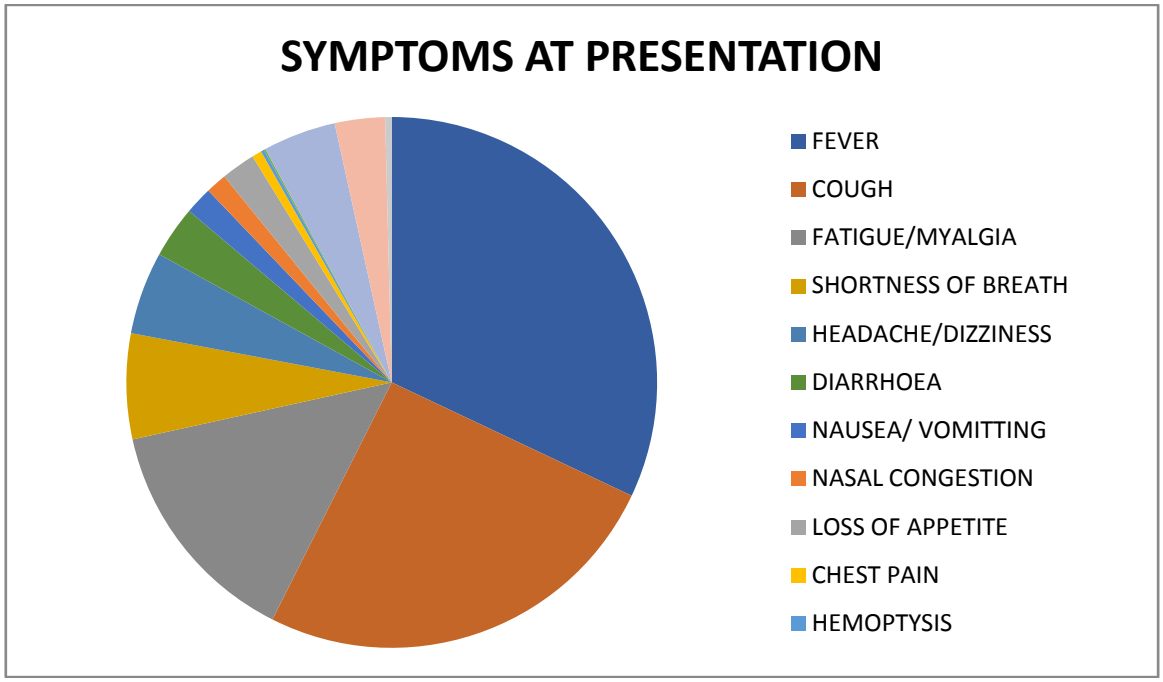
3. Of the total active cases, 94(25.07) were in the age group of 41-50 years followed by 31-40 years(23.47%) and 51-60 years(16.53%) whereas maximum severe cases were found in the age group of 71-80 years(20%).

AGE AT PRESENTATION	SEVERITY			TOTAL(%)
	MILD(%)	MODERATE(%)	SEVERE(%)	
0-10	2(100)	0	0	2(0.53)
11-20	3(100)	0	0	3(0.8)
21-30	54(96.43)	1(1.78)	1(1.78)	56(14.93)
31-40	83(94.32)	5(5.68)	0	88(23.47)
41-50	85(90.43)	7(7.45)	2(2.13)	94(25.07)
51-60	48(77.42)	9(14.52)	5(8.06)	62(16.53)
61-70	27(58.69)	12(26.09)	7(15.22)	46(12.27)
71-80	5(25)	11(55)	4(20)	20(5.33)
81-90	4(100)	0	0	4(1.06)



