

A field study dealing with biometrics of some clinical variables for hepatitis C patients

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Abstract:

Hepatitis C virus is one of the most dangerous and contagious diseases, as its danger lies in the absence of obvious symptoms at the beginning of the infection. Over time, some signs may appear, such as yellowing of the skin, eyes and abdominal pain, but in advanced cases, it may lead to cirrhosis of the liver and may lead to death. The current study aims to know the extent of liver damage to infection with the virus by measuring some biochemical variables such as direct, indirect and total bilirubin, and on the other hand, measuring interleukin-28b to determine the extent of the immune response. The results showed a significant increase in direct and total bilirubin, as well as a significant increase in the concentration of Interleukin-28 b.

Key Words: *Hepatitis C, Interleukin-28 b, Bilirubin*

Introduction:

Hepatitis C virus is one of the types of infections that mainly affect the liver. It is a contagious disease where some signs and symptoms appear on the infected person, and sometimes no symptoms appear during the early stages of infection. [1] Occasionally a Fever, abdominal pain, and yellowing of the skin appear, as this disease is considered a chronic disease in about 75% to 85% of those infected with this virus. Over time, the complications of disease appear, the most important of which is cirrhosis [1] Which in turn leads to liver failure, liver cancer, or dilation of blood vessels in the esophagus and stomach. [2] The mechanism of infection is primarily through direct contact with blood, for example, blood transfusions or needle pricks, and neglecting the sterilization of medical equipment before using it. [1] It may also be spread from an infected mother to her baby during birth.[1] It is not spread by superficial contact, it is one of five known hepatitis viruses: A, B, C, D, and E.[3]

The examination is done by performing blood tests for antibodies or RNA.[4]

The signs and symptoms of a disease that are either acute infection (20% to 30% of infected people develop symptoms within 4 to 12 weeks of infection) [1][5], or Chronic infection, 80% of people infected are chronically infected, due to the continuous reproduction of the virus inside the infected person's body, where the symptoms are mild at the beginning of the infection.[6] Chronic hepatitis C can be related with fatigue[23] and mild perceptive problems, and later cirrhosis of the liver or liver cancer.[7] Elevated levels of liver enzymes indicate liver cells are being damaged by the virus or other disease.) Fatty changes to the liver occur are usually

present before cirrhosis develops.[8] Causes of cirrhosis are multiple, including hepatitis B and C, schistosomiasis, AIDS and alcoholics.[9]

Liver cirrhosis may principal to portal hypertension, ascites, bleeding or easy bruising, varices , jaundice, and a hepatic encephalopathy.[10] 50% of patients suffer from ascites [11]

Extrahepatic complications:

Mixed cryoglobulinemia (type II) caused by hepatitis C , an inflammation of small besides medium-sized vessels.[12] Hepatitis C is also related with autoimmune syndromes as Sjögren's disorder, lichen planus, a little platelet count, porphyria cutanea tarda, necrolytic acral erythema, insulin resistance, diabetes mellitus, diabetic nephropathy, autoimmune thyroiditis, and B-cell lymphoproliferative disorders.[13].

Hepatitis C people pretend have recovered from the infection, but it remains present and contagious at the same time, and it can be detected by some sensitive tests.[14]

One of the people who are most at risk of contracting hepatitis C are patients with kidney failure who are on dialysis.[15] The consequences of ambiguous infection are less severe than chronic and are slightly different from hepatocellular carcinoma.[16]

There are a quantity of analytical investigations for hepatitis C, as well as HCV ELISA, recombinant analyzed immunoblot, and quantitative HCV RNA (PCR).[17] HCV RNA can be detected by PCR typically one to two weeks after infection, while antibodies can take substantially longer to form and thus be detected.[17]

Subjects and methods

Subjects: Seventy samples were collected for patients with hepatitis C from a group of hospitals in the Middle Euphrates in the city of Najaf, Karbala, Babyl and Diwaniyah, the ages of the patients ranged between 30-50 years, on the other hand, forty samples were collected for healthy people with the same age as a control group.

Measurements: Blood samples were collected from patients and healthy persons in the morning and the serum separated by centrifugation after clotting .

Direct and total bilirubin were estimated by spectrophotometer, while Indirect bilirubin mathematically measured. Interleukin-28 b was measured by ELISA.

