Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/14677
DOI URL: http://dx.doi.org/10.21474/IJAR01/14677

RESEARCH ARTICLE

ANALYSIS OF MORTALITY IN COVID 19 PATIENTS -A STUDY IN A DISTRICT COVID HOSPITAL IN ANDHRA PRADESH DURING THE FIRST WAVE

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Manuscript Info

Manuscript History
Received: 05 March 2022
Final Accepted: 08 April 2022
Published: May 2022

Abstract

Introduction: Coronavirus disease 2019 (Covid-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).Although majority of infected patients suffer from a mild form of illness and recover, a portion of patients suffer from severe disease and may eventually succumb to the illness. It has been found that risk factors like hypertension, diabetes mellitus, cardiovascular disease, cancer, COPD, asthma, chronic kidney disease, chronic liver disease ,pneumonia, obesity, and smoking were responsible for the development of the severe disease or death.Studying the common factors in patients who had mortality due to COVID 19 may help in identifying avoidable risk factors and in identifying high risk patients.

Aim: To study the clinical presentation, risk factors, laboratory parameters, and treatment given to covid 19 patients who had fatal outcome.

Material And Methods: This is a retrospective observational study conducted in Dr.Pinnamaneni Siddhardha institute of medical sciences and research foundation, Chinoutpally ,a district covid centre in Andhra pradesh. Baseline characteristics, clinical and laboratory data and treatment details of all mortality cases admitted during first wave i.e April 2020 to January 2021 were recorded in data collection forms and then reviewed and analysed

Results: A total of 5083 patients were admitted with COVID in our hospital during the study period.114 among them had mortality accounting to about 2.24%. Male to female ratio of the mortality group was 2.8:1.Most of the patients (32.4%)belonged to the age group of 61-70 years. Hypertension (51%), Diabetes

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mellitus (46%),alcoholism (13.2%)and smoking(11.2%) were the most common comorbidities observed in these patients.Most of the patients (96%) had hypoxia either at the time of admission or within first two days of admission.42 patients and 17 patients required BiPAP or CPAP during their hospital stay.

Conclusion: Male gender, advanced age, underlying diseases and presence of hypoxia at the time of presentation appear to be most common associations with fatal outcome of COVID 19 in the first wave in our hospital.

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Introduction:-

Coronavirus disease 2019 (Covid-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first case of COVID-19 disease was identified on December 8, 2019 in China and since then COVID-19 disease spread worldwide and was declared as a pandemic by World Health Organisation (WHO). As of 30 March 2022 about 483,556,595 people have been diagnosed with the disease globally, with about 6,132,461 deaths(1). Although the majority of infected patients sufferfrom a mild form of illness and recover, a portion of patients suffer from severe disease who may eventually succumb to the illness [2,3]. The case fatality rate is high for COVID-19 infection. Globally the death rate was 1.26 ([1]).

Symptoms like fever, cough, dyspnoea, myalgia, and fatigue are common in covid 19 patients [4,5]. Though many patients recover within few days ,elderly patients (age greater than 60 years) and patients with various chronic diseases have more fatal outcomes [6-9].

From different studies, it has been found that risk factors like hypertension, diabetes mellitus, cardiovascular disease, cancer, COPD, asthma, chronic kidney disease, chronic liver disease ,pneumonia, obesity, and smoking were responsible for the development of the severe disease or death [10–13].

The present study aimed to identify common clinical presentation, risk factors, laboratory abnormalities in covid 19 patients who had fatal outcome in our hospital,which is identified by the state government as district covid hospital for krishna district, Andhrapradesh.Atotal of 5083 patients were admitted in our hospital from April 2020 to January 2021 i.e during the first wave of covid 19 in India.

Aim:

To study the clinical presentation, risk factors, laboratory parameters, and treatment given to covid 19 patients who had fatal outcome

Materials And Methods:-

This is a retrospective observational study conducted in Dr.PSIMS &RF,Chinoutpally,a district covid centre in Andhra Pradesh with prior permission from institutional ethics committee.All the mortality cases of Covid 19 admitted from April 2020 to January 2021 were identified.Their baseline characteristics, clinical and laboratory data and treatment details were recorded in the data collection forms and then reviewed . Data collection forms included demographic data, risk factors, signs , symptoms, and their duration, vitals at time of presentation, laboratory values of Ddimer ,ESR,CRP,Ferritin etc.X-rays were reviewed and findings noted.

