Study Some Parameters of HCV Isolated From Sample of Hemophilic Patients in Children Welfare Teaching Hospital in Medical City/Baghdad

دراسة بعض معلمات التهاب الكبد الفيروسي نوع ج المعزولة من عينة من المرضى المصابين بالهيموفيليا (الناعور) في مستشفى حماية الأطفال التعليمي في مدينة الطب / بغداد

Yusra Basheer Al-sabbagh B.Sc [*]
Dr. Raya Ezat Al-saade PHD [**]
Dr. Eman Shaker Mahmmod PHD [***]

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[*] Mministry of   Health / Al-karkh – Baghdad Health Directorate / Al-kadhmia Sector for PHC / Typical Al-hurrah Centre for PHC / 07702535247 / yusraalsabaq@yahoo.com.
[**] Ministry of Higher Education and Scientific Research / Middle Technical University / College of Health and Medical Technology – Baghdad / Medical Laboratory Science Technology Department / 07710958496 / rayat_alsaade@yahoo.com
[***]Mministry of Health / Medical City -Baghdad /Teaching Laboratories / 07702514429 / emanshaker944@yahoo.com.

المستخلص :
الهدف : تهدف هذه الدراسة الى تقويم الانتشار المصلي لفيروس التهاب الكبد نوع ج   بين المرضى المصابين بالهيموفيليا و لدراسة العلاقة بين الهيموفيليا و عوامل الخطر لاكتساب التهاب الكبد الفيروسي نوع ج بين المرضى المصابين بالهيموفيليا مثل العمر و الحالة الزوجية و المهنة .
المنهجية : أجريت الدراسة في مستشفى حماية الأطفال التعليمي(مركز الهيموفيليا) / مدينة الطب / بغداد / العراق ، ٢١٠ مريض مصاب بالهيموفيليا تم مقابلتهم بموجب الاستبيان المهئ (عمر المريض ، الجنس، نوع وشدة الهيموفيليا ،الحالة الزوجية ،تاريخ الإصابة السابقة بالتهاب الكبد الفيروسي نوع ج و المستوى الثقافي) و جمعت عينات الدم لهذا الغرض .
النتائج : معظم المرضى كانوا مصابين بالهيموفيليا نوع أ و بالدرجة الشديدة ، العدد الأعلى من المرضى المصابين بالهيموفيليا كان ضمن الفئة العمرية ٢٠ – ٢٩ سنة ، معظمهم كانوا غير متزوجين وكانوا يعيشون في المناطق الحضارية (المدينة) ، بعض المرضى المصابين بالتهاب الكبد الفيروسي نوع ج حاصلين على شهادة الثانوية وكانوا مصابين بالتهاب الكبد الفيروسي نوع ج سابقا .
التوصيات : أوصت هذه الدراسة بزيادة مستوى التثقيف الصحي بين المجتمع بشكل عام وضرورة الالتزام بعمل فحوص دورية للإصابة بالتهاب الكبد الفيروسي نوع ج لكل المرضى المصابين بالهيموفيليا بالاضافة الى فحص الدم ومنتجاته على نحو تام .

Abstract :

Objective(s) : This study aimed at evaluating the seroprevalence of anti -HCV and studying the correlation between   hemophilia and risk factors for acquiring HCV such as age , marital status & occupation among hemophilic patients .
Methodology : 210 hemophilic patients in children welfare teaching hospital/medical city/Baghdad–Iraq (hemophilia center) were investigated using prepared questionnaire and tested for HCV infection, those were measuring patient's age, hemophilia types and severity, marital status, residency and history of previous HCV infection .
Results : Most hemophilic patients were hemophilia A at severe , hemophilia was at age group 20 – 29 years , the majority of patients were unmarried and from urban areas , some of them had HCV infection which was more among those had previous HCV infection .
Recommendations : Health education level be increased among general population , all hemophilic patients be commitment periodic HCV infection screening also blood and its products be strictly screened .

Keywords : Hemophilia , Severity, HCV infection .