Statistical analysis:- The results were expressed as (mean±standard deviation). Pooled t-test was used to compare between the patients and control groups according to the measured parameters , probability (p) value calculated using Microsoft Excell[®] 2010 program, considering a significant change when P Value < 0.05[18],[19],[20].

Results and Discussion

Table (1) the level of Direct Bilirubin, Indirect Bilirubin, Total Bilirubin and IL-28b in patients with hepatitis C and control group.

Parameters	Patients (Mean±SD)	Control (Mean±SD)	T -Test
Direct Bilirubin	1.45±1.54	0.74±0.46	0.00053
Indirect Bilirubin	1.53±1.26	1.17±0.83	0.0699
Total Bilirubin	2.73±1.63	1.86±1.01	0.00071
IL-28b	13615.4±19329.2	277.2±116.9	2.03129E-07

The results in (Table 1) indicate that there is a significant difference in both direct and total bilirubin concentrations in patients infected with hepatitis C compared with the control group. While there was no significant difference between patients and control groups in the concentration of indirect bilirubin, These results are in agreement with other studies [21],[22]. These studies have shown that there is an increase in the level of bilirubin in hepatitis C patients and they are more likely to develop cirrhosis of the liver.

On the other hand, the results in the same table indicate a significant change in the concentration of interleukin-28b in the group of patients compared to the control group, these results are consistent with another study [23] The researchers predict that interleukin 28b is an important indicator for studying the consequences of the virus C [23].

The IL-28b gene encodes λ (IFN- λ) the antiviral protein interferon which shows antiviral characteristics in response to IFN- α ; it is up-regulated by hepatocytes and peripheral blood mononuclear cells through infection with [24]. Published data suggest that its nucleotide substitution (T→G, rs8099917) reduce the cytokine expression of IL-28b and thereby decreases its antiviral potential in comparison with the T allele [25].

Table (2) The Correlation between All parameters

	Direct	Indirect	Total
Indirect bilirubin	0.351 0.003		
Total bilirubin	0.447 0.000	0.906 0.000	
IL-28b	0.491 0.000	0.199 0.098	0.462 0.000

The results in table (2) refers to positive relation between IL-28b with both (Direct and Total bilirubin).

The relationship between bilirubin and interleukin 28 b, according to what was mentioned in the current research, is positive and significant, and this relationship is due to the fact that bilirubin rises as a result of the influence of the liver and damage

to some of its cells, and at the same time, interleukin 28 b responds to viral infection, being sensitive to viral infections [26].

