TO STUDY THE CLINICAL PROFILE OF SUSPECTED CASES OF COVID 19 PRESENTED TO EMERGENCY IN TERTIARY CARE HOSPITAL.

Medicine

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ABSTRACT

BACKGROUND: Coronavirus disease 2019(COVID 19) is an illness which is associated with the novel coronavirus known as severe acute respiratory syndrome coronavirus 2(SARS-CoV -2).On December 2019, Wuhan City in China, became the epicenter of this pandemic. On March 17 2020 Ahmedabad reported its first positive case. On January 2020, Chinese scientists identified this as a novel coronavirus, temporarily labelled as, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. Its name was then changed to coronavirus disease 2019 (COVID-19) by the World Health Organization in February 2020 as the disease spread worldwide [2]. COVID 19 pandemic has posed a huge threat to global public health .The clinical features of COVID-19 are very diverse, ranging from asymptomatic state to acute respiratory distress syndrome and multi organ dysfunction. The common clinical features include fever, cough, sore throat, headache, fatigue, headache, myalgia and breathlessness. Emergency workers carry a huge responsibility in this pandemic. We have to provide early triage and management of patients with suspected or confirmed infection in which inflammatory markers play an important role. More importantly we have to try to prevent the spread of infection and also be prepared to tackle such large footfalls in ED

INTRODUCTION

Emergency departments (ED) are the front line and are playing a vital role for hospital-and community-based care during this pandemic. EDs must be able to tackle and reformat operations to meet the changing needs and exponentially increasing patient volume. The need of equipment is also greatly affected in an outbreak; hence emphasis should be kept on portable radiographic equipment to limit transport, and to increase stock of certain medications, respiratory supplies, and PPE.However, as seen with COVID-19, early identification can be difficult due to asymptomatic carriers and patients presenting with atypical symptoms, such as loss of taste, smell and solely gastrointestinal complaints. Among patients attending EDs, rapid triage of those with suspected COVID-19 is mandatory to appropriately isolate them and avoid secondary transmissions. Clinical diagnosis can be challenging because the disease may present with nonspecific symptoms such as myalgia, cough, or fever.[(5,6)] precise description of history and clinical presentation of patients with COVID 19 facilitate early recognition by emergency physicians and promptly trigger diagnostic procedures such as real-time reverse-transcriptase polymerase chain reaction (RT-PCR).When assessing a patient with COVID-19 infection, biomarkers can be useful to clinicians in treatment and close monitoring. Though biomarkers may help improve prognosis and outcomes, their significant variability between patients could affect the findings of the studies. Upon examination, these subjective clinical symptoms can be interpreted more confidently with the use of biological markers (bio-markers). These provide objective values throughout the progression of the disease [7.] Henceforth, categorizing patients into mild, severe or critical becomes more defined, allowing for earlier interventions [8.]

AIMS AND OBJECTIVES

1) To help the ED physician to understand the clinical presentation of the case on arrival to emergency.
2) To help ED physician to rule out and to put proper differential diagnosis of COVID 19 negative patient.
3) To help the ED physician to assess the amount of resources required to tackle such footfalls.
4) To predict the need of high flow on presentation to Emergency.
5) To predict the need of noninvasive ventilation on presentation to emergency.
6) To predict the need of invasive ventilation on presentation to emergency.

MATERIALS AND METHODS

A retrospective, observational and descriptive study conducted during April 2020 to June 2020 at SVPIMSR hospital. All the data was collected from hospital information system and was enclosed in a case record form. Data was entered in MS excel sheet (version 16) and was analyzed using epi2k, stata 13

INCLUSION CRITERIA

Age > 12 years
All COVID 19 suspected cases that presented to emergency

EXCLUSION CRITERIA

Cases not presenting in emergency

RESULT AND DISCUSSION
Table 1: Frequency Of Type Of Support Required On Admission

Type of support required on admission	Frequency	Percent
BIPAP	12	6%
HFNC	1	0.50%
INTUBATION	26	13%
OXYGEN SUPPORT	109	54.50%
ROOM AIR	52	26%

Appropriate ventilatory support is a grave concern when preparing and responding to, viral respiratory disease outbreaks. Looking at the current COVID-19 pandemic, the prevalence of severe to critical hypoxic respiratory failure is 19% [9] .As seen by the analysis of our study that Out of 200 patients , 74% required any form oxygen support (invasive or non-invasive) which shows hypoxia is a significant primary underlying pathophysiology in covid19, hence emergency rooms   should be prepared with equipment's for ventilatory support Out of 200 patients, 55% required simple oxygen support in form of nasal prong , NRBM or via oxygen mask, 6% required BIPAP support and 13% required invasive ventilation in form of intubation Out of 200 patient, less than 1% required HFNC support as in initial months of covid19, HFNC was not prevalent as a means of noninvasive ventilation but now the initial fears of spread of the corona virus using high-flow nasal cannula (HFNC) have been dispelled. The risk of bio aerosol spread during the use of HFNC even with oxygen flow rate of 60 L/min is not greater than that of oxygen masks with oxygen at 15 L/min.[10] The aerosol dispersion distance with an HFNC is in fact much

lesser than that of a nonrebreathing mask or a venturi mask.[10] The realization that mechanical ventilation is largely detrimental to the progress of the disease has made high-flow nasal oxygen much more acceptable in the management of patients in respiratory failure due to COVID-19. Dr. Rali et al. is an interesting article.[11] in which they mentioned that HFNC is a safe treatment modality with low risk of exposure to aerosolized viral particles for health-care workers, if used appropriately.

