

## Seroprevalence of Hepatitis C Virus among Risk Groups in Mosul City

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### ABSTRACT:-

Cross sectional study of 200 blood donors and other risk groups were conducted in Mosul city. The prevalence of anti-HCV antibodies was (5.5%). Anti-HCV positivity was found to be more common in male at the age group of < 10 years. History of blood transfusion was observed as a common risk factor related to anti-HCV positivity. History of past and present signs that are related to anti-HCV positive were, (72.7%) of cases were suffered from upper abdominal discomfort, (54.5%) of cases were suffered from jaundice, (54.5%) of cases were suffered from loss of appetite, (27.2%) of cases were suffered from arthralgia, (18.1%) of cases were suffered from skin rash.

ظاهرة انتشار فايروس الالتهاب الكبدي C خلال عدة مجاميع من سكان مدينة الموصل

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المستخلص:-

أجريت دراسة ميدانية للبحث عن انتشار التهاب الكبد الفيروسي نمط ج حيث تم اختيار 200 حالة من متبرعي الدم ومجموعة الاختطار الأخرى في مدينة الموصل وقد كانت نسبة انتشار المرض 5.5%. والنسبة كانت أكثر بين الذكور منها في الإناث وكان أكثر المرضى من الفئة العمرية الأقل من 10 سنوات. ان نقل الدم السابق يعد من العوامل المهمة التي ظهرت لدى استبيان النتائج للمرضى المعرضين لخطورة الإصابة وانتقال المرض، ان التاريخ السابق والحالي للأعراض المرتبطة بالتهاب الكبد الفيروسي نوع ج كانت:

- 1- 72.7% يشكون من الم في الجزء العلوي الأيمن من البطن
- 2- 54.5% يشكون من ظهور براقان
- 3- 54.5% يشكون من فقدان الشهية
- 4- 27.2% يشكون من
- 5- 18.1% يشكون من طفح جلدي

### INTRODUCTION:-

Hepatitis C virus (HCV) is the major cause of post – transfusion and community –acquired – non –A, non – B hepatitis (1). The virus was named hepatitis C virus by its discoverers (Chiron). Hepatitis C virus is strongly, similar to both flaviviruses and pestiviruses both belonging to the flaviviridea. The virus is a positive single stranded RNA virus, it is a small (30-60 nm in diameter), with a lipid envelope, sensitive to organic solvents such as chlorophorm (2, 3, 4, 5). Hepatitis C virus is classified into six distinct types, comparing at least 74 different subtypes. Both types and subtypes are subject to geographical differences in distribution (6, 7, 8). Infection with HCV lead to chronic hepatitis in about 90% of cases (1) , chronic persistent hepatitis

established in 40% , chronic active hepatitis in 45% and cirrhosis in 15% of HCV patients (1,9) .

Hepatitis C virus is more often asymptomatic; the percentage of infected individuals who remain carrier of the virus is significantly higher in hepatitis C than in hepatitis B (HBV). The complication resulting from the chronic carrier state is similar for both viruses a much higher percentage of infected individuals develop sever complication (such chronic active hepatitis, cirrhosis, hepatocellular carcinoma). Thus HCV is a serious risk (2). More than half of the patients with acute HCV infection will develop chronic hepatitis that may lead to a protracted clinical course including cirrhosis and hepatocellular carcinoma. In contrast less

than 10% of patients with acute HBV will become chronic (10). HCV is worldwide health hazard. The main risk factors for the infection are: history of blood transfusion, parenteral drug abuse heterosexual exposure, house hold exposure, and employment as health care workers (11). HCV strongly associated with male sex and greater age (12). The present study was planned to investigate the association between HCV sero positivity and some demographic variables, and to detect the risk factors and mode for acquisition HCV infection.

### **MATERIALS AND METHODS:-**

A cross sectional study of 200 cases was performed for HCV since the beginning of July 2007 to the end of August 2007 , the study included the risk groups : blood donors(95) , acute jaundice cases (5) , health care persons(43) , heamodialysis patients(9) , diabetic patients(33) , thalassemia patients(15) , these samples obtained from the cases attended Al-Salaam hospital in Mosul city . Blood samples drawn from each individual through a venpuncture using 10 CC disposable syringes, sera were obtained by centrifugation of clotted blood; each serum sample was transferred into many labeled small tubes to be stored at deep freeze, until the time of testing by using ELISA test kit (UBI, Liatek and Bio- ELISA).

