



Ferritin level and Hb after covid 19 in the city of Baghdad and Karbala-Iraq

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Abstract:

The study was conducted by taking blood samples from those recovering from the Corona virus, specifically 20-28 days after infection. The number of samples was (54) patients, collected from the period among six months (Mars to September). Blood samples were taken from patients recovering from Covid 19 from the hospitals of Karbala and Baghdad, the information of the samples was recorded, and laboratory analyzes were done to measure the level of ferritin, and the complete blood picture was measured. The data of patients were studied Biochemistry lab with biochemical tests.

The results were obtained and indicated that most of the recovered patients with Corona virus had symptoms of acute anemia , and after conducting a ferritin analysis, it was found that their ferritin level was high, which caused an increase in stored iron and a lack of iron

associated with hemoglobin. The research recommended continues taking vitamins and minerals necessary for the health of the body.

Keywords: Ferritin, Covid 19, hemoglobin, Corona virus.

مستوى الفيريتين ونسبة الهيموجلوبين بعد كوفيد 19 في مدينة بغداد وكربلاء – العراق

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الخلاصة:

أجريت الدراسة بأخذ عينات دم من المتعافين من فيروس كورونا وتحديدًا بعد 20-28 يوما من الإصابة. وبلغ عدد العينات (54) مريضا جمعت من فترة ما بين ستة أشهر (أذار حتى أيلول). وأخذت عينات الدم من المرضى المتعافين من كوفيد 19 من مستشفيات كربلاء وبغداد ، وسجلت معلومات العينات ، وأجريت التحاليل المختبرية لقياس مستوى الفيريتين وقياس صورة الدم الكاملة. تم دراسة بيانات المرضى من خلال الاختبارات البيوكيميائية

وأوضحت النتائج أن معظم المتعافين من فيروس كورونا ظهرت عليهم أعراض فقر الدم الحاد ، وبعد إجراء تحليل الفيريتين تبين أن مستوى الفيريتين لديهم مرتفع مما تسبب في زيادة مخزون الحديد ونقص الحديد المرتبط بالهيموجلوبين. وأوصى البحث بمواصلة تناول الفيتامينات والمعادن الضرورية لصحة الجسم

الكلمات المفتاحية: فيريتين ، كوفيد 19 ، هيموجلوبين ، فيروس كورونا.

1. INTRODUCTION:

Coronavirus disease -19 (COVID-19) is seen as an infectious inflammatory disease that mainly affects the lungs [1]. Recently, the involvement of multiple organs, with different pathways to injury [2], has been highlighted. Hemoglobinopathy, hypoxia and cellular iron overload may have an additional potential role. The scientific literature has indicated Corona virus causes an increase in the percentage of white blood cells than normal [3], a sharp decrease in the percentage of red blood cells and hemoglobin in the body, and an increase in the level of iron in the blood; excess iron in the cell/tissue (hyperferrinemia) [4].

Ferritin is a major mediator of immune deregulation, and it helps to understand the amount of iron stored in the body, ferritin can activate (macrophages) type of white blood cell in the immune system [5].

When they are activated, they begin to secrete cytokines that regulate immunity [6], when it is secreted in low concentrations, it is considered safe for the body and helps protect it from viruses and bacteria. When it is secreted in high concentrations, called 'cytokine storm' develops, which can be fatal for half of patients, especially the elderly [7]. Ferritin normal ratio is from 20-300 nm/ml for women and 20-350 for men. Severe hyperferritinemia indicates, through direct immunosuppressive and inflammatory effects, the fatal outcome of COVID-19 has been reported [8].

2. Methods:

Blood samples were taken from patients recovering from Covid 19, from three public hospitals in Iraq. Data were recorded 21-28 days after infection [9].

Blood samples are clinically examined by a set of tests, including a complete blood test, and the level of ferritin in the blood in the medical laboratories by advanced laboratory equipment photometer 5010 by the turbidimeter method; the data of patients were studied Biochemistry lab with biochemical tests [10]. All patient data were examined and analyzed according to the results in Table 1.

3. Results and Discussion:

Table(1) evidence and results of ferritin and haemoglobin tests for control sample

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Error	Std. Deviation
Hb	30	12.20	16.00	14.0633	.21028	1.15176
Ferritin	30	43.00	210.00	116.2333	8.13545	44.55967

Table (2) Evidence and results of ferritin and haemoglobin tests for those recovering from Covid 19

	N	Minimum	Maximum	Mean	Std. Error	Std. Deviation
Hb	54	9.60	14.70	12.2000	.19580	1.43882
Ferritin	54	308.00	580.00	429.7037	8.22757	60.46007

N: represents the size of the studied sample and is equal to (54) and for the two statistics (HB) and (FIRRITIN)

RANG: shows us its value for (HB) equal to (5.1) and for (FIRRITIN) equal to (272).

MEAN: shows us the arithmetic mean value of (HB) equal to (12.2) and of (FIRRITIN) equal to (429.7).

S.D: The value of the standard deviation is equal to (HB) equal to (1.438) and for (FIRRITIN) equal to (60.46).

S(2): the variance value for (HB) is (2.07) and for (FIRRITIN) is (3655.42).

When looking at the studied values (range), it appears to us, and by reading the data of the two tables above and comparing them, that the greater the percentage of dispersion in the data, the greater the percentage or probability of developing symptoms [11]. (1.151), which is less than its value in the case of infected people, which was equal to (1.438) and the same case for (FIRRITIN), where its value appeared for healthy people equal to (44,559) and for the injured (60.46), and the difference is clear between the two values, and this means that the natural dispersal ratio should be close about the standard limit [12], and whenever the value of the person studied is close to the standard value, the probability of him suffering from symptoms is few or close to zero.

Also, for the purpose of simple clarification, the subject of the largest value and the smallest value was touched upon. When studying the affected persons, the largest value was (14.7) and (580) and the smallest value was (9.6) and (308) for each of (HB) and (FIRRITIN), respectively, When studying healthy people, the results (HB) and (FIRRITIN) had the largest value (16) and (210) and the smallest value (12.2) and (43), respectively, and it also indicates that (FIRRITIN) its value for the injured is very large for healthy people and the same for the case of (HB) [11].

Recent studies of COVID-19 have shown that infection depends on cytokine storm syndrome [13]. Many people with diabetes have elevated levels of ferritin in their blood and may experience serious complications from COVID-19 [14]. The results of the study showed that the recovered suffer from an increase in the level of ferritin, and this indicates the possibility of bacterial infection during infection with the virus because of the immune system's preoccupation with fighting the virus [15].

And this indicates that the Corona virus participates during infection by binding to the iron stored in the human body, which reduces its association with the "globulin protein" [16]. These results in a lack of hemoglobin, which carries oxygen [17], which may cause a decrease

in the level of oxygen in the body of the infected person, and these symptoms continue for a period of 30-40 days from the beginning of the infection [18].

This confirms that Covid 19 patients decreased in hemoglobin levels and resulted in anemia even after recovery from the disease [19, 20].

4. Recommendation:

The study recommends following up the cases of patients after recovering from the Covid 19 virus, especially patients who have a family history of chronic diseases such as diabetes and high blood pressure and following up on those recovering for anemia analyzes. It is advised to continue taking vitamins and minerals necessary for the health of the body and strengthening immunity.

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