Short Communication
Volume 4:2, 2020
DOI: 10.37421/jid.2020.4.118

Clinical Infectious Diseases: Open Access

ISSN: 2684-4559 Open Access

Lacticodeshydrogénase (LDH) and Ferrétinémia, Biomarkers of Coronavirus Disease (COVID-19)

Nawal Brikci Nigassa[1] and Mustapha Haddouche[2]*

[1]Department and Faculty of Medicine, Biochemistry Service, University of Tlemcen, Algeria
[2]Department of Pharmacy, Faculty of Medicine, University Hospital of Tlemcen, Algeria

Abstract

Coronavirus disease (COVID-19) is caused by SARS-COV2 and represents the causative agent of a potentially fatal disease that is of great global public health concern. Its involves humans as well as animals and may cause serious damage to the respiratory tract, including the lung: coronavirus disease (COVID-19). This pathogenic virus has been identified in swabs performed on the throat and nose of patients who suffer from or are suspected of the disease. Based on the large number of infected people that were exposed to the wet animal market in Wuhan City, China, it is suggested that this is likely the zoonotic origin of COVID-19.

Keywords: Covid-19 • Ferriinemia • LDH

Introduction

The virus that causes COV-19 is spread mainly by droplets produced when infected person Coughs, sneezes or expires. This droplet is too heavy to stay in the air and fall quickly to the ground or any nearby surface [1-4]. People with Cov-19 have severe respiratory failure, or lack of oxygen, which involves an imbalanced cytoplasmic and mitochondrial metabolism (Effect Warburg), important activity of enzyme Lacicideshydrogénase (LDH), production of acid lactic, muscular weakness on the one hand Ferritin is a protein that fixes iron (Fe) contributes to the oxygenation of blood and organs. The main role of iron is to transport and store the oxygen contained in the blood to the organs and muscles to human body. It is essential for the formation of hemoglobin protein found in red cells.

When COVI-19 infect the upper and lower respiratory tract it can cause mild or highly acute respiratory syndrome with consequent release of pro-inflammatory cytokines, including interleukin (IL)-1β and (IL)-6. [5]. In this study, we attempted to evaluate the concentration of the enzyme lacicideshydrogénase, Ferriinemia and iron to investigate the anomalies affecting the anaerobic metabolism. In this respect, a retrospective case-control study conducted at the Tlemcen university hospital, biochemistry service. (Algeria).

Materials and Methods

Twenty patients with Covi-19 and Twenty sex-matched control were recruited for a retrospective case-control study at the Tlemcen university hospital, biochemistry service (Algeria). Characteristics of Patients Covi-19 and Control (Gender (M/F) 6/14; 9/11) [6].

Age (year) Control (48.4 ± 4.37); Patients Covi-19 (55.68 ± 3.68). The circulating levels of Ferriinemia, LDH, Fer and CRP were evaluated in 20 patients with Covi-19 and 20 controls. The concentrations of studied parameters were measurement by Automated Biochemistry Analysis ADVIA 1800 siemens.

***Address for Correspondence:** Mustapha Haddouche, Department of Pharmacy, Faculty of Medicine, University Hospital of Tlemcen, Algeria, Tel: + 0663407039, E-mail: haddouchemustapha2004@yahoo.fr*

Received 01 June 2019; **Accepted** 16 June 2020; **Published** 23 June 2020

Results

In this study, the circulating levels of LDH, Ferritinemia, Fer and CRP were evaluated in 20 patients with Covi-19 and 20 controls. Characteristics of Patients Covi-19 and Control are presented in Table 1. The biomarkers are shown in Table 2.

The serum levels of Fer (Iron), Ferritinemia and LDH are show in Figures 1-3 respectively. We note that correlation coefficient between the different biomarkers varies proportionally (Table 3). The serum iron (Fer (µg/dl) level is significantly decreased in Covi-19 than in control (20.42 ± 1.54; 85.15 ± 5.90). Additionally, the serum levels of Ferriinemia, LDH and CRP were significantly higher in COVID-19 and in Control. Ferriinémia (ng/

Table 1. Characteristics of Patients and Control Covid-19.

Variable	Controls	Patients
Gender(M/F)	14-Jun	11-Sep
Age(year)	48.4 ± 4.37	55.68 ± 3.68

Table 2. Levels of biomarkers in Covid-19 and Controls.

Variable	Controls	Patients
Ferritinémia (ng/ml)	72.35 ± 12.02	896.79 ± 97.70
Fer (µg/dl)	85.15 ± 5.90	20.42 ± 1.54
LDH (u/l)	184.3 ± 9.72	366.32 ± 33.94
CRP (mg/l)	4.03 ± 0.30	67.54 ± 8.08

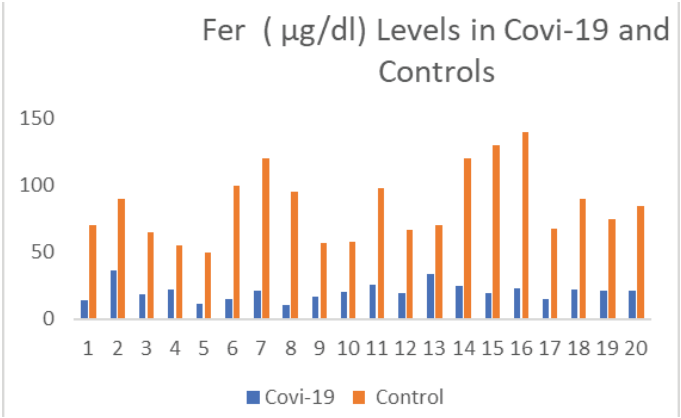

Figure 1. Fer Levels in Covid-19 and Controls.
The variables are presented. as mean ± standard error $P > 0.005$.

