International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2020): 7.803

A Study of Clinical, Biochemical, Radiological Profile and Outcome of Suspected COVID-19 Patients Admitted at a Tertiary Care Hospital

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Abstract: ***Objective: This study was performed to evaluate clinical, biochemical and radiological profile and outcome of suspected patients admitted at a tertiary care hospital. Design: This study was a cross - sectional study conducted over a period of 6 months between August of 2020 to January of 2021, in LG hospital, Ahmedabad. Materials and Methods: Clinical, biochemical and radiological profile of 70 suspected covid19 patients with 2 or more RT PCR negative results admitted in the hospital were analyzed. Methodology: 1) Approval from institutional review board. 2) All the suspected patients admitted in the hospital giving consent after satisfying inclusion and exclusion criteria were included in the study. 3) Thorough history, examination and biochemical and radiological profile was taken through enclosed questionnaire and case record form over a period of 6 months between August of 2020 to January of 2021. Results: We can observe that the mean total duration of stay was 17 days. The need for mechanical ventilation is 46% (32 patients). In which the males were 64% and females were 36%. The mean PO2 in ABGA are 75.79 with Standard Deviation of 17.14. The mean NLR are 6.44 with Standard Deviation of 5.18. The mean DDIMER are 3544.19 with Standard Deviation of 2727.02. Mean CT severity in HRCT (out of 25) are 11.84 with Standard Deviation of 4.45 and the mean RBS are 157.3 with Standard Deviation of 77.12.***

1. Introduction

The recent ongoing outbreak of COVID-19 has put a significant strain on the current health system. Different from both MERS - CoV and SARS - CoV, 2019 - nCoV is the seventh member of the family of coronaviruses that infect humans.

Clinical presentations vary from mild and the typical pattern of covid - 19 resembling an influenza like illness which includes fever, cough and malaise. Myalgia, headache and taste and smell disturbance to severe pneumonia, metabolic acidosis and coagulation dysfunction.

People with mild symptoms and those whose symptom have not yet appeared still carry large amounts of virus in the upper respiratory tract, which might contribute to the easy and rapid spread of SARS - CoV. Symptomatic and pre symptomatic transmission is likely to play a greater role in the spread of SARS - Cov 2. A combination of preventive measures, such as physical distancing and testing, tracing and self isolation continue to be needed.

The primary mechanism of transmission is via infected respiratory droplets with viral infection occurring by direct or indirect contact with nasal, conjunctival or oral mucosa.

Increased levels of pro inflammatory cytokines correlate with severe pneumonia and increased ground glass opacities within the lungs. In people with severe illness, increased plasma concentrations of inflammatory cytokines and biomarkers were observed compared with people with a non severe illness.

Quantitative reverse transcription polymerase chain reaction (RT - PCR) technology can detect viral SARS - CoV RNA in the upper respiratory tract for a mean of 17 days (maximum 83 days) after symptom onset. However detection of viral RNA by RTPCR does not necessarily equate to infectiousness, and viral culture from PCR positive upper respiratory tract samples has been rarely positive beyond nine days of illness.

It has been reported that the sensitivity of chest CT was superior to that of RT PCR (98% VS 71% respectively) Another cost effective, rapid method of testing is rapid antigen testing for COVID-19 which has a lower sensitivity (60%) compared to RT PCR but high specificity.

Need for Clinical Correlation: An important issue with real time RT PCR is the risk of eliciting false negative and false positive results. It is reported that many suspected cases with typical clinical characteristics of COVID-19 and identical specific computed tomography (CT) images were not diagnosed.

Thus, a negative result does not exclude the possibility of COVID19 infection and should not be used as the only criterion for treatment of patient management decisions.

2. Materials and Methods

A cross sectional study was done including 70 suspected COVID-19 patients (severe acute respiratory illness) with2 or more times RT PCR negative report admitted at a tertiary care hospital. Information recorded will be history given by patients, underlying comorbidities, symptoms, signs,

laboratory profiles, CT scans, RT PCR reports, Rapid antigen reports and treatment measures. Patients will be followed up 1 month after discharge.

Limitation: The samples were not collected from lower respiratory tract, which could have given a positive result in RT PCR test.

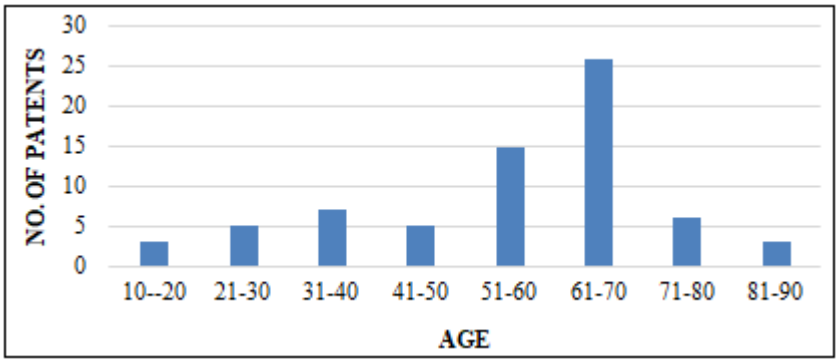
Rationale of Study: COVID-19 disease is life threatening and the diagnosis and treatment are challenging specially in a small number of patients where the RT PCR test is negative. The importance of other parameters needs emphasis.