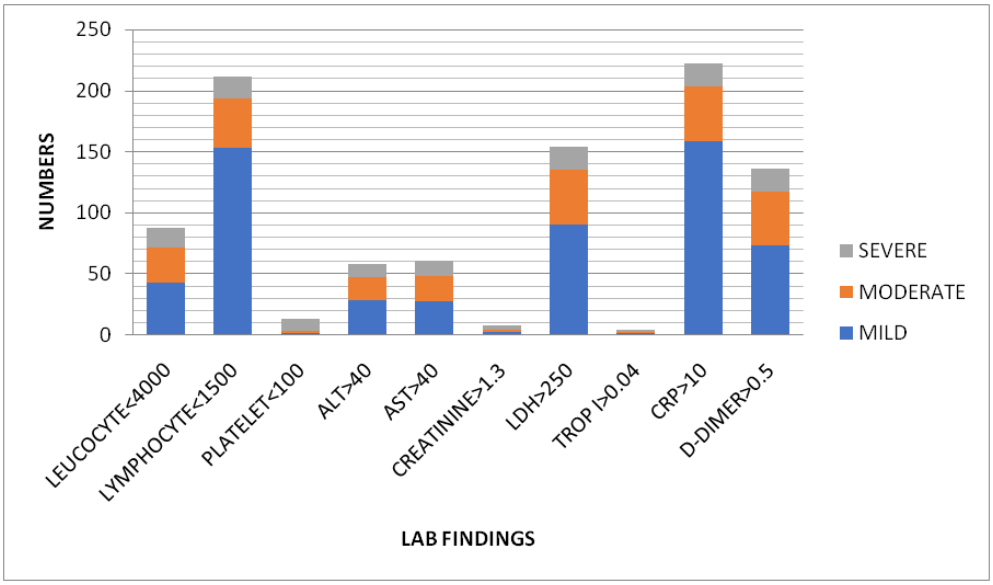
4. In regard to clinical presentation, fever was the most common symptom, seen in 324 (86.4%) patients, followed by cough (257 (68.53%)), fatigue/ myalgia (143 (38.13))and dyspnea (65(17.33%)). Lesser common symptoms include diarrhea in (32 (8.53%)) patients followed by nausea/vomiting (17(4.53%)), nasal congestion (13 (3.46%)), loss of appetite (21 (5.6%))

SYMPTOMS AT PRESENTATION	NUMBER(%)
FEVER	324(86.4)
COUGH	257(68.53)
FATIGUE/MYALGIA	143(38.13)
SHORTNESS OF BREATH	65(17.33)
HEADACHE/DIZZINESS	51(13.6)
DIARRHOEA	32(8.53)
NAUSEA/VOMITING	17(4.53)
NASAL CONGESTION	13(3.46)
LOSS OF APPETITE	21(5.6)
CHEST PAIN	6(1.6)
HEMOPTYSIS	2(0.53)
IMPAIRED CONSCIOUSNESS	1(0.26)
IMPAIRED SMELL	45(12)
IMPAIRED TASTE	31(8.26)
CONJUNCTIVAL CONGESTION	4(1.06)



