Clinicopathological Profile in Prognosis of Patients With Covid-19

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Abstract:

Background:*India has had more than 31378143 confirmed cases of coronavirus illness 2019 (COVID-19). Numerous social, environmental, health, and economic issues have been raised by COVID-19's effects on the global population. In light of the novelty and significant variety of the condition around the world, particularly in India, it is crucial to determine the clinical biochemical and radiological determinants of disease severity, progression, and patient outcomes. In this study, a tertiary care hospital in southern India's is profiled in terms of its demographic characteristics, clinical traits, comorbid conditions, baseline laboratory results, radiographic characteristics, and clinical management.*

Materials and MethodsIn this retrospective study,100 patients belonging to the age group of >18 years, with symptoms pertaining to ILI or SARI whose data was collected. The diagnosis of SARS COV-2 was confirmed by real-time reverse transcriptase polymerase chain reaction on throat and /or nasopharyngeal swabs. We included information regarding management of cases from MOHFW, Govt of India*

Results: During the study period, 100 patients with SARS-CoV-2 infection were admitted. The mean age of the patients was 53.50 years (22-85yr), and there were 80(80%) males and 20(20%) females. The mean age among males 52.01 years and among females it was 55.55years. Of the total enrolled patients, 73 (73%) were in normal range of BMI i.e. 18.6-24.9.8 patients were overweight with BMI of 25-29.9 .19 patients (19%) were obese i.e., from 30-34.9. The mean duration of hospital stay was 11.60 days and the mean duration of symptom onset before hospitalization was 4.10 days. The most common presenting complaint was fever among 89 patient's (89%) followed by breathlessness at exertion at 81% and 68 patients (68%) were having dry cough. One patient had history of travel, and 13 patients (13%) had history of contact in family and 11 patients were healthcare workers Study observed that 44 patients (44%) had diabetes mellitus. 31 patients (31%) were hypertensive and 4 patients had ischemic heart disease. Study reveals that 38 patients were smokers and 9 patients were alcoholic and 4 patients were both alcoholic and smoker We noted that 32 patients had a CT severity score between 15-20 11 patients had a CT severity of >20. All patients (100%) of them were administered Inj Remdesivir, Inj enoxaparin sodium and methylprednisolone.73.0% of patients were treated with oxygen therapy, 44 (44.0%) of patients were treated with non-Breathable face mask and 30 (30.0%) of patients were treated with HFNO, 23 of them were on NIV of them required invasiveventilation. 84 patients were improved and 16 patients expired.*

Key Word: *SARS CoV-2*

I. Introduction

The COVID-19 pandemic has taken us unprecedentedly. The World Health Organization (WHO) reported more than 43 million confirmed cases of SARS-CoV-2 infection and more than one million deaths globally [1] In India the first patient was from Kerala[2]. There is a lack of vast clinical data concerning SARS-COV-2 infection and, most importantly, the disease progression. In COVID-19, increased levels of inflammatory markers have beenassociated with cytokine storm, coagulopathy, and endothelial dysfunction. Similarly, patients with co-morbidities, increasing age male gender have shown increasing severity. Increasing BMI is also associated with more sever disease. It is important to identify the clinical and demographic features of patients because of the novelty and variedmanifestations of the illness across the world, particularly in countries like India [3-7] Patients with SARS-CoV-2 infection may have mild-to-asymptomatic illness, but few progress to acute respiratory distress syndrome (ARDS), multi-organ dysfunction syndrome (MODS) and finally death.