Table 2: CRP Levels On Admission And Covid Status

CRP	negative	Positive	TOTAL
0-20	57	69	126
21-40	10	7	17
41-60	2	2	4
61-80	4	5	9
81-100	8	5	13
101-120	4	0	4
TOTAL	85	88	173

The above table shows that on admission CRP level doesn't correlate with the outcome or with the chances of being COVID 19 positive but this could be due to the fact that CRP is non-specific marker of infection, inflammation and tissue injury.[12] and its Concentration tells about the severity of the illness[13] CRP usually Peaks in 48 hours from the disease onset[12] i.e. the time when symptom started, Half-life of CRP is 19 hours[14-15]and its Concentration decreases when patient's inflammatory stimulus ends, and patient is healing. CRP is also affected by certain medications such as statins, magnesium supplementation and non-steroidal anti-inflammatory drugs (NSAIDs) which will decrease CRP levels falsely. Mild elevations in CRP can also be seen without any specific inflammatory cause. Females and elderly patients have higher levels of CRP. Certain factors such as obesity, insomnia, depression, smoking, and diabetes can all lead to mild elevations in CRP. As there are multiple causes of elevated CRP, Mild elevations in the CRP can be difficult to interpret and a single value of CRP should not be used to assess the disease severity. CRP rise and fall rapidly with the onset and removal of the inflammatory stimulus respectively. Persistently elevated CRP levels can be seen in chronic inflammatory conditions such as chronic infections or inflammatory arthritis such as rheumatoid arthritis. Further, prolonged periods of high CRP concentrations are associated with adverse outcomes [16]. Serial C-reactive protein measurements have been used to diagnose and monitor the response to therapy in patients with pneumonia and other infectious diseases Therefore a single CRP level on admission is not specific to assess for the disease severity or the outcome and emphasis should be kept on serial CRP level measurements to assess the progression of the disease as CRP levels could be falsely elevated due to a variety of other interfering factors and hence results in inappropriate clinical picture.

Table 3: LDH On Admission And Outcome

LDH	DAMA	DEATH	DISCHARGE	TRANSFER	TOTAL
0-200	14	6	10	0	30
201-400	21	11	29	9	70
401-600	7	22	28	7	64
601-800	3	16	10	0	29
TOTAL	45	55	77	16	193

Table 4: LDH On Admission And Covid Status

	COVID STATUS		
LDH	NEGATIVE	POSITIVE	TOTAL
0-200	18	12	30
201-400	38	32	70
401-600	27	37	64
601-800	8	19	27
TOTAL	91	100	191

On admission, elevated level of LDH increases the chances of mortality as outcome from covid19 as compared to the possibility from being discharged or recovered, also the chances of being COVID positive is also positively related with elevated levels of LDH on admission. This is comparable to a retrospective study Ferrari D et al. (2020) in which higher levels of LDH was apparent in positive groups and also to a retrospective study Luo et al. 2020 which shows that elevated LDH levels is associated with increase in severity and mortality, hence admission levels LDH should be considered as an independent marker for predicting disease severity and mortality.

CORELATION OF FERRITIN LEVELS ON ADMISSION WITH OUTCOME AND COVID STATUS:

Table 5: Ferritin Levels On Admission And Covid Status

Ferritin Levels On Admission	Negative	Positive	Total
0-200	38	29	67
201-400	16	27	43
401-600	8	16	24
601-800	9	7	16
801-1000	4	9	13
TOTAL	75	88	163

Table 6: Ferritin Levels On Admission And Outcome

	Outcome			
Ferritin Level On Admission	Dama	Death	Discharge	Transfer	Total
0-200	20	14	28	5	67
201-400	8	14	16	5	43
401-600	5	7	10	2	24
601-800	5	5	4	2	16
801-1000	2	5	6	0	13
TOTAL	40	45	64	14	163

The patients with increased levels of ferritin on admission had increased chances of being COVID 19 positive. However on admission , low level of ferritin have higher chances of getting discharged from COVID19, but higher level of ferritin has no significant change in outcome in form of discharge or death. Though many patients with COVID 19 present with hyperferritinemia, elevated ferritin levels are not accurate predictors of outcome but this conclusion could also be due to less sample size of the study.

OTHER FINDINGS
1) The most common presenting symptom to ED was breathlessness (79.5%) i.e. out of 200 patients 159 patients presented with breathlessness on admission followed by fever (76%)
2) Out of the patients presenting with breathlessness approximately 55% had COVID positive which is the maximum
3) Out of the total patients HTN(Hypertension) was the most common presenting comorbidity (53%) i.e. 103 out of 200 patients had HTN followed by DM (Diabetes Mellitus) (47.5%) and also the chances of being covid positive was maximum with those having HTN as comorbidity i.e. approximately 54%

LIMITATIONS OF THE STUDY
1) Small size of study population
2) Single hospital study

CONCLUSION
In our study out of 200 patients 148 patients required any form of oxygen support , the most common presenting symptom to ED was breathlessness (79.5%) i.e. followed by fever (76%) also Out of the patients presenting with breathlessness approximately 55% had COVID positive which is the maximum, HTN was the most common presenting comorbidity (53%) i.e. followed by DM(47.5%) and also the chances of being covid positive was maximum with those having HTN as comorbidity i.e. approximately 54%. Out of the inflammatory markers studied, on admission LDH values should be considered as an independent marker for predicting disease severity and mortality, while for CRP emphasis should be kept on serial crp level measurements to assess the progression of the disease as CRP levels could be falsely elevated due to a variety of other interfering factors while for ferritin further analysis is required.

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