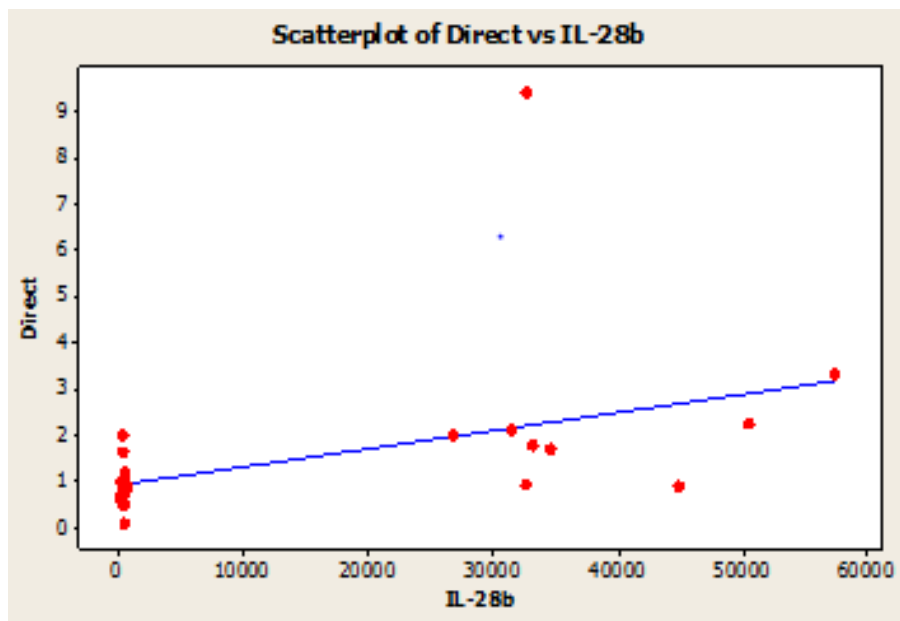


Figure (1) The correlation between direct bilirubin and IL-28b

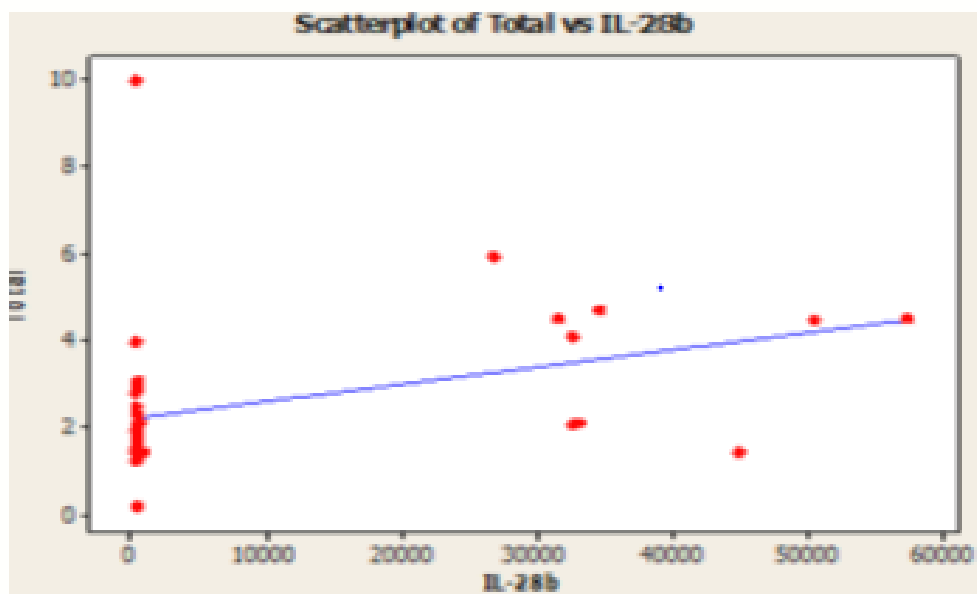


Figure (2) The correlation between total bilirubin and IL-28b

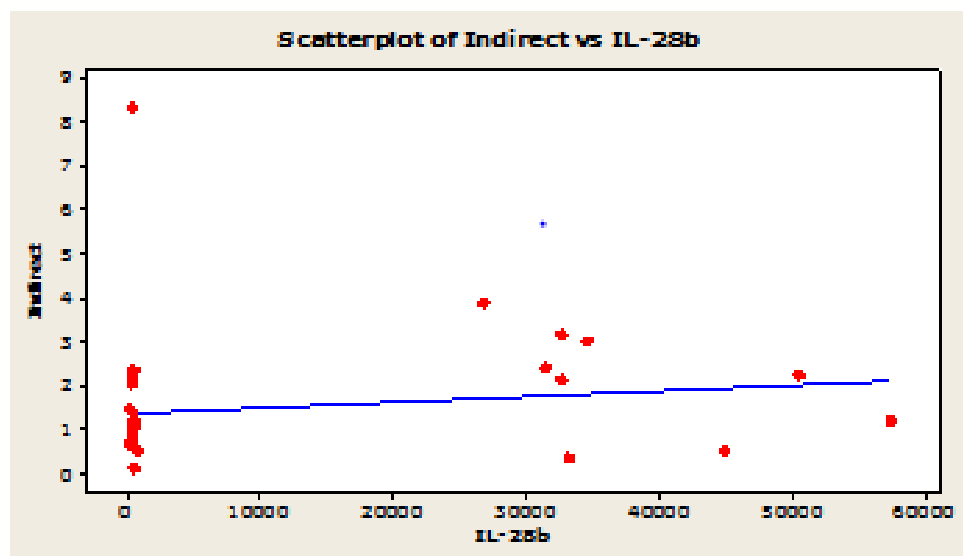


Figure (3) The correlation between Indirect bilirubin and IL-28b

Conclusion : From the current study, it can be concluded that hepatitis C patients suffer from a significant increase in the levels of both direct and total bilirubin, as well as a clear increase in the level of interleukin-28b. The study also proved a positive relationship between interleukin-28b with both direct and total bilirubin.

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