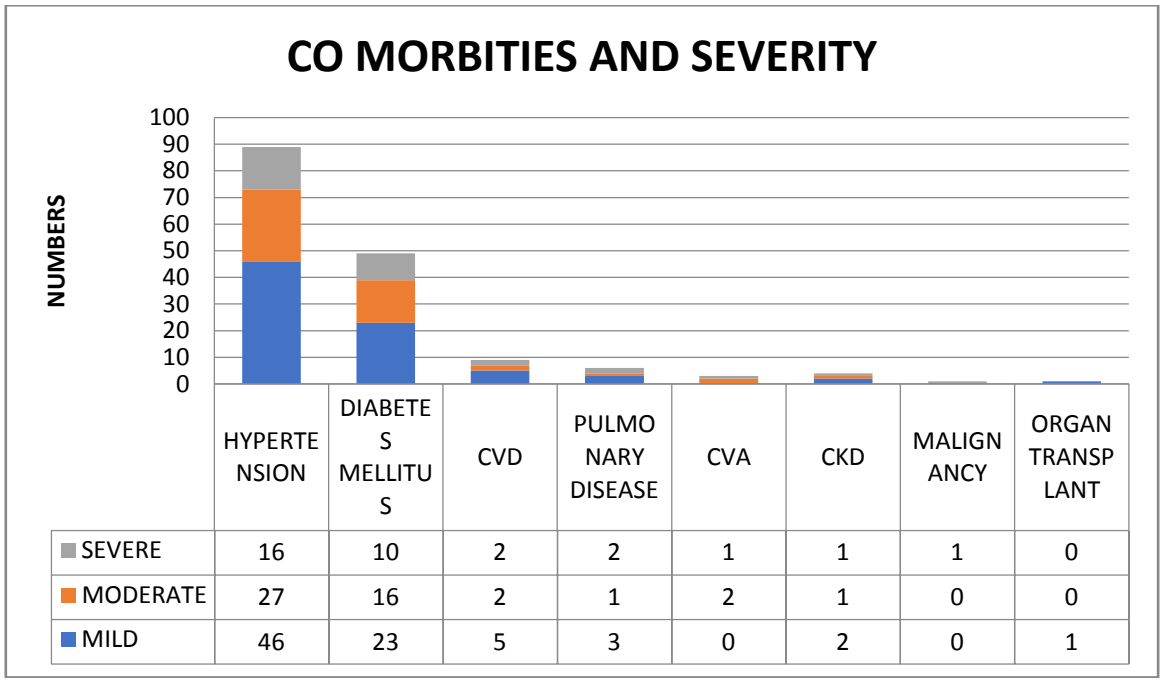
5. At admission, nearly two-thirds (56.27; 211/375) presented with lymphopenia. Over half (559.2%; 222/375) had increased C-reactive protein (CRP); 36.27% (136/375) had elevated D-dimers; a quarter had leukocytopenia (23.2%; 87/375).

LAB FINDINDS	SEVERITY			TOTAL(%)
	MILD(%)	MODERATE(%)	SEVERE(%)	
LEUKOCYTE(per mm^3)<4000	42(48.27)	29(33.33)	16(18.39)	87(23.2)
LYMPHOCYTE(per mm^3)<1500	153(72.51)	40(18.96)	18(8.53)	211(56.27)
PLATELET(10^3 per mm^3)<100	1(7.69)	2(15.38)	10(76.92)	13(3.47)
Alanine aminotransferase(U/ml)>40	28(48.27)	19(32.76)	11(18.96)	58(15.47)
Aspartate aminotransferase(U/ml)>40	27(45)	21(35)	12(20)	60(16)
Creatinine>1.3	2(28.57)	2(28.57)	3(42.86)	7(1.87)
Serum Lactate Dehydrogenase(U/litre)>250	90(58.44)	45(29.22)	19(12.34)	154(41.07)
Troponin I(ng/ml)>0.04	1(25)	1(25)	2(50)	4(1.07)
C- reactive protein(mg/litre)> 10	158(71.17)	45(20.27)	19(8.55)	222(59.2)
D-dimer(microgram/ml)> 0.5	73(53.68)	44(32.35)	19(13.97)	136(36.27)



