

## Research Article

# Correlation Of (D- Dimer), (LDH) And (C RP) Levels With COVID-19 Infection

Ibrahim Mohammed Saeed Hussein<sup>1</sup>, Jalank Hameed Mahmoud<sup>2</sup>, Cheia Majeed Wahhab<sup>3</sup>

<sup>1,2,3</sup>Kirkuk Technical Institute/ Northern Technical University-Iraq

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### Abstract:

100 samples were taken from people infected with Covid 19 virus, where the infection was diagnosed by taking nasal samples using special sterile cotton swabs, then the infection was confirmed using a PCR machine. After confirming the infection, 52 samples were taken from males (52%) and 48 samples from females (48%) of different ages, in general, the results showed that 78% of the infected people had an increase in CRP and 46% of the infected people had an increase in D. dimer above the normal level While 36% had an increased LDH .Then the levels of LDH, D. dimer and CRP were measured using the Vitec device, the results showed that the patients aged over 50 years in both sexes were more affected by the infection than the patients aged less than 50 years, as they showed that the percentage of infection severity was in the elderly more and that the percentage of infection was more High levels of LDH, D. dimer and CRP in males were more than females and this may be affected by sex hormones

**Keywords: Covid-19, LDH, D.dimer and CRP.**

### Introduction

**Covid-19 disease:** It is a disease caused by infection with a coronavirus that causes severe acute respiratory syndrome <sup>[1]</sup>, and this disease appeared for the first time in the Chinese city of Wuhan in December 2019, although the virus Covid-19 primarily affects the respiratory system, it may affect many other organs and organs In the body such as the heart, nervous system, digestive system and liver <sup>[2][3]</sup>. This virus causes serious complications, including disseminated intravascular coagulopathy, which is common in COVID-19 infection <sup>[4][5]</sup>. Recent studies, it was documented that it was reported that most cases of infection were of a mild type <sup>[6][7]</sup>, however, it was noted that a number of infected people suffer from severe infection with a high number of deaths<sup>[8]</sup>, as the death rate associated with infection with Covid-19 is higher than other respiratory viral infections<sup>[9]</sup>.

**Lactate dehydrogenase (LDH):** an enzyme that required during process of turning sugar into energy in the cells. LDH is an interesting biomarker because high levels of LDH have been associated with outcomes for patients who had been infected with other viruses in the past<sup>[10][11]</sup>.

**C-reactive protein:** is a protein which synthesized in the liver in response to factors liberating from phagocytes and fat cells. <sup>[13][14]</sup>. It is the first model recognition receptor (PRR) to be identified<sup>[15]</sup>.

**D-dimer:** It is the product of the hydrolysis of fibrin protein, and is widely used as an indication of the vitality of coagulation disorders, and its normal value is less than 0.5 µg/mL. D-dimer increases with age, with severe lung injury or during pregnancy<sup>[16]</sup>. After the outbreak of the Corona epidemic, the D-dimer test was used to predict the severity of infection with

this epidemic, as it is necessary to differentiate between people infected with Covid-19 who have a high risk of severe infection and who have been shown to have abnormal coagulation function<sup>[16][17]</sup>.

### Materials and methods

#### Infection diagnosis

**Sample collection:** Special swabs used to collect respiratory material found in the nose. Then the genetic material was isolated (extracted) from the sample. Then a PCR machine was used to detect the virus.

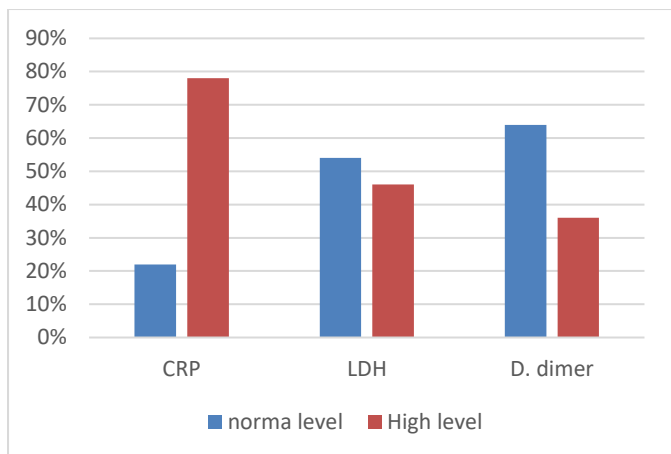
#### Sampling

5 ml of venous blood was withdrawn using sterile syringes, where 100 samples were collected from people infected with Covid-19 of both sexes from fever unit, and after the withdrawal, levels of CRP and D. dimer were measured. D. dimer and LDH by Vitec device, where the normal ratios are negative, <500 and <248, respectively

### Results and discussion

The current study included 100 samples, 52 samples from males by 52% and 48 samples from females by 48% of varying ages, in general, the results showed that 78% of the infected patient had an increase in CRP and 46% of the infected people had an increase in D. dimer above the normal level While 36% had an increased LDH .As in Figure (1)

**Figure No. (1) Shows the percentage of high levels of (D-dimer), (LDH) and (C RP) with covid-19**



Also, the results of this study showed that the age factor has a strong effect compared to the sex factor, as it appeared that the affected people who are older than 50 years in both sexes are more likely to have a high level of CRP, D. dimer and LDH from infected persons whose age is less than 50 years as in Tables (1) and (2)

**Table No. (1) Shows the percentage of high levels of (D-dimer), (LDH) and (C RP) by age in females**

Females Ages	CRP	%	D.dimer	%	LDH	%
<50	Negative	26%	<500	58%	<248	58%
	+24	68%	500-2000	31%	248-500	36%
	+48	6%	>2000	11%	>500	6%
>50	Negative	0%	<500	60%	<248	40%
	+24	80%	500-2000	40%	248-500	60%
	+48	20%	>2000	0%	>500	0%

It was also noted that males over 50 years of age were more affected by an infection than females in the same symptoms, as the severity of infection was greater in males compared to females, as shown in Table No. (2), where it appears that infected males in general have higher levels of (D- dimer), (LDH) and (C RP) more than females, especially the elderly. This may be affected by sex hormones.

**Table No. (1) Shows the percentage of high levels of (D-dimer), (LDH) and (C RP) by age in males**

Males Ages	CRP	%	D.dimer	%	LDH	%
<50	Negative	31%	<500	88%	<248	88%
	+24	44%	500-2000	12%	248-500	6%
	+48	25%	>2000	0%	>500	6%
>50	Negative	10%	<500	30%	<248	20%
	+24	60%	500-2000	50%	248-500	70%
	+48	30%	>2000	20%	>500	10%

## Conclusion

This study concluded that a high percentage of people infected with COVID-19 have elevated levels of (D- dimer), (LDH) and (C RP), as it showed that 78% of the infected people had an increase in CRP level of and 46% of those infected had an increase in D. dimer above normal level while 36% had an increased LDH. It was also concluded that patients aged more than 50 years are more likely to have increased of LDH ,CRP and D. dimer levels than those less than 50 years old, and the severity of infection was higher in females than males.


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