II. Material And Methods

This retrospective comparative study was carried out on patients admitted to dedicated covid hospital in Kalaburagi, Karnataka study period was from, A total of 100 patients both male and female, aged> 18years were included in this study

Study Design: Retrospective
Study Location: This was the tertiary care teaching hospital which had dedicated covid ICU, HDU's at BASAVESHWAR TEACHING AND GENERAL HOSPITAL, KALABURAGI, KARNATAKA
Study Duration:1ST OF MARCH 2021 To 1st august 2022**Sample size:** 100 patients. **Subjects& selection method**: Study subjects were collected after applying inclusion and exclusion criteria. Information was collected through prepared proforma from each patient. The study was performed on inpatients admitted in Basveshwara teaching and general hospital attached to Mahadevappa Rampure Medical College, Kalaburagi. A detailed history was obtained from qualifying patients using a predesigned structured proforma. Further, a detailed systemic examination, followed by relevant investigations were performed and the results were noted

Inclusion criteria:
1. Patients who were tested positive for covid-19 RTPCR
2. Patients who developed ILI and SARI like symptoms
3. Age >18 years

Exclusion criteria:
1. Patients tested negative for RTPCR

Procedure methodology
After written informed consent was obtained, a well-designed questionnaire was used to collect the data of the recruited patients retrospectively. The questionnaire included socio-demographic characteristics such as age, gender, height, weight, and lifestyle habits like smoking and alcohol and co-morbidities symptoms at presentation. Clinical and biochemical laboratory investigation such as Complete hemogram, LFT, PT/INR, D-dimer, IL-6, ferritin levels and CRP were obtained. Radiological investigations included CT thorax. Clinical data such as vitals including blood pressure, pulse rate and room air saturation were collected. Subjects were then grouped into three classes based on the severity criteria as proposed by MOHFW into mild, moderate and severe, where mild cases included patients with uncomplicated URTI and may have mild symptomssuch as fever, cough, sore throat nasal congestion, malaise and headache, without shortness of breath or hypoxia (spo2 > 95%). Moderate cases included subjects with clinical features of dyspnoea and or hypoxia, cough including spo2 90% to <_ 93% at room air, respiratory rate of more than or equal to 24/min. Severe cases included clinical signs of pneumonia plus one of the following: Respiratory rate of >30/min, severe respiratory distress, spo2 <90% room air

Statistical analysis
The statistical data will be compiled using SPSS Software, Chi-square test, small sample t-test and ANOVA test will be applied for significance .P value of <0.05 will be considered a significant value

III. Results

During the study period 100 people were diagnosed with covid -19. Majority of patients 27 (27.0%) belonged to the age group of 51—60 years, followed by 21 (21.0%) of patients belonged to the age group of ≤ 40 years and 20 (20.0%) of patients belonged to the age group of 41-50 years. The mean age of all patients was 53.50 years, among males mean age was 53.01 years and among females mean age was 55.55 years. The minimum age of the patients was 22 years and maximum age was 85 years.

Table no.1

Age in years	Males		Females		Total	
	No.	%	No.	%	No.	%
≤ 40	16	20.0	5	25.0	21	21.0
41—50	15	18.8	5	25.0	20	20.0
51—60	26	32.5	1	5.0	27	27.0
61—70	13	16.2	5	25.0	18	18.0
71—80	8	10.0	4	20.0	12	12.0
>80	2	2.5	0	0.0	2	2.0
Total	80	100.0	20	100.0	100	100.0

Mean ± SD	53.01 ± 14.47	55.55± 16.40	53.50 ± 14.80
t-test, P-value	t = 0.683, P = 0.496, NS		

