



A STUDY OF MORTALITY EVALUATION IN CORONAVIRUS DISEASE 2019 (COVID-19) SUBJECTS IN FIRST 24 HOURS

Internal Medicine

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ABSTRACT

COVID-19 is a novel highly contagious infection caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). There is an evidence of a hyper-inflammatory immune response in critically ill patients, which leads to acute respiratory distress syndrome (ARDS) within first 24 hours of admission. This study was conducted to assess the epidemiologic, clinical and pathological data as an indicator of mortality within first 24 hours of admission in COVID-19. This is a retrospective, observational study done among critically ill COVID-19 patients between April 21, 2021 and June 03, 2021. History, examination, c-reactive protein, erythrocyte sedimentation rate, serum ferritin, d-dimer were analyzed. There were 416 COVID-19 mortalities during the study period of which 106 died within the first 24 hours of admission. Mean age was 58 years. 68 (64.2%) were males. At the time of admission, 48 patients were on oxygen (Polymask/NRBM), 10 on HFNO, 12 on CPAP, 36 on BiPAP mode of ventilation. Serum ferritin was in the normal range in 32 (30.1%) patients and elevated in 74 (69.9%) patients, among which 62 patients had >500. Eleven (10.4%) subjects had D-dimer 50-250ng/ml, 95 (89.6%) had >250ng/ml. CRP was <5mg/l in 11 (10.4%), 5-50mg/l in 23 (21.7%), >50mg/l in 72 (67.9%) patients. ESR was <25 in 8 (7.6%), 25-50 in 20 (18.8%) and >50 in 78 (73.6%) patients. These results conclude that hyper inflammation, abnormal intravascular coagulation seen in COVID-19 play a key role in mortality within first 24 hours of COVID-19.

KEYWORDS

COVID-19, Inflammatory markers, d-dimer, mortality.

INTRODUCTION:

COVID-19 is a novel highly contagious infection caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)^[1]. Severe or critical COVID-19 is strongly linked with mortality^[2] and the high mortality rate amongst these cases is linked with SARS-CoV-2 infection-induced hyperinflammation of the innate and adaptive immune systems and the resulting cytokine storm, a cytokine release syndrome (CRS)-like syndrome in severe/critical COVID-19 cases^[3-6].

Studies have reported that the inflammatory parameters are closely linked to the COVID-19 severity and mortality^[7-9].

AIMS & OBJECTIVES:

This study was conducted to assess the epidemiologic, clinical and pathological data as an indicator of mortality within first 24 hours of admission in COVID-19.

MATERIALS & METHODS:

This is a prospective, observational study done among critically ill COVID-19 patients between April 21, 2021 and June 03, 2021. Demographic data, history, physical examination findings and laboratory parameters such as serum creatinine, liver function tests, c-reactive protein, erythrocyte sedimentation rate, serum ferritin, d-dimer were analysed.

Inclusion Criteria:

Patients of age \geq 18 yrs. diagnosed with COVID-19 by RT-PCR and Patients who died within 24 hours of admission.

Exclusion Criteria:

Patients who are less than 18 years of age.

RESULTS:

There were 416 COVID-19 mortalities during the study period of which 106 died within the first 24 hours of admission. Mean age of the study population was 58 years. Males were 68 (64.2%) and females were 38 (35.8%) in number. The most common comorbidity is hypertension (67.9%) followed by diabetes (54.7%). The mode of ventilation at the time of admission are Polymask/NRBM of 48 (45.3%), HFNO of 10 (9.5%), CPAP of 12 (11.3%) and BiPAP of 36 (33.9%) patients. Acute Kidney Injury was found in 12 out of 106 (11.3%), Transaminitis was found in 23 out of 106 (21.6%). Serum Ferritin was normal in 32 (30.1%), elevated in 74 patients (69.9%). Out of that 74 patients, 62 had >500 (58.6%) values.

Figure 1: Levels of Serum Ferritin

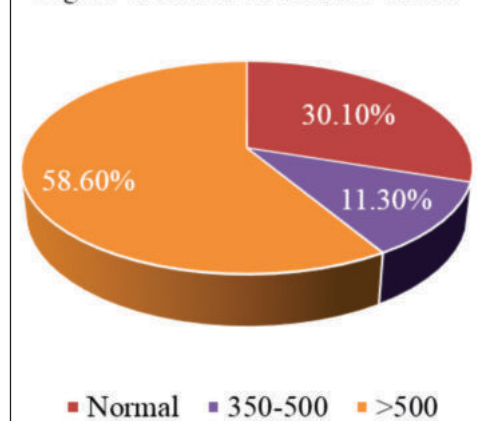


Figure 1: Levels of Serum Ferritin

D-dimer values of 50-250 ng/ml were seen in 11 patients (10.4%) and >250 ng/ml in 95 patients (89.6%).

Figure 2: Levels of D-dimer

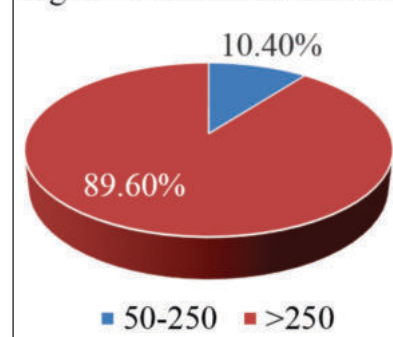


Figure 2: Levels of D-dimer

CRP was <5 mg/l in 11 (10.4%), 5 - 50 mg/l in 23 (21.7%) and >50 mg/l in 72 (67.9%) patients. ESR was <25 in 8 (7.6%), 25 - 50 in 20 (18.8%)

and >50 in 78 (73.6%) patients.

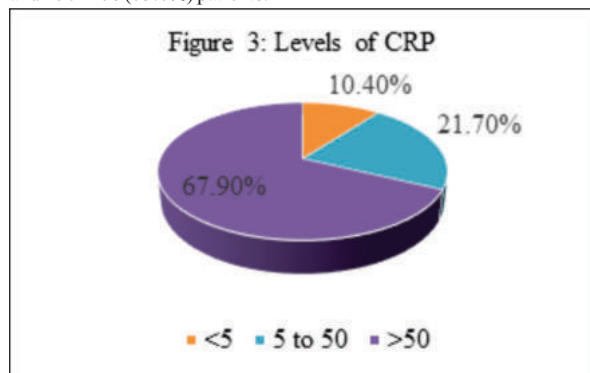


Figure 3: Levels of C-reactive protein

CONCLUSIONS:

Our study showed increased serum concentrations of CRP, ESR, D-dimer and serum ferritin in severe COVID-19 patients who died within first 24 hours of admission. These inflammatory parameters could help the physicians to rapidly identify severe COVID-19 patients, hence facilitating the early initiation of effective treatment.

In addition, these inflammatory parameters could be used to predict the transition from mild to severe/critical infection in patients of COVID-19.

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