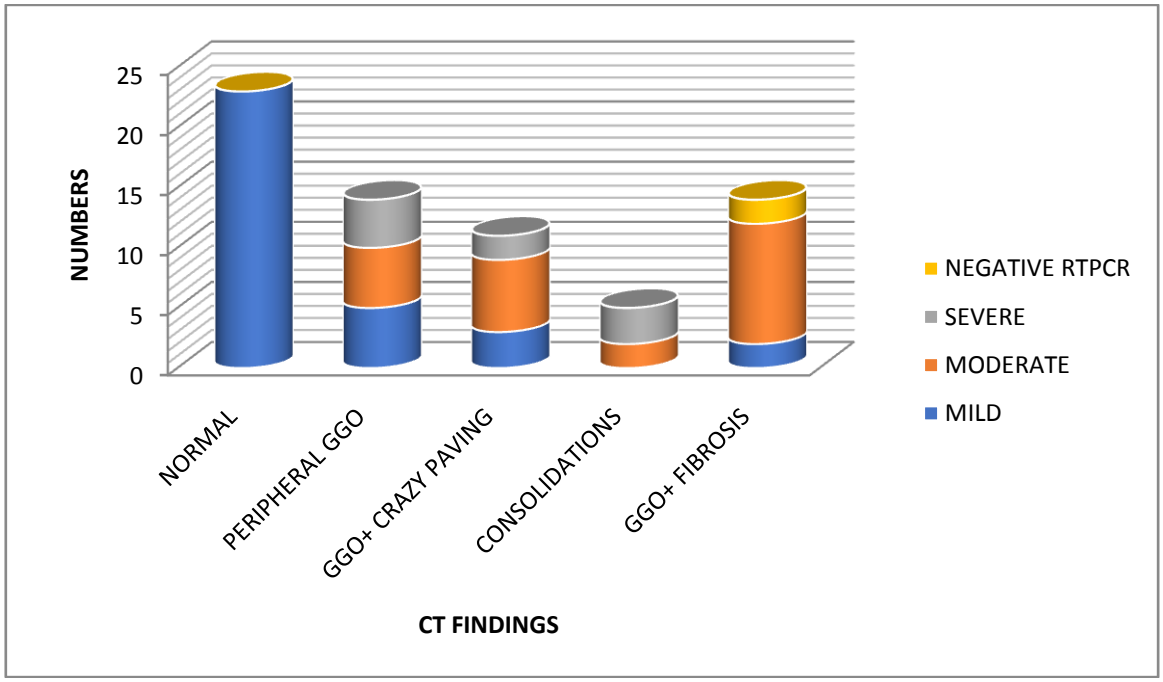
6. Underlying co-morbidities were present in 43.2% (162/375) of cases, included hypertension (23.73%; 89/375), diabetes (13.07%; 49/375), and coronary heart disease (2.4%; 9/375).

COMORBIDITIES	SEVERITY			TOTAL(%)
	MILD(%)	MODERATE(%)	SEVERE(%)	
Hypertension	46(12.27)	27(7.2)	16(4.27)	89(23.73)
Diabetes mellitus	23(6.13)	16(4.27)	10(2.67)	49(13.07)
Cardiovascular diseases	5(1.33)	2(0.53)	2(0.53)	9(2.4)
Pulmonary Disease	3(0.8)	1(0.27)	2(0.53)	6(1.6)
Cerebrovascular Disease	0	2(0.53)	1(0.27)	3(0.8)
Chronic Kidney Disease	2(0.53)	1(0.27)	1(0.27)	4(1.07)
Malignancy	0	0	1(0.27)	1(0.27)
Organ Transplant	1(0.27)	0	0	1(0.27)