Bar diagram showing age and gender distribution
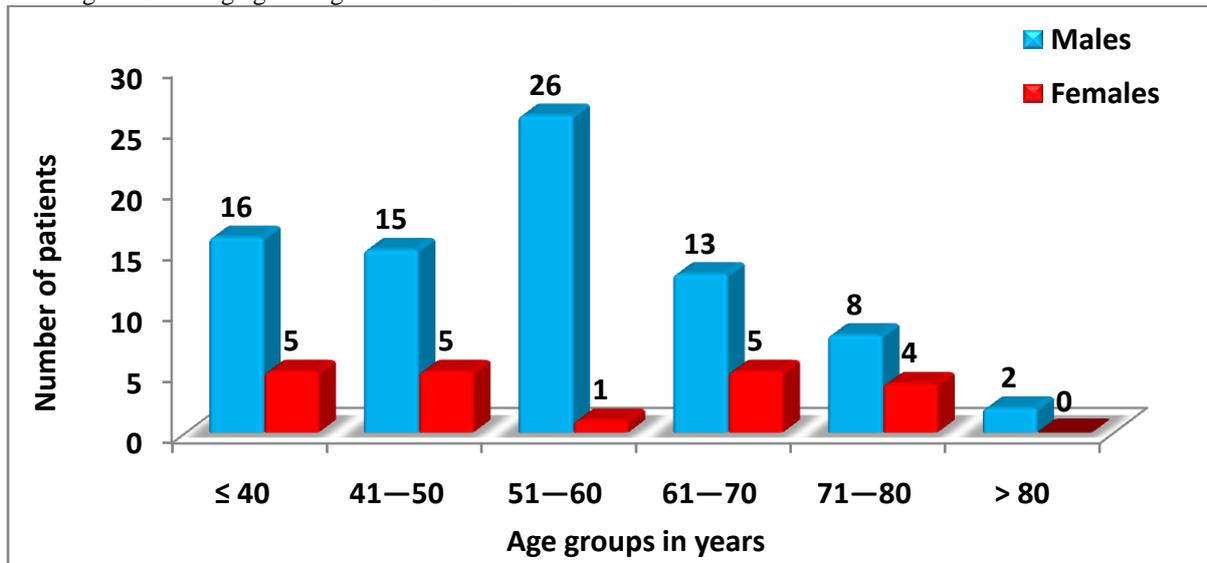
Of the total enrolled patients, 73 (73%) were in normal range of BMI i.e. 18.6-24.9.8 patients were over weight with BMI of 25-29.9 .19 patients (19%) were obese i.e., from 30-34.9.

Table.no 2

BMI	Categories	No. of patients	Percentage
< 18.5	Under weight	0	0.0
18.6—24.9	Normal range	73	73.0
25.0—29.9	Over weight	8	8.0
30.0—34.9	Obese	19	19.0
35.0—39.9	Extreme obese	0	0.0
Total	---	100	100.0