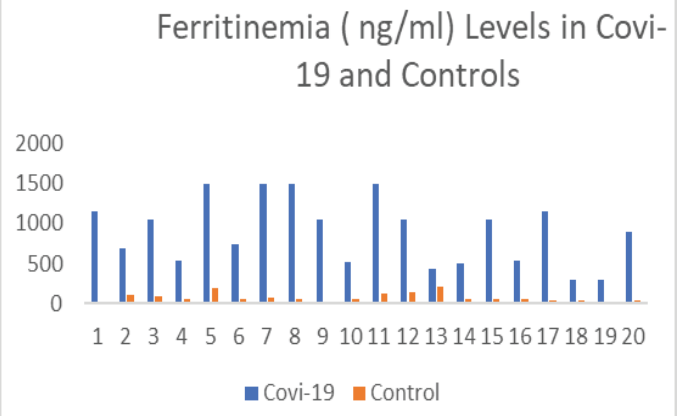

Figure 2. Ferritinemia Levels in Covid-19 and Controls.
The variables are presented. as mean ± standard error $P > 0.005$.

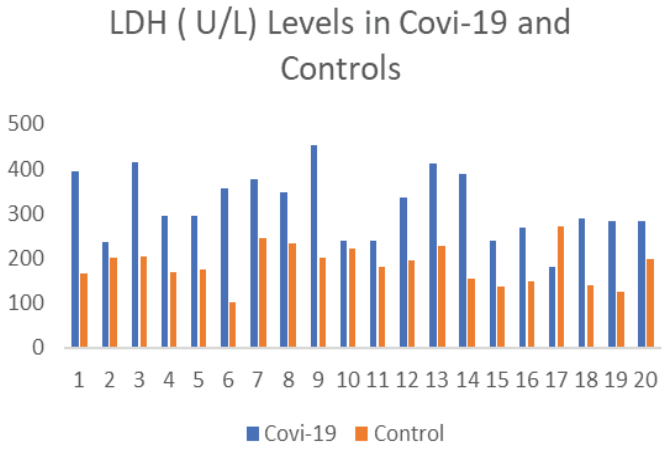

Figure 3. LDH Levels in Covid-19 and Controls.
The variables are presented. as mean ± standard error P > 0.005.

Table 3. Correlation Coefficient of biomarkers with Covid-19.

Variable	Pearson	Spearman
LDH/Fer	-0.622	-0.734
LDH/		
Ferritinemia	0.742	0.807
LDH/CRP	0.679	0.711
Fer/Ferritinemia	-0.725	-0.808
CRP/		
Ferritinemia	0.697	0.787
Fer/CRP	-0.655	-0.8011

ml) Control (72.35 ± 12.02) Patients Covi-19 (896.79 ± 97.70); LDH(u/l) (184.3 ± 9.72,366.32 ± 33.94); CRP (mg/l) (4.03 ± 0.30, 67.54 ± 8.08).

Discussion

Covi-19 patients are usually exposed to potentially risk of mortality, maternal and neonatal consequences [7] respiratory, renal problems and immunology disorder [8].

The increase in Ferritinemia and decrease of Iron (Fe) represent an imbalance for oxygenation of cells and the destiny of pyruvic acid which will be transformed to lactic acid via lacticodeshydrogénase (LDH), (effect Warburg).

Conclusion

Our results show the importance of this parameters to identify people a risk these are a simple and quick analyzes for Cov-19.

The indication to prevent infection is a supplementation on iron, trying to inhibit the enzyme LDH and to estimate ferriinemia.

References

1. Lauer Stephen, Kyra Handers, Grantz Baneswe, and Forrest Kender, et al. "The Incubaion Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Conirmed Cases: Esimaion and Applicaion." *Ann Intern Med 2020.*
2. Coni Pincos, Ronconi Galandi and Carafa Aamndies. "Impact of mold on mast cell-cytokine immune response." *Journal of Biological Regulators and Homeostaic Agents 32* (2018): 4; 763-768.
3. Al Tao, Zhenlu Yang and Hongyan Hou. "Correlaion of Chest CT and RT-PCR Tesing in Coronavirus Disease 2019 (COVID-19) in China: A Report of 1014 Cases." *Radiology*, 2020.
4. Rothan, Hussin and Siddappa Byrareddy. "The epidemiology and pathogenesis of coronavirus disease (COVID-19) Outbreak." *J Autoimmun*, 2020.
5. Coni Pincos, Ronconi Galandi and Carafa Aamndies. "Inducion of pro-inlammatory cytokines (IL-1 and IL-6) and lung inlammaion by Coronavirus-19 (COVI-19 or SARS-CoV-2): ani-inlammatory strategies." *J Biol Regul Homeost Agents* 34 (2020): 2; 1.
6. Lorenz, Fryderyk, Ewa Pawłowicz and Monika Klimkowska, et al. "Ferriinemia and serum inflammatory cytokines in Swedish adults with Gaucher disease type 1." *Blood Cells Mol Dis* 68 (2018): 35-42.
7. Gonzalez, Rafael Caparros. "Maternal and neonatal consequences of coronavirus COVID-19 infection during pregnancy." *Revista Española de Salud Pública 94* (2020): e1- e8.
8. Marechal, Solesne Papillard, Marc Sznajder and Margarita Hurtado-Nedelec, et al. "Iron Metabolism in Paients with Anorexia Nervosa: Elevated Serum Hepcidin Concentraions in the Absence of Inlammaion." *Am J Clin Nutr* 95 (2012): 548-554.

How to cite this article: Nigassa NB, Haddouche M. Lacticodeshydrogénase (LDH) and Ferrétinémia, Biomarkers of Coronavirus Disease (COVID-19). *Clin Infect Dis* 4 (2020) doi: 10.37421/jid.2020.4.118