Statistical analysis:

The data was checked for logical errors and missing information and transferred to SPSS for windows (V16) for statistical analysis.

Results:-

A total of 5083 covid -19 patients were admitted to our hospital from the month of April 2020 to January 2021 i.e during the first wave of covid-19.

1.Age and sex distribution

Among 5083 patients 1819 were females and 3264 were males (M: F =1.7). Mean age of patients was 45 with a standard deviation of 15. Youngest patient admitted was 2 months old and the oldest was 98 years old.

Among 5083 covid patients, 114 patients succumbed to covid 19. Out of 114 cases 30 were females and 84 were males (M: F =2.8). Mortality was observed in Age ranging from 30 to 85 with mean age being 59 .A large number of patients i.e 37 were in the age group 60 -69 years, followed by 33 patients in the age group 50-59 years

Table 1:- Sex distribution.

	Male	Female	Total
Admitted	3264	1819	5083
Mortality			
Number of patients	84	30	114
Percentage	2.2%	1.6%	2.24

Table2:- Age distribution.

Age	**Number**	**Mortality**	**Mortality (%)**
<1	7		
1 to 10	54		
11-20	153		
21-30	555		
31-40	921	4	3.5%
41-50	1127	19	16.7%
51-60	1308	33	29%
61-70	723	37	32.4%
71-80	203	18	15.8%
81-90	30	3	2.6%
>90	2		

2.Duration of symptoms prior to admission

Among the non survivors, 85 patients visited the hospital within 5 days of symptom onset and 28 patients within 10 days of symptoms . Only one patient visited the hospital after 10 days of symptom onset.

Duration of symptoms prior to admission	Number of patients with fatal outcome
1-5 days	85
6-10 days	28
>10 days	1

Table 3:- duration of symptoms.

3.Presence of comorbidities.

Table 4:- Comorbidities.

COMORBIDITIES	NUMBER OF PATIENTS	Percentage
Hypertension	59	51%
Diabetes mellitus	53	46%
HYPOTHYROIDISM	10	8.7%
CAD	5	4.3%
ASTHMA	3	2.6%
CVA	3	2.6%
OBESITY	3	2.6%
CKD	1	0.8%
LIVER DISEASE	1	0.8%
Smoking	14	11.2%

Alcoholism	15	13.2%

4.Duration of hospital stay

23 of 114 patients had mortality in the first 24 hours.70,11,6 and 4 patients had mortality in the first, second ,third and fourth week respectively .Most of the patients (74)were in their second week of illness at the time of presentation .

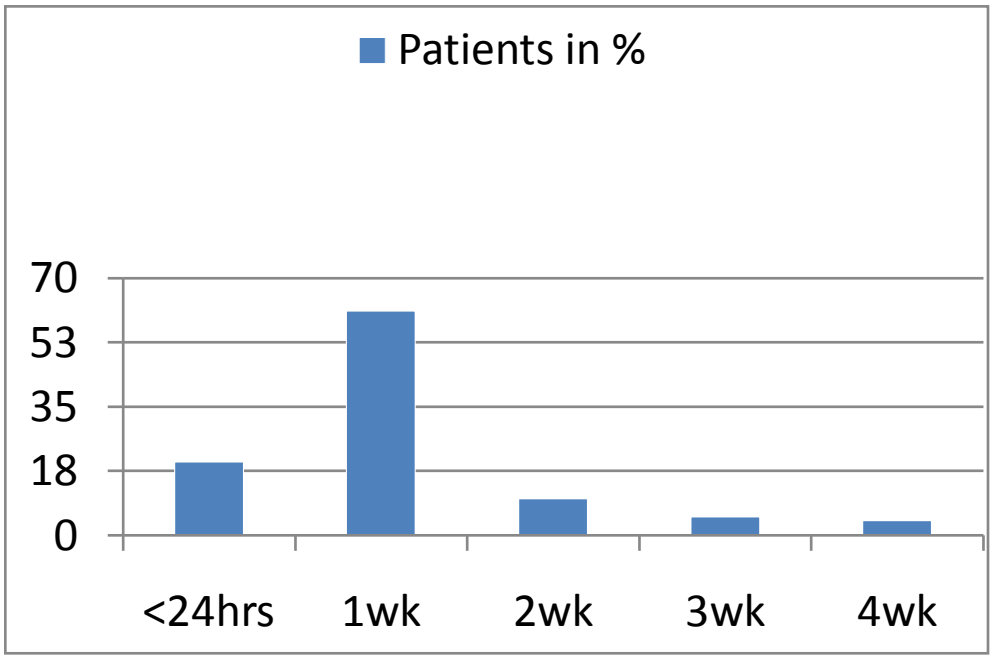

Fig1:- Duration of stay in hospital.