Bar diagram showing BMI wise distribution
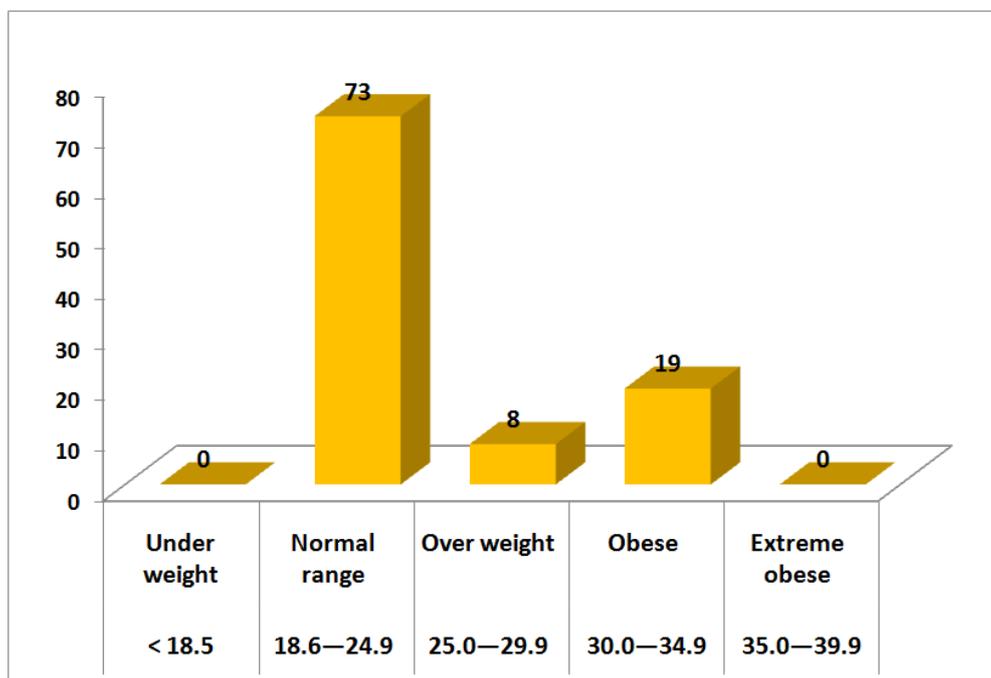
It has been observed that the mean duration of hospital stay was 11.60 days and the mean duration of symptom onset before hospitalization was 4.10 days. 34 patients had a hospital stay of 11-15 days and mean duration of symptom onset before hospitalization was 4.10 days
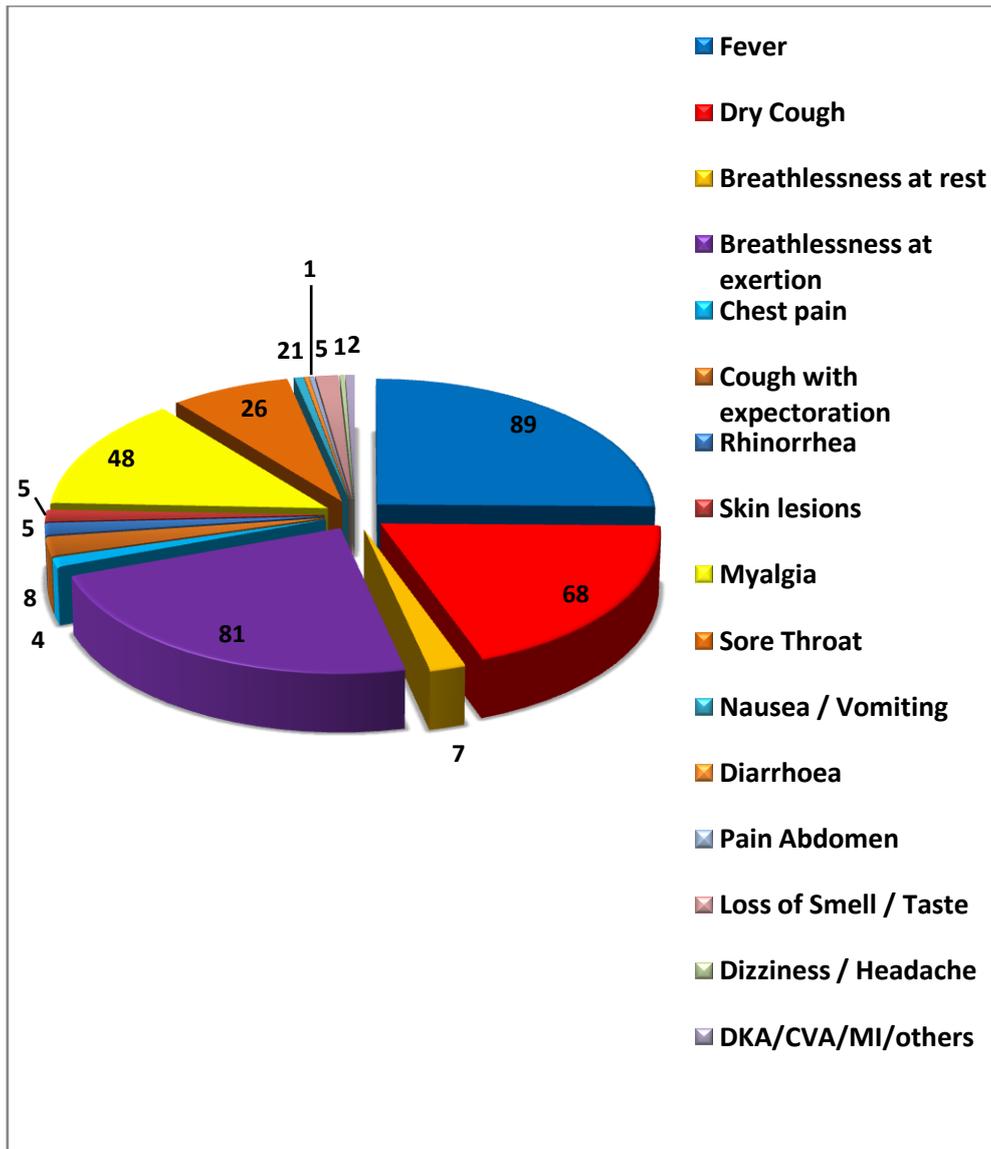
Table no.3