Inclusion Criteria:
1) Patient who gave consent
2) Patients with age 18 years or more
3) Patients who were admitted as suspected COVID-19 patients
4) Patients whose 2 or more RT PCR reports are negative and there is high suspicion of COVID-19 infection on clinical, biochemical and radiological parameters.

Exclusion Criteria:
1) Patients younger than 18 years
2) Patients who are not suspected as COVID-19
3) Patients having positive Rapid antigen or RT PCR result in the 2nd or consecutive test.
4) Patients with mild disease not requiring oxygen therapy.

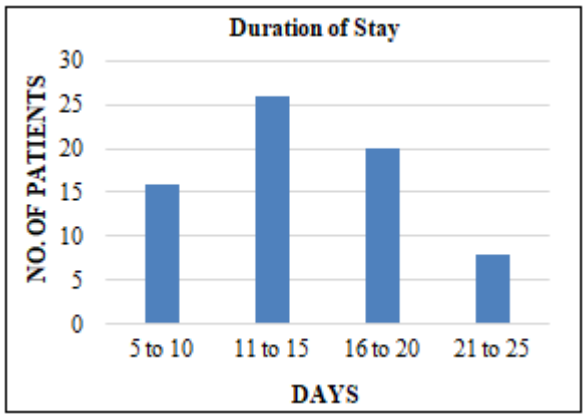
Total duration of study: 6months (08/2020 to 01/2021)

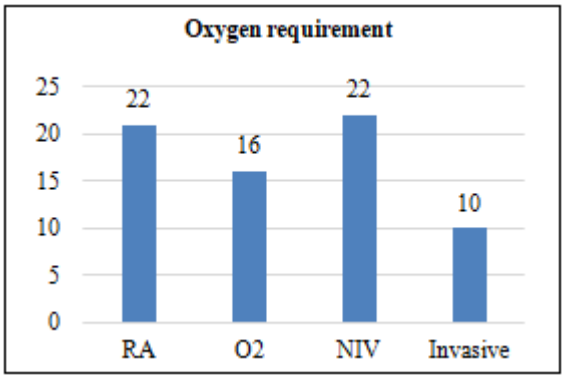
Age	Number of Patients
18 - 20	3
21 - 30	5
31 - 40	7
41 - 50	5
51 - 60	15
61 - 70	26
71 - 80	6
81 - 90	3



Total Duration of Stay

Days	No. of Patients
5 to 10	16
11 to 15	26
16 to 20	20
21 to 25	8

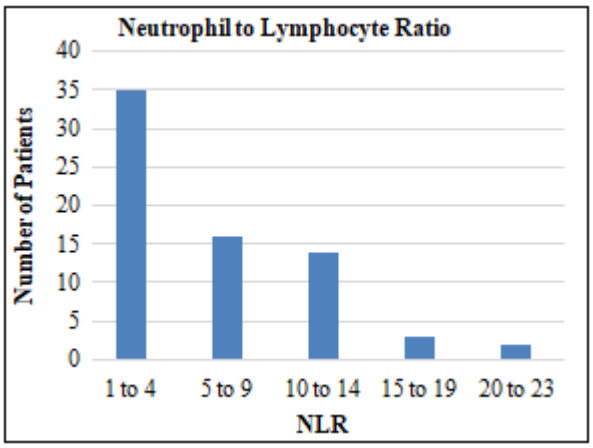




Oxygen requirement	No. of Patients
RA	22
O_2	16
NIV	22
Invasive	10
Grand Total	70