Introduction :

Hemophilia is the most frequent congenital coagulation disorders , there are two types of hemophilia , hemophilia A that caused by factor VIII deficiency (classic hemophilia) and hemophilia B that caused by factor IX deficiency (Christmas disease)[1].The hemophilic patients have a genetic mutation in the affected gene on the X chromosome , which results in reduced production of factor VIII or IX and creates a bleeding tendency , so they are almost suffer from spontaneous bleeding especially in to joints and muscles and prolonged internal or external bleeding after surgery or trauma because coagulation takes much longer than normal[2].Because hemophilic patients received multiple transfusion of Fresh Frozen Plasma (FFP) and cryoprecipitate (cryo) that prepared from pool plasma of thousands of donations , they are in risk of acquiring transfusion – transmitted infection (TTI) especially HCV infection [1][3]. Hepatitis C virus (HCV) can be transmitted primarily via blood , rarely transmitted by sexual contact , HCV prenatal transmission may be occurs before or during birth in about 6 % of births depending on the presence of high levels of viremia in baby's mother[4].

Methodology :

At hemophilia center children welfare teaching hospital / medical city / Baghdad – Iraq , across sectional study was conducted in period between December 2015 to February 2016 , in which 210 hemophilic patients , attended the center during period of the study in order to receiving prophylaxis doses or because of treatment doses , were included in the study .

bleeding episode to receiving The pilot study was achieved during the last week of November of academic year 2015 – 2016 . It was conducted on 10 patients (9 males and 1 female) selected randomly from hemophilic patients in children welfare teaching hospital / medical city / Baghdad – Iraq and they were not included in the study , after piloting the necessary modifications were made .

All hemophilic patients were investigated by prepared questionnaire which measures patient's age , hemophilia types and severity , marital status , residency , history of previous HCV infection , education level and occupation , and then were tested for HCV infection (2 ml of blood were collected from each patient) by using enzyme – linked immunosorbent assay (ELISA) to detect anti - HCV . Diagnoses of hemophilia type and severity were done by specialist hematological doctors depending on clinical technique . All patients both adults and children who were infected with congenital Hemophilia A or Hemophilia B that live in Baghdad city and other governorates were included in this study . One patient was excluded from this study because he was infected with acquired hemophilia before one month of initiated study then achieved cure when study was started.

Microsoft excel software and SPSS were used in order to analyze and assess the results of the study . Frequencies , relative frequencies means , standard deviation (SD) , ranges and bar charts were used . To test the associations between variables Chi – Square statistical test (χ^2) was used (statistically significant when the P - value ≤ 0.05) [5].
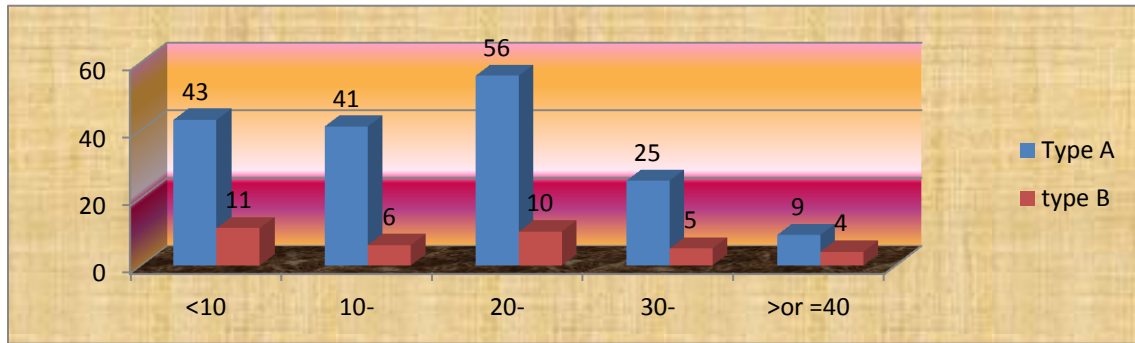
Results :