Duration of stay	Duration of hospital stay (in days)	Duration of symptoms before hospitalization (in days)
	Number (%)	Number (%)
≤ 5days	7	83
6—10 days	44	13
11—15 days	34	4
> 15 days	15	0
Total	100	100.0
Mean ± SD	11.60 ± 5.9	4.10 ± 2.6

The most common presenting complaint was fever among 89 patients (89%) followed by breathlessness at Exertion 81% and 68 patients (68%) were having dry cough.48 patients had myalgia ,26 patients had sore throat

Table no.4

Presenting complaints	Number of patients	Percentage
Fever	89	89.0
Dry Cough	68	68.0
Breathlessness at rest	7	7.0
Breathlessness at exertion	81	81.0
Chest pain	4	4.0
Cough with expectoration	8	8.0
Rhinorrhea	5	5.0
Skin lesions	5	5.0
Myalgia	48	48.0
Sore Throat	26	26.0
Nausea / Vomiting	2	2.0
Diarrhoea	1	1.0
Pain Abdomen	1	1.0
Loss of Smell / Taste	5	5.0
Dizziness / Headache	1	1.0
DKA/CVA/MI/others	2	2.0

Pie diagram denoting symptom distribution

One patient had history of travel, and 13 patients (13%) had history of contact in family and 11 patients were healthcare workers

Table no.5

| History of transmitted	Number of patients	Percentage
Travel History	1	1.0
History of COVID in family	13	13.0
Health care workers	11	11.0

Study observed that 44 patients (44%) had diabetes mellitus. 31 patients (31%) were hypertensive and 4 patients had ischemic heart disease, 3 of them had hypothyroidism ,1 of them had bronchial asthma , and 2 of them had obstructive sleep apnoea

Table no.6

Co-morbid	Number of patients	Percentage
Diabetes mellitus	44	44.0
Hypertension	31	31.0
Hypothyroidism	3	3.0
Bronchial asthma	1	1.0
IHD	4	4.0

Obstructive sleep apnea	2	2.0
Evans syndrome	1	1.0

Bar diagram showing comorbities distribution
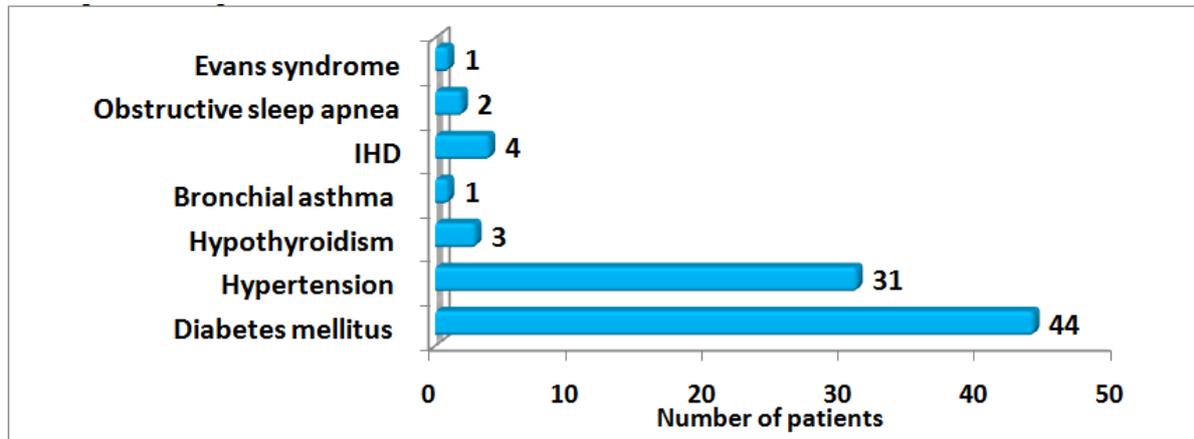
We found that there was significant elevation in NLR at mean 5.96 ± 4.47, mean ESR 37.19 ± 21.71,mean CRP of 49.09 ± 32.57.We also found that there were elevated mean D-dimer ,ferritin LDH,IL-6