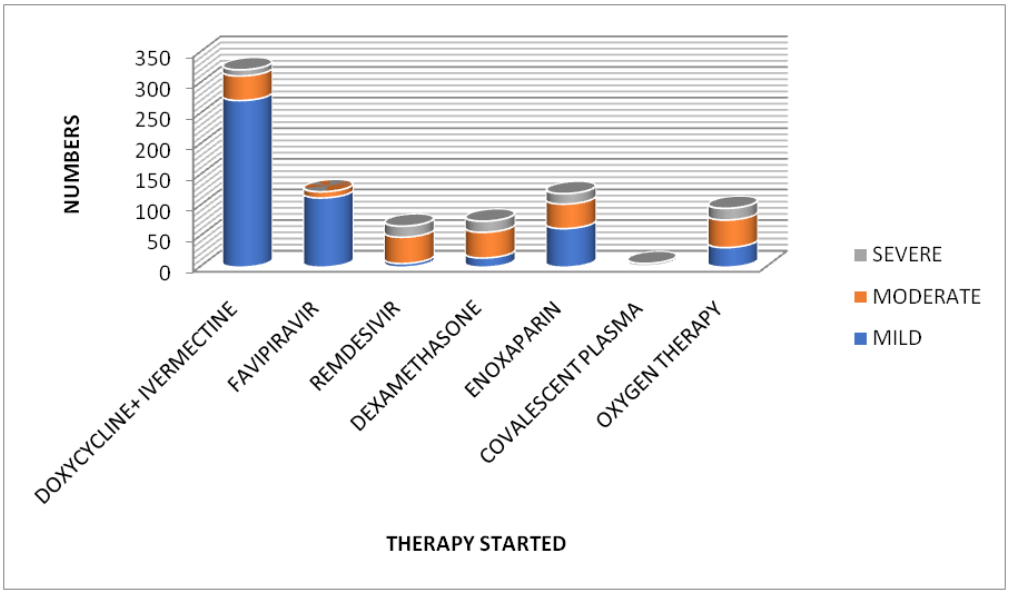
7. Computed tomography (CT) scan was performed on 67 patients (17.87%), mainly revealed ground glass opacities in the majority of the patients. 34.34% patients had normal CT scans. Few patients showed imaging features of pleural effusion and consolidation involving one or multiple lobes. 2(2.98%)patients had negative RTPCR where the CT findings showed GGO and fibrosis typical of COVID pneumonitis.

CT THORAX FINDINGS	SEVERITY			NEGATIVE RTPCR
	MILD(%)	MODERATE(%)	SEVERE(%)	
Normal	23(34.34)	0	0	
Peripheral GOO	5(7.46)	5(7.46)	4(5.97)	
GOO + Crazy Paving	3(4.48)	6(8.95)	2(2.98)	
Consolidations	0	2(2.98)	3(4.48)	
GGO +Fibrosis	2(2.98)	10(14.92)	0	2(2.98)



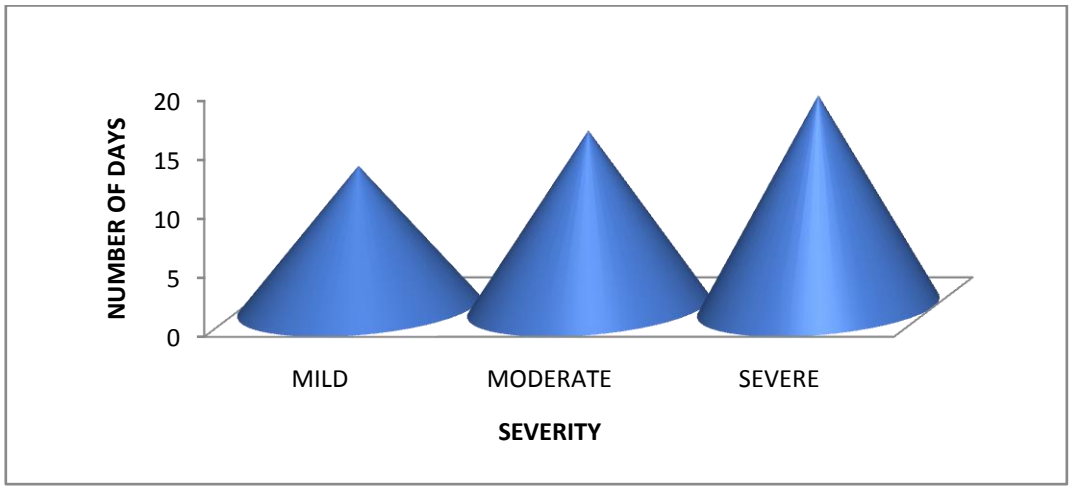
8. A quarter of the admitted patients (24%; 90/375) required oxygen during the disease course with 6.13% (23/375) needing high-flow nasal oxygen (HFNO). Antiviral therapies were prescribed to 50.67% (190/ 375) of patients, with treatment consisting of favipiravir and remdesivir. Other prescribed medications included doxycycline and ivermectin (85.87%; 322/375), anticoagulant drugs i.e. low molecular weight heparin or heparin (32%; 120/375), glucocorticoid i.e. dexamethasone(20%; 75/375). Among mild cases, 190/311 (61.74%) did not receive antiviral therapy. Very few patients (1.6%; 6/375) were given convalescent plasma therapy

