بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / مني مغربي أحمد

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: لا يوجد

Correlation between the Serum Level of Ferritin and D-Dimer and the Severity of COVID-19 Infection

Thesis

Submitted for Partial Fulfillment of Master Degree in Chest Diseases

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Shimaa Mohamed Ibrahim Mohamed Amer

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List of Abbreviations

Abb.	Full term
ACE2	Angiotensin Converting Enzyme 2
AKI	Acute kidney injury
Ang I and II	Angiotensin I and II
ARDSNet	Acute Respiratory Distress Syndrome Clinical Network
CD	Cluster of Differentiation
CDC	Centers for Disease Control and Prevention
CEST	Central European Summer Time
CRP	C-reactive protein
CRS	Cytokine release syndrome
CSS	Cytokine storm syndrome
CXCL10	Cxc Chemokine Ligand 10
DC-SIGN	Dendritic Cell-Specific Intercellular adhesion molecule-3-Grabbing Non-integrin
EUA	Emergency Use Authorization
FDA	Food and Drug Administration
G-CSF	Granulocyte colony-stimulating factor
GGO	Ground Glass Opacity
HFNC	High Flow Nasal Cannula
Hi-VNI	High Velocity Nasal Insufflation
HLH	Hemophagocytic lymphohistiocytosis
IL	Interleukin
IMV	Invasive Mechanical Ventilation
L-SIGN	Liver/lymph node-specific intercellular adhesion molecule-3-grabbing integrin
MCP1	Monocyte chemotactic protein-1
MERS-CoV	Middle East Respiratory Syndrome-Corona Virus
MIP1α	Macrophage inflammatory protein 1α
NCBI	National Center for Biological Information
PAI-1	Plasminogen Activator Inhibitor-1
PRRs	Pattern Recognition Receptors
RAS	Renin Angiotensin System
ROX	Respiratory rate oxygenation index

List of Abbreviations **cont...**

Abb.	Full term
SARI	Severe Acute Respiratory Infections
SARS-CoV	Severe Acute Respiratory Syndrome-Corona Virus
TNF	Tumor Necrosis Factor
VTE	Venous Thromboembolism
WHO	World Health Organization
WOB	Work of Breathing

INTRODUCTION

Corona viridea is a family of viruses that cause illness such as respiratory diseases or gastrointestinal diseases. Respiratory diseases can range from common cold to more severe diseases such as, Middle East Respiratory Syndrome (MERS-CoV), severe Acute Respiratory Syndrome (SARS-CoV*)* ***(WHO, Coronavirus disease (COVID-19), 2020).***

They got their name from the way they look under a microscope. The word Corona means "crown" in Latin. The virus consists of a core of genetic material surrounded by an envelope with protein spikes. This gives it the appearance of a crown. The source of the SARS-CoV-2 (COVID-19) is yet to be determined, but investigations are ongoing to identify the zoonotic source to the outbreak ***(Public Health England, 2020).***

Corona viruses are zoonotic, meaning that the viruses are transmitted between animals and humans. It has been determined that MERS-CoV was transmitted from dromedary camels to humans and SARS-CoV from civet cats to humans ***(Chan et al., 2015; WHO, Coronavirus disease (COVID-19), 2020).***

Coronavirus disease 2019 (COVID-19) was first identified amid an outbreak of respiratory illness cases in Wuhan City, Hubei Province, China ***(CDC, 2019 Novel Corona virus, 2020).***

It was initially reported to the World Health Organization (WHO) on December 31, 2019. On January 30, 2020, the WHO

declared the COVID-19 outbreak a global health emergency ***(Gallegos, 2020; Ramzy and McNeil, 2020).***

On March 11, 2020, the WHO declared COVID-19 a global pandemic, its first such designation since declaring H1N1 influenza a pandemic in 2009 ***(Cucinotta and Vanelli, 2020).***

Globally, as of 7:01pm CEST, 8 April 2022, there have been 494,587,638 confirmed cases of COVID-19, including 6,170,283 deaths, reported to WHO. As of 5 April 2022, a total of 11,250,782,214 vaccine doses have been administered ***(WHO Coronavirus (COVID-19) Dashboard).***

In general, adults with SARS-CoV-2 infection can be grouped into the following severity of illness categories. However, the criteria for each category may overlap or vary across clinical guidelines and clinical trials, and a patient's clinical status may change over time ***(NIH, COVID-19 treatment guidelines, 2021).***

1. *Asymptomatic or Presymptomatic Infection:* Individuals who test positive for SARS-CoV-2 using a virologic test (i.e., a nucleic acid amplification test [NAAT] or an antigen test) but who have no symptoms that are consistent with COVID-19.

2. *Mild Illness:* Individuals who have any of the various signs and symptoms of COVID-19 (e.g., fever, cough, sore throat, malaise, headache, muscle pain, nausea, vomiting,

diarrhea, loss of taste and smell) but who do not have shortness of breath, dyspnea, or abnormal chest imaging.

3. *Moderate Illness:* Individuals who show evidence of lower respiratory disease during clinical assessment or imaging and who have an oxygen saturation (SpO_2) ≥94% on room air at sea level.

4. *Severe Illness:* Individuals who have SpO_2 <94% on room air at sea level, a ratio of arterial partial pressure of oxygen to fraction of inspired oxygen (PaO_2/FiO_2) <300 mm Hg, respiratory frequency >30 breaths/min, or lung infiltrates >50%.

5. *Critical Illness:* Individuals who have respiratory failure, septic shock, and/or multiple organ dysfunction.

While most people with COVID-19 develop only mild (40%) or moderate (40%) disease, approximately 15% develop severe disease that requires oxygen support, and 5% have critical disease with complications such as respiratory failure, acute respiratory distress syndrome (ARDS), sepsis and septic shock, thromboembolism, and/or multiorgan failure, including acute kidney injury and cardiac injury ***(WHO, Clinical management of COVID-19, 2020).***

AIM OF THE WORK

To study the correlation between the severity of COVID-19 infection and the serum level of Ferritin and D-dimer.