



STUDY ON COVID 19 PATIENTS WITH CO-MORBIDITIES WITH GOOD PROGNOSTIC OUTCOME

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ABSTRACT

Background - A novel human coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was identified in Wuhan, China, in December 2019. This study included patients with comorbid conditions, the progression of the disease, and prognostic outcome, infected with the ongoing COVID-19 disease. From what is known patients with COVID-19 disease who have comorbidities, such as hypertension or diabetes mellitus, are more likely to develop a more severe course and progression of the disease. Furthermore, older patients, especially those 65 years old and above who have comorbidities and are infected, have an increased admission rate into the intensive care unit (ICU) and mortality from the COVID-19 disease. [1]

Methods - A series of 30 patients with COVID 19 nasopharyngeal swab test positive, with various co morbid conditions admitted in Gandhi Hospital , Secundrabad from May 2020 to November 2020 were included in the study. Severity of the disease was detected by using COVID19 severity scale

Results - Most common co morbid condition identified in these patients was hypertension , followed by diabetes mellitus , chronic kidney disease , coronary artery disease , cerebrovascular accidents. COPD, asthma , HIV , pulmonary tuberculosis and malignancies were on a rarer side. All these patients initially had a higher severity score but eventually on undergoing treatment had a good prognostic outcome

KEYWORDS : Corona virus ; Covid 19; co morbidities; covid 19 severity scoring tool ;pandemic ;prognostic outcome

INTRODUCTION

Coronavirus disease (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a global pandemic that initially started in Wuhan, China, and spread extremely quickly, making its way to over 180 countries. Older adults and people of any age who have underlying medical conditions, such as hypertension and diabetes, have shown worse prognosis. Diabetic patients have increased morbidity and mortality rates and have been linked to more hospitalization and intensive care unit (ICU) admissions [2]. People with chronic obstructive pulmonary disease (COPD) or any respiratory illnesses are also at higher risk for severe illness from COVID-19 [3]. The risk of contracting COVID-19 in patients with COPD is found to be 4-fold higher than patients without COPD [3].

The clinical manifestation of COVID-19 is broad and ranges from asymptomatic and mild upper respiratory tract symptoms to severe illnesses with multiorgan failure and death [4]. Furthermore, it is challenging to predict the clinical course or determine patients at risk of deterioration. The most common comorbidities found were obesity, hypertension, and diabetes mellitus [5]. Previous studies have shown On admission, 20–51% of patients were reported as having at least one comorbidity, with diabetes (10–20%), hypertension (10–15%) and other cardiovascular and cerebrovascular diseases (7–40%) being most common [6].

Here we report a case series of 30 patients with various co morbid conditions with good prognostic outcome.

MATERIALS AND METHODS

A prospective study was conducted on 30 COVID 19 positive RT PCR test positive who were admitted in Gandhi Hospital , Secundrabad , from June 2020 to December 2020 . Patients with various co morbid conditions such as hypertension , diabetes mellitus, chronic obstructive pulmonary disease , asthma , cerebrovascular accidents , coronary heart disease, chronic kidney disease , malignancies ,

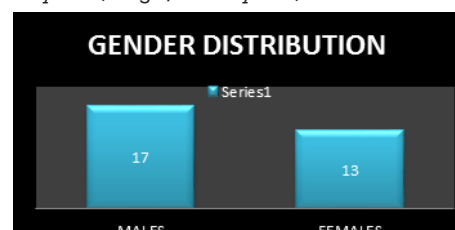
immunocompromised patients with retroviral disease were included in this study.

All the patients admitted underwent routine blood examination which included complete blood picture , renal function tests , liver function test , coagulation profile , CRP , ESR , D- Dimers. Chest radiography was done for all patients . Clinical , Demographic, laboratory , Radiological and treatment data of these patients was collected. Patients were classified based on the severity into mild , moderate , severe and critically ill based on Covid 19 severity scale at the time of admission. These patients were followed up till discharge and the outcome in these patients was assessed. Data was analyzed and the variables included type of co- morbidity , age , gender , number of co morbid conditions , severity of the disease based on vital parameters such as pulse rate , respiratory rate , blood pressure , temperature , based on the oxygen requirement (high flow or non invasive ventilation), hematological , biochemical , radiological parameters.

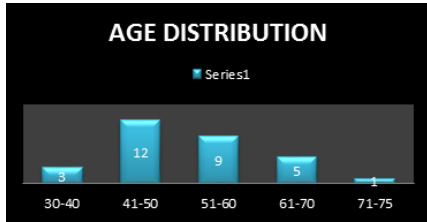
The study was conducted after the approval from Ethical Committee , Gandhi medical college and Hospital

RESULTS

In total 30 covid 19 positive patients with various comorbidities were reported . COVID-19 infection was confirmed by RT – PCR nasopharyngeal swab. We documented 17 male patients and 13 female patients. The mean age group of the patients was 52.66 years (range, 30 – 72 years)