THERAPY STARTED	SEVERITY			TOTAL(%)
	MILD(%)	MODERATE(%)	SEVERE(%)	
Doxycycline + Ivermectin	272(72.53)	40(10.67)	10(2.67)	322(85.87)
Favipiravir	113(30.13)	10(2.67)	0	123(32.8)
Remdesivir	6(1.6)	43(11.47)	18(4.8)	67(17.87)
Dexamethasone	15(4)	42(11.2)	18(4.8)	75(20)
Enoxaparin	63(16.8)	40(10.67)	17(4.53)	120(32)
Covalescent Plasma	0	2(0.53)	4(1.06)	6(1.6)
Oxygen Therapy	32(8.53)	45(12)	19(5.07)	90(24)



9. Median time from illness onset to negative viral detection was longer in severe and critical patients compared with mild patients.

SEVERITY	AVERAGE DURATION OF STAY IN HOSPITAL
MILD	12
MODERATE	15
SEVERE	18



10. Six deaths, all caused by acute respiratory distress syndrome (ARDS) or multiple organ dysfunction (MODS), yielded a case fatality rate of 1.6% (6/375) with median time from onset to death of 16 days . Case fatality rate in patients with glucocorticoid therapy was 6.67%, while no patient died among those without glucocorticoid therapy.

EXPIRED PATIENT NUMBER	SpO2 AT PRESENTATION	AGE	CO MORBIDITIES	THERAPY RECEIVED	DURATION BETWEEN ONSET OF SYMPTOMS TO PRESENATION
1. PK	90	58	DM, HTN, CKD	LMWH, DOXYCYCLINE, MEROPENAM, HFO	8
2. KH	84	59	DM, AKI	LMWH, DEXAMETHASONE, MEROPENAM, MV	2
3. BB	54	62	HTN, MALIGNANY, CVD	DEXAMETHASONE, MEROPENAM, REMDESIVIR, MV	2
4. JD	52	55	HTN	DEXAMETHASONE, REMDESIVIR, LMWH, BIPAP	1
5. MB	54	70	HTN, HYPOTHYROID	REMDESIVIR, LMWH, DEXAMETHASONE, NIV	3
6. PQ	76	72	NO	REMDESIVIR, DEXAMETHASONE, LMWH	1

IV. Discussion

Although most cases presented with fever, 13.6% never developed fever throughout their illness. Fever was an important clue for detecting imported cases. Significant reduction of lymphopenia and CD4+T lymphopenia as well as ground-glass lesions on CT images appeared in most patients at admission, supporting the three clinical criteria i.e. fever/respiratory symptoms, leukopenia and/ orlymphopenia,andtypicalpulmonaryimaging findings, for diagnosis of suspected COVID-19 [4]. We also found thatCTimaginghelpedclassifydiseaseseverityasalarger proportion of scans from critically ill patients revealed bilateral lung involvement compared with mild cases.

Abnormally elevated D-dimer levels were found in over one-third patients. Zhong et al. reported that the proportion of patients with D-dimer over 0.5 µg/ml were significantly higher in severe cases and those who

met a composite endpoint i.e. admission to an intensive care unit, the use of mechanical ventilation, or death, compared with mild cases [5]. A study by Cao et al. revealed increased odds of hospital-death associated with D-dimer concentration over 1 µg/ml at admission [6]. These findings may reflect the underlying imbalance of the coagulation system triggered by infection, which warrants continued study. Although most patients in this study presented with mild symptoms (82.93%), one fourth needed oxygen therapies at least once throughout the disease course. This result was similar to other studies from Hubei province [7].

Although specific anti-SARS-CoV-2 drugs are currently unavailable, half of our patients received general antiviral agents on the first day of hospitalization.

