

Content available at: <https://www.ipinnovative.com/open-access-journals>

International Journal of Clinical Biochemistry and Research

Journal homepage: <https://www.ijcbr.in/>

Original Research Article

D – Dimer, ferritin, lactate dehydrogenase, C – reactive protein, prothrombin time and activated partial thromboplastin time are the significant indicators of suspected Covid – 19 patients

Syed Ateeq Ahmed Jafri¹, Zaheda Nasreen¹, Dussa Hema Chandan¹, Mahmood Shaikh^{2,*}

¹Dept. of Biochemistry, Ayaan Institute of Medical Sciences, Telangana, India

²Dept. of Physiology, Deccan College of Medical Sciences, Hyderabad, Telangana, India



ARTICLE INFO

Article history:

Received 03-05-2021

Accepted 14-05-2021

Available online 23-07-2021

Keywords:

COVID 19 Patients

D- Dimer

Ferritin

Lactate dehydrogenase

C - Reactiveprotein

Prothrombin time

Activated partial prothrombin time

ABSTRACT

Covid '19 is a pandemic disease, spread all over the world. Covid '19 was first detected in Wuhan, China and it was first reported to the WHO country office on 31st December 2019. Covid '19 was spread through Corona Virus, this virus initially infected the respiratory tract than to lungs. In the beginning, Covid '19 was suspected to spread only with community transformation, later it was assumed that it is an airborne, waterborne, and community transformation disease. Recent clinical research reveals that Corona virus causing mutations and point mutations, still cause is unknown. Covid '19 is unstable in the living body, once coronavirus is found positive to a person involving in multiple complications in the body such as cardiovascular dysfunction, renal dysfunction, and other complications in the body. Different Hospitals have shown that when a person was infected with Covid '19 that person was severe for breathing problem and collapsing with unknown cause. The affected person's life span was only 48 to 72 hours. The researcher scientists, clinicians are day-night trying to take any suitable solution to control and cure Covid '19. Covid '19 patients are found changes in their routine life. There is a change in their metabolic functions. There is a change in their physics and also in their Biochemical and Molecular parameters. Mostly their Protein synthesis and coagulation profiles are involved in Covid '19. The present study is aimed to investigate the value of D- Dimer, ferritin, lactate dehydrogenase, C – Reactive Protein, Prothrombin Time, activate partial prothrombin time are the significant indicators of suspected COVID '19 - Patients.

© This is an open access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

1. Introduction

There are different opinions with international levels about Covid-19.¹ In the beginning, Covid '19 was spread through community contamination, later it was suspected airborne, waterborne, and community contaminations. In the early period, Covid-19 was suspected only viral disease recently it is found that it causing mutations and point mutations.² Protein genes mutations and point mutations are irregular and unstable.³ Researchers, Scientists, and Clinicians are trying for plasma therapy and immune cell therapy.⁴ It is a

hypothetical theory that might be soon gene therapy will be followed for the affected genes causing mutations and point mutations. COVID-19 patients have a favorable prognosis, but some rapidly progress to severe and critical cases with respiratory distress syndrome, coagulation dysfunction, multiple organ failure, etc.⁵ Therefore, early identification of severity is very important to the clinical diagnosis and treatment for COVID-19. Mostly used clinical laboratory coagulation profiles and other enzymes related to D-Dimer, Ferritin, Lactate Dehydrogenase, C Reactive Protein, Prothrombin Time, Activate Partial Prothrombin Time and fibrinogen could sensitively reflect the clotting state and enzymatic activity of the body.⁶

* Corresponding author.

E-mail address: mahmood_shaikh2001@yahoo.co.in (M. Shaikh).

2. Aim

This study aims to investigate the elevation and significance of D- Dimer, Ferritin, Lactate Dehydrogenase, C – reactive protein, prothrombin time and activated partial thromboplastin time are found the indicators of suspected covid – 19 patients.

3. Materials and Methods

A total number of 300 suspected patients and 200 healthy controls were enrolled for the study and compared their data for the elevation and significance of D- Dimer – Ferritin – Lactate Dehydrogenase - C - protein – prothrombin time and activated partial prothrombin time are found the indicators of suspected covid – 19 patients.^{7,8}

This study was carried at Biochemistry Laboratory, Ayaan Hospital & Research Centre (A teaching hospital to Ayaan Institute of Medical Sciences, RR District, Telangana State, India).