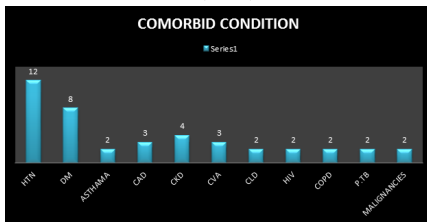


GRAPH 1 : Showing gender distribution



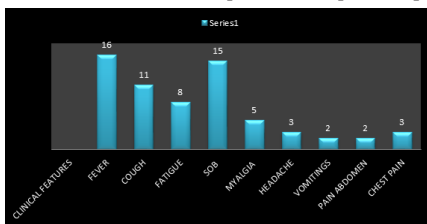
GRAPH II ; Showing age distribution

Various Co morbid conditions include 12 patients with hypertension(40%) , 8 with diabetes mellitus(26%) , 4 patients with chronic kidney disease (13%) , 3 with coronary artery disease(10%) , 3 with cerebrovascular accidents(10%) , 2 with chronic obstructive pulmonary disease(6.6%) , 2 with asthma(6.6%) , 2 with chronic liver disease(6.6%) , 2 patients with pulmonary tuberculosis(6.6%) , 2 patients with HIV(6.6%) and 2 patients with malignancies(6.6%).Of these 30 patients 2 patients had three co existing co morbidities(3.33%) ,10 patients had 2 co existing co morbidities(33%) and 18 patients had one co morbid condition(60%)



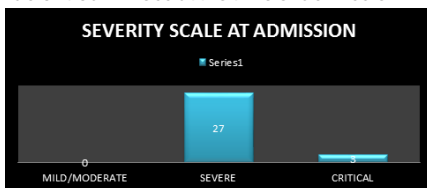
GRAPH III : Showing various co - morbid conditions

On admission 16 (53.3%)patients presented with fever, 11 (36.6%)with cough, 15(50%) with shortness of breath. Other complaints were easy fatiguability , myalgias , head ache , vomiting , pain abdomen and chest pain in 8(26%),5 (16.6%), 3(10%),2(6.6%),2(6.6%),3(10%) patients respectively



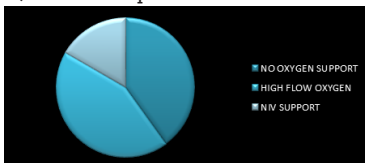
GRAPH IV:Showing various clinical features at presentation

Based on the severity 27(90%) patients had severe illness and 3(10%) had critical illness at the time of admission



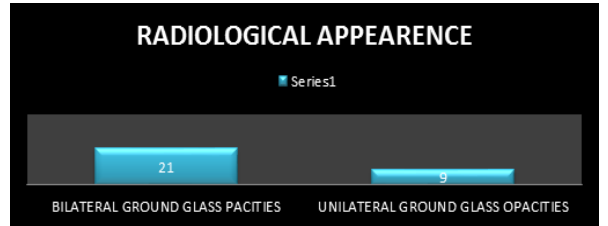
GRAPH V : Showing severity scale at admission

Out of 30 patients 13(43%) patients were in need of high flow oxygen support, 12 (40%) patients had no oxygen requirement and 5 (16.6%) had NIV requirement



GRAPH VI : Showing ventilatory support requirement

21(70%) patients had bilateral ground glass opacities and 9 (30%) had unilateral ground glass opacities on radiological examination



GRAPH VII: Showing radiological appearance of HRCT chest

The mean WBC count was 7.0 with standard deviation of 1.41 mean platelet count was 2.28 lakhs with standard deviation of 0.94 CRP was found to be elevated in all these patients ranging from 28 to 110 with a mean of 74.26±23.2

Levels of D- Dimers were elevated ranging from 510ng/ml to 1280ng/ml with a mean of 874.53±207

Mean Total serum bilirubin was 0.52± 0.091, mean seum creatinine was 0.94 ± 0.11, mean serum proteins was 6.92± 0.40

Temperatures of these patients ranged from 98.5 F to 100 F with a mean of 99.2±0.33, Respiratory rate ranged from 18 to 30 with a mean of 23.9±3.

Table I : Showing Vital Parameters

VITAL PARAMETERS	n = 30
PULSE RATE	
RANGE	76 – 112bpm
Mean ± SD	91.53±10.35
BLOOD PRESSURE (SBP)	
RANGE	110 – 160 mm Hg
Mean ± SD	136± 12mm Hg
RESPIRATORY RATE	
RANGE	18 - 30
Mean ± SD	23.9 ± 3.69
TEMPERATURE	
RANGE	98.5 F – 100 F
Mean ± SD	99.2±0.33 F

TABLE II : showing hematological parameters

HEMATOLOGICAL PARAMETERS	
HEMOGLOBIN	
Range	8- 14gm/dl
Mean ± SD	12± 2
WBC COUNT	
Range	6000 - 10000
Mean± SD	7000± 1400
PLATELET COUNT	
Range	1.8 L - 4 L
Mean± SD	2.28 ± 0.94
D DIMER	
Range	510 – 1280ng/ml
Mean± SD	874.53± 207