### **RESULTS:-**

As shown in (Table 1) among 200 cases 11 patients were positive for anti – HCV (5.5%) and shows the prevalence of hepatitis C virus among risk group. The anti-HCV by using UBI ELISA Kits was detected in, 5 out of 15 thalassemia patients 33.3% , in 2 out of 9 heamodialysis patients 22.2%, 1 out of 33 diabetic patients 3% , 1 out of 43 health care persons 2.3% and 2 out of 95 blood donors 2.1% . Table 2 shows the association of HCV infection with age groups .The higher rate 20% of HCV infection was found in age group < 10 years, while there is no infection in age group 20-29 years and in the age group > 50 years. The positivity rate for HCV among the examined cases were 7 males (7%) and 4 females (4%) as shown in (Table 3). Table (4) shows the relationship between risk factors and acquisition of HCV which were as follow. History of blood transfusion 81.8% , (

9 out of 11 ) , history of major operation 36.3% , ( 4 out of 11) , history of using old glass syringe 27.2% , ( 3 out of 11) , and history of immunosuppresser drug , chest disease, contact with HCV was 9%, 1 out of 11.

Table (5) shows the history of symptoms that might be related to HCV infection. Upper abdominal discomfort was observed in 72.7% ,( 8 out of 11 HCV positive patients , loss of appetite and jaundice was 54.5% , 6 out of 11 , arthralgia was 27.2% , 3 out of 11 , while skin rash was 18.1% , 2 out of 11.

### **DISCUSSIONS:-**

Hepatitis C virus HCV is an RNA virus responsible for the majority of post-transfusion non-A non – B hepatitis. More than half of the patients with acute infection will develop chronic hepatitis that may lead to protracted clinical course including cirrhosis and hepatocellular carcinoma (13). In the current cross sectional survey it was found that , 5.5% , 11 out of 200 cases were anti-HCV positive , these cases include blood donors and other risk group . The relation between anti-HCV and some demographic variables was studied. The results showed that, the higher rate of anti-HCV (20%) was found in age group less than 10 years, 7% was male and 4% was female. Kazhan reported that , in Sudia Arabia seroepidemiological study of HCV and possible transmission of HCV revealed 1.8% of normal population have anti-HCV , both sexes were affected equally peak age affected in male > 44 years while females 40-44 years (14)

A study by Patino etal reported that , seropositivity increased in males and with age group of 40-49 years old (11) . Bohman etal also reported that, the risk of HCV related with age (greater than 22.5 years) (15). Other servay by Fujiyama etal (16) reported that, older adults have HCV more than younger. Other survey by Wang (17) found that prevalence of the mean age of positive blood donors in Singapore 41 years were found in males. Hepatitis C virus correlated with anti-HCV positivity with history of blood transfusion (81.8%) while major operation (36.3%). Other risk factors which were detected in the present investigation like

using old glass syringe (27.2%), immuno-suppressive drugs, chest disease, and contact with anti-HCV positive patients (9%). Similar study by Suman et al (18) reported that, a history of parenteral exposure (blood transfusion, IV drug abuse, hemodialysis and needle stick exposure) found in 40% of patients with acute HCV infection. Also other observation have also been made by Schjman et al who found that 57% of anti-HCV positive patients with history of receiving transfusion (19), and study of prevalence of hepatitis C in

blood donors in the municipality of Durange, Mixico by Guerrero et al mentioned that, the main risk factors associated with HCV were a history of transfusion and sexual promiscuity or intercourse with prostitutes (20). According to the relation between history of symptoms that, might be related with HCV infection, the higher rate 72.7% have upper abdominal discomfort, loss of appetite and jaundice found in 54.5%, arthralgia 27.2%, and the lower rate 18.1% have skin rash.

**Table (1) The frequency of HCV infection among the study group**

No. (%) of HCV cases	No. of samples	The study groups
2 (2.1)	95	Blood donors
0 (0)	5	Acute jaundice cases
1 (2.3)	43	Health cares persons
2 (22.2)	9	Haemodialysis patients
1 (3)	33	Diabetic patients
5 (33.3)	15	Thalassemia patients
11 (5.5)	200	Total

**Table (2) The association between HCV infection and age groups**

No. (%) of HCV cases	No. of samples	The age groups (yr.)
4 (20)	20	< 10
1 (3.4)	29	10-19
0 (0)	50	20-29
4 (6.1)	65	30-39
2 (8)	25	40-49
0 (0)	11	>50
11 (5.5)	200	Total

**Table (3) The relation between HCV and sex**

No. (%) of HCV	NO. of samples	The sex
7 (7)	100	Male
4 (4)	100	Female
11 (5.5)	200	Total

**Table (4) The association between variant risk factors and acquisition of HCV infection**

The study groups	No. of HCV	Using old glass syringe	Blood transfusion	Major operation	Immune supp. Drug	Chest disease	Contact with HCV
Blood donors	2	1 (50)	2 (100)	1 (50)	0	0	0
Acute jaundice cases	0	0	0	0	0	0	0
Health cares persons	1	0	0	0	0	0	1 (100)
Haemodialysis patients	2	1 (50)	2 (100)	1 (50)	1 (50)	1 (50)	0
Diabetic patients	1	1 (100)	0	0	0	0	0
Thalassemia patients	5	0	5 (100)	2 (40)	0	0	0
Total	11	3 (27.2)	9 (81.8)	4 (36.3)	1 (9)	1 (9)	1 (9)