Lymphopenia was the most common laboratory abnormality at admission, occurring in nearly 56.27% of cases. Consistent with earlier results, this study found that inflammatory markers, such as CRP, were elevated [8,9]. D-dimer elevation was also an important feature of the disease, seen in over one-third of cases. About a quarter of our patients were off ered anticoagulant drugs.

The case-fatality rate was lower (1.6%) than same day national data (2.11%) [10].Studies have suggested that old age and comorbidities are risk factors for death [11]. In our cohort, 18.66% of patients were over 65 years old, nearly 30% had underlying disease. The main cause of death was ARDS and MODS.

We observe very few cases among children and pregnant women, which was consistent with studies showing a typically mild disease course among children and a lack of evidence for higher risks in pregnancy. Moreover, our researchmay not reflect thetransmissionand clinical features completely since undetected asymptomatic and mild cases may exist. Other limitations included small numbers of severe and critically ill patients for study and potential lack of representativeness of imported cases if extrapolated to urban community transmission.

V. Conclusion

Close monitoring of the vitals and lab parameters were carried out and as the disease progressed, our conservative approach changed to more aggressive mode backed by the knowledge that getting down the viral load early is beneficial to the patient. We learnt that that simple care, assurance and proper communication go a long way in building up the patient's confidence and encourage them to communicate their discomfort at the earliest. Moreover, early nutritional supplementation also helps in maintaining the much-needed vital elements.

SOURCE OF FUNDING: Self-Funding

CONFLICT OF INTEREST: None

References

[1]. World Health Organization. Coronavirus disease(COVID-19) outbreak situation. [cited 2020 March25]. Available at: https://www.who.int/emergencies/diseases/novel-coronavirus-2019.

[2]. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinicalfeatures of patients infected with 2019 novel coronavirusinWuhan, China. Lancet. 2020;395(10223):497–506. https://doi.org/10.1016/s0140-6736(20)30183-5.

[3]. Rothe C, SchunkM, Sothmann P, BretzelG, FroeschlG, WallrauchC, et al. Transmission of 2019-nCoV infection from an asymptomaticcontact in Germany. N Engl J Med. 2020;382(10):970–1.https://doi.org/10.1056/NEJMc2001468.

[4]. National Health Commission of the People's Republicof China. National COVID-19 diagnosis and treatmentscheme (the seventh edition). [cited 2020 Mar 3].Available at: http://www.nhc.gov.cn/yzygj/s7653p/202003/46c9294a7dfe4cef80dc7f5912eb1989/files/ce3e6945832a438eaae415350a8ce964.pdf.

[5]. Guan WJ, Ni ZY, Hu Y, et al. Clinical characteristics ofcoronavirus disease 2019 in China. N Engl J Med.2020;382(18):1708–1720.

[6]. Zhou F, Yu T, Du R, et al. Clinical course and risk factorsfor mortality of adult inpatients with COVID-19in Wuhan, China: a retrospective cohort study.Lancet. 2020;395(10229):1054–1062.

[7]. Tian S, Hu N, Lou J, et al. Characteristics of COVID-19infection in Beijing. J Infect. 2020;80(4):401–406.

[8]. Guo L, Wei D, Zhang X, et al. Clinical featurespredicting mortality risk in patients with viral pneumonia:The MuLBSTA Score. Front Microbiol.2019;10:2752.

[9]. Leung C. Clinical features of deaths in the novel coronavirus epidemic in China. Rev Med Virol.2020;30(3): e2103.

[10]. https://www.worldometers.info/coronavirus/country/india/

[11]. Liu W, Tao ZW, Lei W, et al. Analysis of factors associated with disease outcomes in hospitalized patients with 2019 novel coronavirus disease. Chin Med J (Engl). 2020; 133(9):1032–1038.

Dr Vandana Sinha, et. al. "Epidemiological and Clinical Profile Of Covid 19 Patients in a Tertiary Care Hospital: A Retrospective Analysis". *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(11), 2020, pp. 16-23.