THE RELATIONSHIP BETWEEN COVID- 19 WITH D-DIMER AND FERRITIN

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ABSTRACT

Introduction: COVID - 19 viruses are responsible for endemic respiratory tract infection in the wide world. In some cases, COVID-19 causes thrombosis, to detect these cases D-dimer test should be done. Also, there is a correlation between COVID-19 and ferritin. according to this, this research was done to detect these variations. **Aims:** So this study aims to detect the relation between COVID-19 and D-dimer and ferritin. **Methods:** This study carried out on adult patients in the special labs in Amman the capital of Jordan between January 2020 to July 2021 using PCR tests for detecting the virus. The ferritin test was done in serum samples by the sandwich method of ELISA (enzyme-linked immunosorbent assay), D-Dimer Rapid Quantitative Test is based on fluorescence immunoassay technology. **Discussion/Conclusion.** We conclude that the COVID-19 patients suffer from hyperferritinemia and elevated baseline D-dimer. thrombosis can occur in different organs, leading to organ failure in serious COVID-19 cases.

KEYWORLD: COVID-19, ferritin, Thrombosis, and D- dimer.

INTRODUCTION

COVIDs are enveloped, positive-sense, and single-stranded RNA viruses. COVID-19 is causing devastating morbidity and mortality in people all over the world.[1] The COVID- 19 infections, the predominant respiratory tract infection in the population which reach 178 million cases in the wide world and the mortality 3,86 million.[2] About 20% of infected patients have a severe form of the disease, including acute respiratory distress syndrome and bilateral pneumonia.[2] Patients with extreme COVID-19 symptoms have a profound coagulopathy, with thromboembolic complications affecting about 30% of patients, Increase of neutrophil seen in extreme COVID-19 patients plays a role in inflammation-related coagulation. Bacteria infection occurs as a complication of viral infection which leads to activation of neutrophils, increased phagocytic potential, and produce cytokines like IL-6, TNF-level, especially for CD40 which is clinically linked to D-dimer.[3] mainly in acute and chronic inflammation, serum ferritin is increased. so ferritin should be detected in COViD-19 infection. since ferritin use as a marker for immune dysregulation which leads to immune suppression].[4]

MATERIALS AND METHODS

From January 2020 to December 2021, a total of 170 Patients (91 males and 79 females average age 57years). All patients had a positive polymerase chain reaction (PCR) test result of SARS- CoV-2. The infected persons were divided according to gender into categories according to the presence of a previous history of patient's hypertension, chronic kidney disease, cardiovascular disease, stroke, and diabetes or patients without a previous history of these diseases. The following laboratory tests were performed for all Corona patients such as D-dimer, Ferritin, LDH, CBC, KFT, and CRP. our study deals with an examination D- dimer test. EDTA blood from the first tube was tested within half an hour for CBC Count. The second serum sample was tested for ferritin. Its uses a sandwich immunodetection method, Enzyme-Linked Immuno-Sorbent Assay (ELISA) test system using the commercial kit an immune enzymatic (Biokit) kit, which was used to screen all patients for ferritin. D-Dimer Rapid Quantitative Test is based on fluorescence immunoassay technology. It uses a sandwich immunodetection method.

RESULTS
Table -1: D-dimer test for patients who suffers from COVID-19.

Gender	COVID-19 diagnosis	Average Age	No. of patient	D- dimer test	Average D-dimer in COVID Patient	Normal of. of D-dimer test
Male	PCR	57.8	91	sandwich immunodetection method	1.42	1.25
Femal	PCR	59.7	79	sandwich immunodetection method	1.62	1.25

Table 2: Ferritin test for patients who suffers from COVID-19.

Gender	COVD-19 diagnosis	Average Age	No. of patient	Ferritin test	Average	Normal of Ferritin test
Male	PCR	57.8	91	sandwich immunodetection method	392.63	46.6
Female	PCR	59.7	79	sandwich immunodetection method	194.79	26.4

DISCUSSION
Patient with COVID-19 suffers from severe infection lead pneumonia and hypoxia.[5] Increase D- dimer level indicating hypercoagulation factors. Hypercoagulability may be linked to a cytokine storm that causes endothelial damage and microvascular thrombosis. An elevation of D- dimer is linked to a higher mortality rate.[6]

Table 1 indicates an increase D- dimer level in some patients who are suffering from COVID-19, in this case, patients need ICU treatment and fetal outcome. Table 2 indicates an increased ferritin level in patients who are suffering from COVID- 19 Those with elevated ferritin levels experienced extreme symptoms such as dry cough, bone pain, general weakness, and a fever. Ferritin levels remained stable in people without or minor symptoms.[7]

CONCLUSION
In COVID-19 patients, elevated baseline D-dimer levels are linked to inflammation, Anticoagulant therapy may be needed due to abnormal D-dimer. There is a relationship between it and infection with COVID; the presence or severity of COVID infection is related to serum ferritin levels. So we can use D-dimer and ferritin as a marker for the identification of the severity of COVID- 19 disease. And the recommendations are to use anticoagulant and anti-inflammatory medications to control these cases.

Ethical Considerations: Ethical approval was obtained from the Ethical committee of the institute and informed consent was obtained from patients.

Conflict of Interest Statement: I didn't had any conflicts of interest to declare.

Author Contributions
1Nawal S. Faris: collect the data and writing
Omar analysis the data
Mohammad reversion and add treatment

Data Availability Statement: data present in tables.

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