Table III : Showing Biochemical Parameters

BIOCHEMICAL PARAMETERS			
SERUM CREATININE		S. SODIUM	
Range	0.76 -1.17	Range	134- 139
Mean ± SD	0.94 ± 0.11	Mean ± SD	136.7 ± 3.1
B. UREA		S. POTASSIUM	
Range	20- 45	Range	3.6- 4.26
Mean ± SD	32.2± 8.7	Mean ± SD	3.9±0.4
TOTAL PROTEINS		TOTAL SERUM BILIRUBIN	

Range	6.33 - 705	Range	0.38-0.67
Mean ± SD	6.92 ±0.40	Mean ± SD	0.52±0.091
CRP		ALBUMIN	
Range	28 - 110	Range	2.8 - 3.5
Mean ± SD	74.26 ± 23.21	Mean ± SD	3.17± 0.21

Table IV : Showing Various Comorbidities

CO- MORBID CONDITION			
1	HTN + DM	16	HTN
2	HTN + CKD	17	HTN + CAD
3	ASTHAMA	18	CAD
4	COPD	19	DM+ CAD
5	HTN+DM + CAD	20	HIV
6	ADENOCARCINOMA OF STOMACH	21	CHRONIC LIVER DISEASE
7	DM	22	HIV
8	HTN + DM+CVA	23	HTN+DM
9	HTN + CKD	24	HTN
10	PULMONARY TB	25	COPD
11	DM + CKD	26	ASTHAMA
12	Ca ESOPHAGUS + PTB	27	HTN + CVA
13	NON HODGKINS LYMPHOMA	28	HTN + DM
14	HTN + CVA	29	HTN + CVA
15	DM + CKD	30	CHRONIC LIVER DISEASE

DISCUSSION

According to WHO reports, the overall fatality rate for COVID-19 is estimated at 2.3% [7], but the fatality rate has varied among studies from 1.4% to 4.3%. Although the risk factors of COVID-19 remain unclear, many studies reported that a significant proportion of patients had underlying conditions [8]

The elderly, a vulnerable population, with chronic health conditions such as diabetes and cardiovascular or lung disease are not only at a higher risk of developing severe illness but are also at an increased risk of death if they become ill. People with underlying uncontrolled medical conditions such as diabetes; hypertension; lung, liver, and kidney disease; cancer patients on chemotherapy; smokers; transplant recipients; and patients taking steroids chronically are at increased risk of COVID-19 infection [9].

A meta-analysis study on COVID-19 comorbidities, as depicted, had a total of 1786 patients, of which 1044 were male and 742 were female with a mean age of 41 years old [10]. The most common comorbidities identified in these patients were hypertension (15.8%), cardiovascular and cerebrovascular conditions (11.7%), and diabetes (9.4%). The less common comorbidities were coexisting infection with HIV and hepatitis B (1.5%), malignancy (1.5%), respiratory illnesses (1.4%), renal disorders (0.8%), and immuno deficiencies (0.01%) [10]

In a study conducted in china in 1590 patients the mean age was 48.9 years. 686 patients (42.7%) were females. Severe cases accounted for 16.0% of the study population. 131 (8.2%) patients reached to the composite endpoints. 399 (25.1%) reported having at least one comorbidity. The most prevalent comorbidity was hypertension (16.9%), followed by diabetes (8.2%). 130 (8.2%) patients reported having two or more comorbidities. After adjusting for age and smoking status, COPD [hazards ratio (HR) 2.681, 95% confidence interval (95%CI) 1.424-5.048], diabetes (HR 1.59, 95%CI 1.03-2.45), hypertension (HR 1.58, 95%CI 1.07-2.32) and malignancy (HR 3.50, 95%CI 1.60-7.64) were risk factors of reaching to the composite endpoints. The HR was 1.79 (95%CI 1.16-2.77) among patients with at least one comorbidity and 2.59 (95%CI 1.61-4.17) among patients with two or more comorbidities. Among laboratory-confirmed cases of Covid-19, patients with

any comorbidity yielded poorer clinical outcomes than those without. A greater number of comorbidities also correlated with poorer clinical outcomes.[11]

The clinical outcomes and length of stay directly correlate with the underlying conditions and age of the COVID-19 patient. Researchers in China studied 344 patients in the ICU with COVID-19. Of the 344 subjects, 133 patients died on the 28th day with a median survival of 25 days [12]. Of these patients, there were many with different comorbidities with 141 patients having hypertension [13]

Here we report a case series of 30 patients with various co morbid conditions. Most common co morbid condition was hypertension 40%, followed by diabetes mellitus 26%, chronic kidney disease 13%, Cerebro vascular accident and coronary artery disease 10%, COPD 6.6%, followed by asthma, HIV, pulmonary tuberculosis and diabetes. All these patients were admitted in ICU given symptomatic treatment and once the vitals were stabilized they were shifted to general wards and once the symptoms subsided and clinical condition improved they were discharged. All these patients had a good prognostic outcome

CONFLICT OF INTEREST

No conflict of interest

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