Table no.7

Variables	Day-1
Hb%	12.41 ± 1.45
TC	7909.6 ± 3550.1
NLR	5.96 ± 4.47
PC	2.58 ± 1.07
ESR	37.19 ± 21.71
CRP	49.09 ± 32.57
LDH	611.79 ± 944.09
D-Dimer	1797.39 ± 2614.19
Ferritin	477.69 ± 377.2

IL-6	221.94 ± 73.02
Creatinine	0.86 ± 0.42
Urea	31.54 ± 14.50
Sodium	138.27 ± 3.65
potassium	4.24 ± 0.50
Bilirubin T	0.76 ± 0.74
Bilirubin D	0.24 ± 0.27
Albumin	3.47 ± 0.66
Globulin	3.21 ± 0.44
PT	17.07 ± 3.65
INR	1.37 ± 0.31

We noted that 32patients had a CT severity score between 15-20 11 patients had a CT severity of >20

Table no.8

Severity of CT	Number of patients	Percentage
<10	29	29.0
10—15	28	28.0
15—20	32	32.0
≥ 20	11	11.0
Mean ± SD	12.7 ± 5.5	

All patients (100%) of them were administered InjRemdesivir, Inj enoxaparin sodium and methylprednisolone .73.0% of patients were treated with oxygen therapy, 44 (44.0%) of patients were treated with Non-Breathable face mask and 30 (30.0%) of patients were treated with HFNO, 23 of them were on NIV of them required invasive ventilation
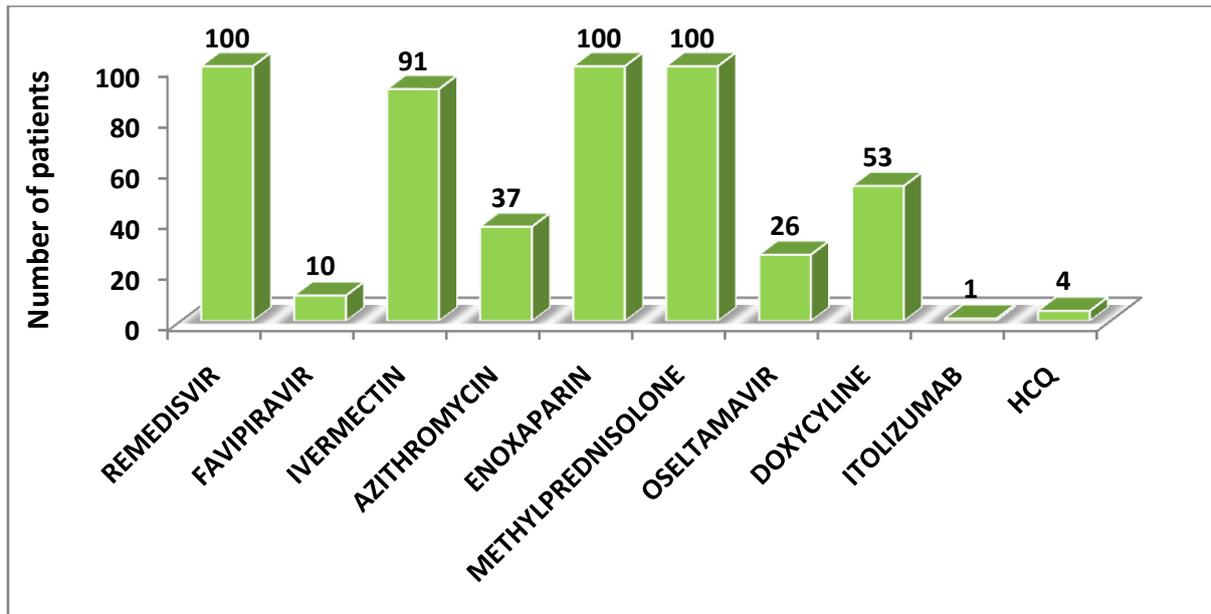Bar diagram showing treatment wise distribution