The parameters were done on Cobas C 311, Mini Vidas, and Coagulometer.

4. Results

Comparison of D- Dimer, Ferritin, Lactate Dehydrogenase, C Reactive Protein, Prothrombin Time, Activated Partial Thromboplastin Time in COVID-19 patients and health controls.

Table 1:

Parameters	Covid '19 Patients	Healthy Controls	p Value
Age and either Sex	40.66 ± 15.96	20.55 ± 10.85	<0.001
D-Dimer (ng/mL)	2565 ± 250.55	150 ± 85.62	<0.001
Ferritin (ng/mL)	1250 ± 150.75	125 ± 25.50	<0.001
LDH (IU/L)	855 ± 210	260 ± 55.40	<0.001
C – Reactive Protein(mg/L)	15 ± 8	4 - 6	<0.001
Prothrombin Time (Sec)	22 ± 55	13 ± 1.0	<0.001
A.P.T Time (Sec)	48 ± 10	30 ± 4.0	<0.001

SD, Mean Value was calculated and found over all p value = <0.001

5. Discussion

The results have shown that there are elevation and significance indicators of D- Dimer, Ferritin, Lactate Dehydrogenase, C – Reactive Protein, Prothrombin Time, Activated Partial Thromboplastin Time in COVID-19 Patients which were compared to Healthy Controls for their normal limits.⁹

6. Conclusion

Although the above investigations are associated with severe disease of COVID 19. The values are at high risk of disease COVID 19. The COVID 19 pandemic disrupted medical science and management. These days researchers are intensely looking for suitable vaccines and clinicians are facing new symptoms of the disease and are using new treatments to improve the outcome of the disease.¹⁰

7. Source of Funding

None.

8. Conflict of Interest

The author declares no conflict of interest.

References

- Guan WJ, Ni ZY, Hu Y. Clinical Characteristics of corona disease 2019 in China. *N Engl J Med.* 2020;382(18):1708–20.
- Zhu N, Zhang D, Wang W. A novel coronavirus from patients with pneumonia in China. *N Engl J Med.* 2019;382(8):727–33.
- Han W, Quan B, Guo Y. The course of clinical diagnosis and treatment of a case infected with coronavirus disease 2019. *J Med Virol.* 2020;92(5):461–3.
- Tang N, Li D, Wang X, Sun Z. Abnormal coagulation parameters are associated with poor prognosis in patients with novel coronavirus pneumonia. *J Thromb Haemost.* 2020;18(4):844–7.
- Huang C, Wang Y, Li X. Clinical features of patients infected with 2019 novel coronavirus in Wuhan. *Lancet.* 2020;395(10223):497–506.
- Wang D, Hu B, Hu C. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA.* 2020;323(11):1061.
- Wan Y, Shang J, Graham R, Baric RS, Li F. Receptor Recognition by the Novel Coronavirus from Wuhan: an Analysis Based on Decade-Long Structural Studies of SARS Coronavirus. *J Virol.* 2020;94(7). doi:10.1128/jvi.00127-20.
- Kowalczyk S, Broer A, Tietze N, Vanslambrouk JM, Rasko JEJ, Broer S. A protein complex in the brush-border membrane explains a Hartnup disorder allele. *FASEB J.* 2008;22(8):2880–7.
- Gates B. Responding to COVID-19 – a once-in-century pandemic? *N Engl J Med.* 2020;382(18):1677–9.
- Zhou T, Liu Q, Yang Z. Preliminary prediction of the basic reproduction number of Wuhan novel coronavirus 2019-nCoV. *J Evid Based Med.* 2020;13(1):3–7.

Author biography

Syed Ateeq Ahmed Jafri, Assistant Professor

Zaheda Nasreen, Professor and HOD

Dussa Hema Chandan, Assistant Professor

Mahmood Shaikh, Assistant Professor

Cite this article: Jafri SAA, Zaheda Nasreen, Chandan DH, Shaikh M. D – Dimer, ferritin, lactate dehydrogenase, C – reactive protein, prothrombin time and activated partial thromboplastin time are the significant indicators of suspected Covid – 19 patients. *Int J Clin Biochem Res* 2021;8(2):143-144.