Table (5) The history of symptoms that might be related with HCV infection

The study groups	No. of HCV	Loss of appetite	Arthralgia	Skin rash	Upp. Abd. discomfort	Jaundice
Blood donors	2	1	1	0	1	1
Acute jaundice cases	0	0	0	0	0	0
Health cares persons	1	1	0	0	1	1
Heamodialysis patients	2	2	1	0	1	1
Diabetic patients	1	0	0	0	1	1
Thalassemia patients	5	2	1	2	4	2
Total	11	6 (54.5)	3 (27.2)	2 (18.1)	8 (72.7)	6(54.5)

**REFERENCES:-**

- 1- Mauro C , Maria G . HLA class II genes in chronic hepatitis C virus infection and a associated immunological disorders . Hepatology 1996 , 1338-1341 .
- 2- Annie E . K.Abbas A. prevalence of hepatitis B surface antigen (HBsAg) and hepatitis C (HCV) in Salahdeen province . Scientific Jornal of Tikrit University 1997, 2(3) .
- 3- Ikuo S. Teksuro S. proteolytic activity of NS3 serine proteinase of hepatitis C virus efficiently expressed in *Escherichia coli* . Hepatology 1995 , 22(6) : 648-1655 .
- 4- Kakuo I. Takaji W. Interferon gamma production by peripheral blood lymphocytes to hepatitis C virus core protein in chronic hepatitis C infection . Hepatology 1995 , 22(4) : 1057-1064 .
- 5- Zeuzem S , Roth W.K.Viral hepatitis C . Z-Gastroenterol . 1995 , 33(2) : 117-32 .
- 6-Michael A., Renate R. Specific inhibition of hepatitis C viral gene expression by antisense phosphorothionate oligodeoxy nucleotides . Hepatology 1995 , 22(3) : 707- 717 .
- 7- Lwisa B. patrizia P.Lack of correlation between hepatitis C virus related cirrhosis . Hepatology 1997 , 25 : 211-215 .
- 8- Katsutosh , T. Takaji W. Expression and immune response to hepatitis C virus core DNA – based vaccine contracts . Hepatology 1996 , 24:14-20 .
- 9-Par A. Paul M. Clinical immunological features and interferon therapy in chronic hepatitis C . orv. Hetil. 1995 , 136(1) : 9-18 .
- 10- Sun L.T. Yun F.L.Detection of type 2 – like T-helper cell in hepatitis C virus infection . Implication for hepatitis C virus chronicity . Hepatology 1997 , 25 : 449 – 458 .
- 11- Patino S.F. , Hyman J. Prevalence and risk factors for hepatitis C antibodies in volunteer blood in Brazil . Transfusion 1994 , 34 (2) .
- 12- Emmet B. Keffe K.G. Hepatitis A through E: Distinguishing the etiologic agents . Modern medicine of the middle east 1993 : 10 : 48-62 .
- 13- Rey J.F.Halfon P.Risk of transmission of hepatitis C virus by digestive endoscopy . Gastroenterol . clin.Biol.995 , 19(4) : 346-9 .
- 14- Kazhan A.T.Seroepidemiology study on HBV.HCV and HDV infection among patients with sexually transmitted disease STDs , 1997 , M.Sc thesis .
- 15- Bohman V.R. setteler R.W. seroprevalence and risk factors for hepatitis C virus antibody in pregnant women . obstet . Gynecol 1992 , 80(4) : 609-13.
- 16- Fujiyama S. Kawano S. changes in prevalence of anti-HCV antibodies associated with preventive measures among hemodialysis patients and dialysis staff .Hepatogastroenterology 1995 , 42(2) : 162-7.
- 17- Wang J.E.A. study on the epidemiology of hepatitis C infection among blood donors in singapores .J-public Health –Med 1996 , 17:387-91 .
- 18- Suman K.Lisa R.Performance characteristics and result of a large scale screening program for viral hepatitis and risk factors associated with exposure to viral hepatitis B and C . Results of the national hepatitis screening suring . Hepatology . 1996 : 24 : 979 -986 .
- 19- Schujman L. Lavitulas , Relative risk of hepatitis C virus transmission in polytransfused patients . Medicine B- Aires 1994 , 54(3) : 199-202 .
- 20- Guerrer J.F, castan A. Prevalence of risk factor associated with hepatitis C in blood donors in the municipality of Durango , mexico . Salad- public – mex 1996 , 38 : 94 – 100.