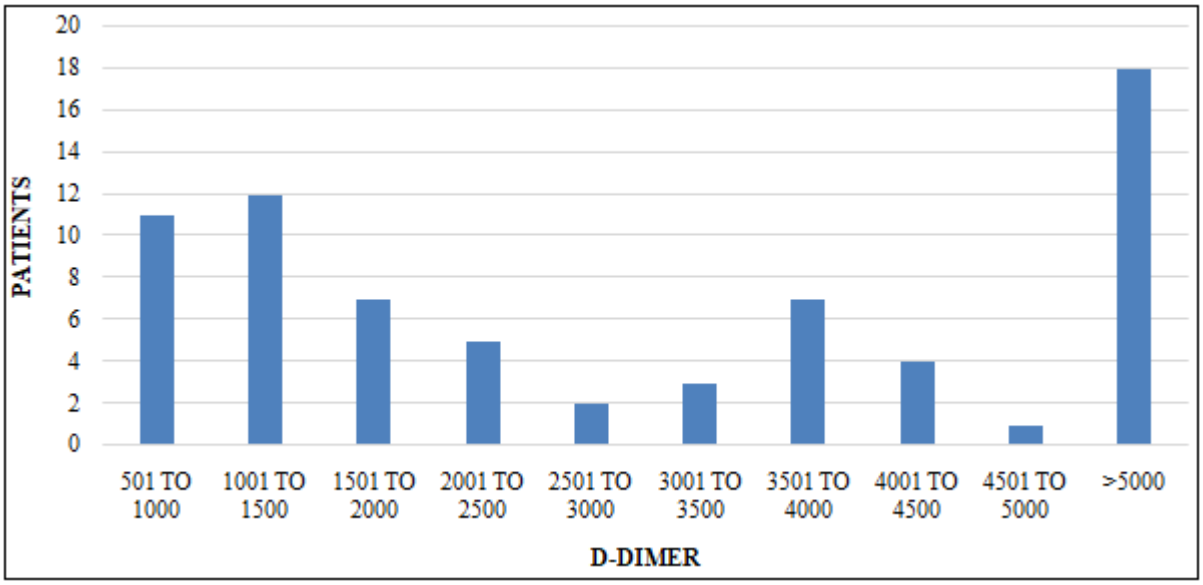
Neutrophil to Lymphocyte Ratio

NLR (Neutrophil To Lymphocyte Ratio)	Number of Patients
1 to 4	35
5 to 9	16
10 to 14	14
15 to 19	3
20 to 23	2



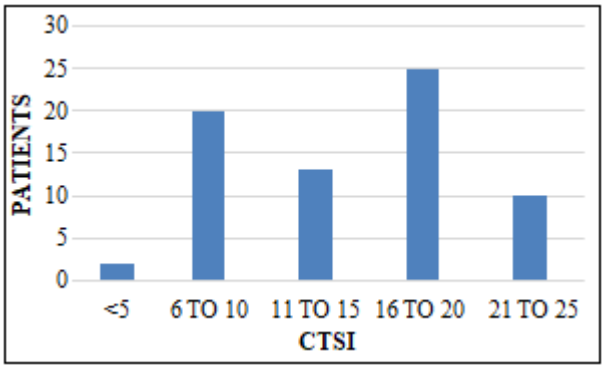
D DIMER

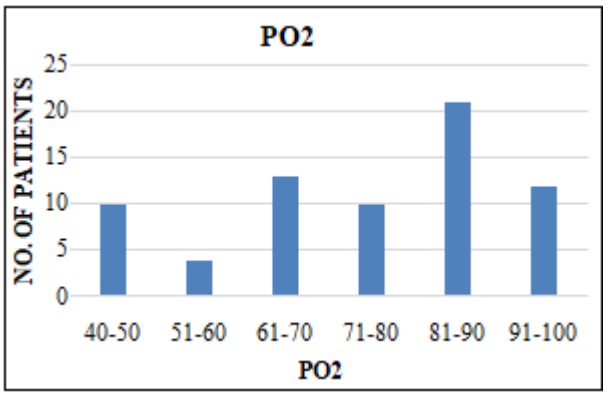
D DIMER	PATIENTS
501 TO 1000	11
1001 TO 1500	12
1501 TO 2000	7
2001 TO 2500	5
2501 TO 3000	2
3001 TO 3500	3
3501 TO 4000	7
4001 TO 4500	4
4501 TO 5000	1
>5000	18



CT Severity Score in HRCT

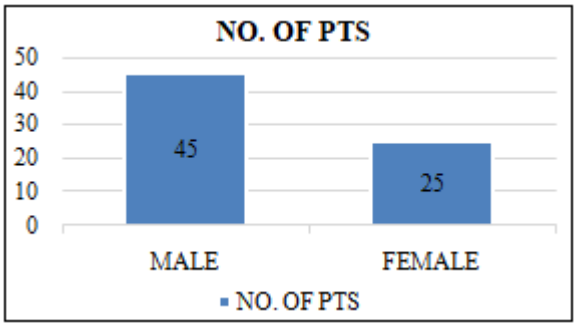
CTSI	No. of Patients
<5	2
6 TO 10	20
11 TO 15	13
16 TO 20	25
21 TO 25	10





PO2	No. of PTS
40 - 50	10
51 - 60	4
61 - 70	13
71 - 80	10
81 - 90	21
91 - 100	12

Sex	No. of PTS
Male	45
Female	25



Outcome:
97.14% of patients were discharged after treatment and 2.85% couldn't survive.

3. Conclusion

1) Most of the patients suspected as COVID-19 had clinical, biochemical and radiological profile similar to COVID-19 patients but RAT and RT PCR negative.
2) Patients were treated with intravenous steroids, low molecular weight heparin, oxygen therapy and mechanical ventilation as per requirement and some were discharged on oral anticoagulants.
3) These patients did not receive Remdesivir or Tocilizumab as covid positive patients get and their mean duration of stay was 17 days.
4) Though these patients are rapid antigen and RT PCR negative but their clinical, bio chemical and radiological finding suggestive COVID-19 Pneumonia. So, even after negative RAT and RT PCR, it is better to give Remdesivir or Tocilizumab or any anti - viral in early stage to these patients considering this current pandemic scenario.