5. Presence of Hypoxia

Most of the patients (96%) had hypoxia at the time of admission(63%) or within first 2 days of admission(33%).4 (3.5%)patients had cardiac arrest without development of hypoxia.

6.Inflammatory markers

105 patients had isolated elevation of esr , crp ,d dimer or in combination .Blood sample could not be sent for 9 patients as they deteriorated as soon as their admission.

7.Blood sugar

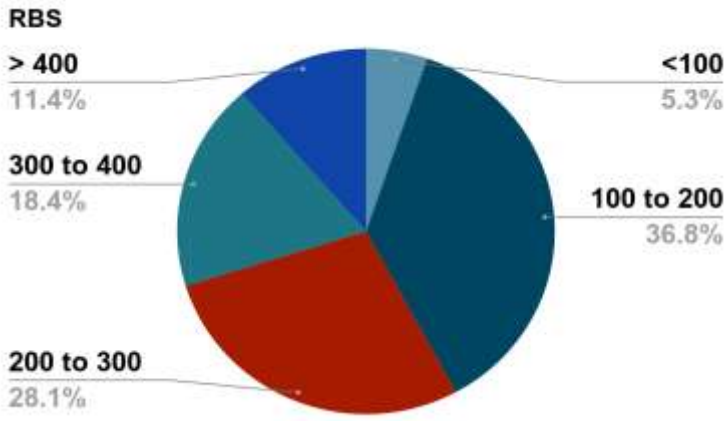

Figure 2:- Random blood sugar.

Random blood sugar>200 mg/dl was observed in 66 patients 13 patients among them were not known diabetics prior to admission. In 48 patients Random blood sugar was normal throughout the stay of hospital.

8.Radiological findings:
In 52 patients all three zones (upper, middle, lower) of both lungs were involved , in 43 patients middle and lower zones of both lungs were involved and in 4 patients only lower zone of both lungs were involved .One patient had hydropneumothorax .x ray could not be performed in 15 patients.

9.Treatment
a.Oxygen support
Most of the patients(110) received oxygen either through oxygen mask,Non rebreathing mask,High flow nasal oxygen ,CPAP or BIPAP.42 and 17 patients required BiPAP or CPAP for hypoxia respectively.

Type of ventilatory support	No of patients
OXYGEN MASK	18
NRBM	20
HFNO	13
CPAP	17
BIPAP	42

Table 5:- Type of ventilatory support.

b.Steroid and low molecular heparin
29 of 114 patients received dexamethasone and 84 of 114 patients received methylprednisolone as treatment . 60 of these patients received high dose steroid I.e >2 mg/kg of methylprednisolone.All patients received low molecular weight heparin.23 patients received only one or two doses of steroid and low molecular weight heparin as they succumbed to disease during first 24 hours.

Discussion:-
From this study, it is evident that mortality from covid-19 was more in male gender and elderly patients which was consistent with otherstudies[2]. Most of the patients had underlying co-morbid conditions especially diabetes mellitus,hypertension,smoking and alcoholism, before they developed covid -19 infection, which might have increased their risk of mortality.

Many patients had uncontrolled sugars during the treatment course and 13 patients developed denovo diabetes. These uncontrolled blood sugar levels could be due to use of steroids or due to the disease itself .

Most of the patients had hypoxia during their illness and cause of death among these was presumed to be either ARDS or viral pneumonia.All patients in our study were given oral or intravenous steroid- either dexamethasone or methylprednisolone once hypoxia was documented.Multiple studies showed that systemic corticosteroid therapy improves clinical outcomes and reduces mortality in hospitalised patients with COVID 19 who require supplemental oxygen.(14).

Patients with COVID 19 are at higher risk for thromboembolic phenomenon and proper treatment can improve the survival of these patients (15).We have treated all high risk patients with prophylactic doses of low molecular weight heparin and those with very high D dimers with therapeutic doses of low molecular weight heparin.

Conclusion:-
Male gender, advanced age, presence of co-morbid conditions, presence of hypoxia at the time of presentation appear to be most common associations with fatal outcome of COVID 19 in the first wave.

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