Table no.9

Mode of ventilation	Number of patients	Percentage
OXYGEN THERAPY	83	83.0
NON-REBREATHABLE FACE MASK	19	19.0
NASAL PRONGS	4	4.0
FACE MASK	26	26.0
HFNO	15	15.0
NIV	18	18.0
INVASIVE VENTILATION	1	1.0

We noticed that most of them 83% required oxygen therapy, majority of them needed face mask (26%) followed by NRBM (19%.)

Table no.10

Study outcome	Number of patients	Percentage
Improved	84	84.0
Expired	16	16.0
Total	100	100.0

We found that mortality in our study was 16%

Table no.11

Severity of COVID-19	Number of patients	Percentage
Mild	27	27.0
Moderate	25	25.0
Severe	38	38.0
Total	100	100.0

We also noted that 38 (38.0%) of were having severe illness, followed by 27 (27.0%) of patient's had mild illness and 25 (25.0%) of patient's had moderate illness.

IV.   Discussion

SARS-CoV-2 is one of the most virulent pathogens causing severe acute respiratory illness. Initial case studies from China demonstrated COVID-19 to be a respiratory illness with a spectrum ranging from mild illness (81%), severe respiratory distress (14%) and critical illness in five per cent with a case fatality rate of around 2.4 per cent

Considerable disparities in demographic and clinical patterns have been observed between countries across different continents. This retrospective study demonstrated the clinical profile and outcomes of initial COVID-19 patients from southern India.Patients in our study were with mean age of 53.50 years. Similar age pattern (mean age of 40.3 yr.) was observed in a study done by Gupta et al[8] at a tertiary care hospital from northern India,

All the patients in our study were symptomatic at admission; all of them were followed closely. 89% had fever as the presenting complaint, followed by 81% with breathlessness at exertion and 68% had dry cough as the presenting complaint. We found out that 11% of them were healthcare workers and 13 % had history of contact in family.

Another observation was an increased incidence of severe COVID-19 disease manifestations in patients with underlying chronic diseases (hypertension 31% and diabetes 44%). Similar findings have been reported from various studies across the world. The mean hospital stay was at 11.60 days

Various biomarkers have been shown to predict severe COVID-19 disease. An increased white blood count, decreased lymphocyte/platelet count, high interleukin-6. and high serum ferritin levels were strong discriminators for severe disease We found similar thing in our study mean ESR, CRP, LDH, NLR, IL-6 were significantly deranged.

We also observed that around 32 patients had a CT severity score of 15-20. There were no cases of thrombotic events, since as per ourInstitutional protocol early administration of heparin was strictly followed. Tang et al[11] also observed beneficial effects of early initiation of low molecular weight heparin among the 449 severe COVID-19 patients with markedly elevated D-dimers with a significantly improved 28-day overall survival (P=0.017 and P=0.029, respectively) among the users versus non-users.The mortality rate in our study was at 16%

V. Conclusion

To conclude even though all the patients were symptomatic at admission, 38% had the severe illness. Fever was noted in 89% of the patients and respiratory complaints in almost 80 per cent of the patients. High inflammatory markers and elevated NLR was seen in most of them. Higher age with co-morbidities like Diabetes and hypertension

Were associated with higher rate of infection. Most of patients who were symptomatic with respiratory complaints had a higher CT severity score. Most of them who expired had severe illness.

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