Figure (1) : Bar Chart of Age Groups According to Hemophilia Types

The current study was noted that the highest number of hemophilic A patients at age group 20 – 29 years of 56 (26.7 %) more than other age groups , while the highest number of patients that infected with hemophilia B was at age group < 10 years of 11 (5.2 %) more than other age groups , this results were found in the figure (1).
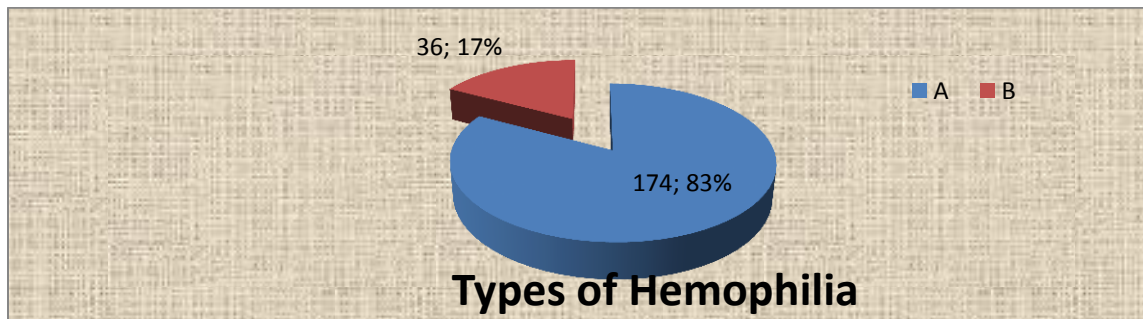

Figure (2) : The Percentage of Hemophilia Types among Hemophilic Patients

Figure (2) showed that the high percentage of hemophilia A was 174 (83 %) other than hemophilia B was 36 (17 %) .
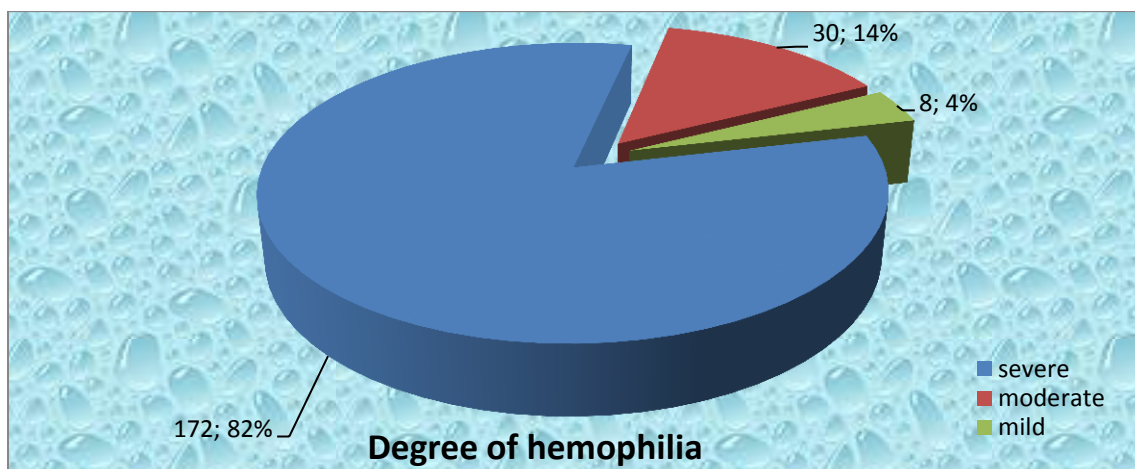

Figure (3) : The Percentage of Hemophilia Severity among Hemophilic Patients

Figure (3) indicated that the high percentage of severe hemophilia more than moderate and mild at 172 , 30 and 8 (82 , 14 and 4) % respectively .

Table (1) : Distribution Types of Hemophilia According to Severity

Hemophilia Degree	Types of Hemophilia						P-value
	A		B		Total		
	No	%	No	%	No	%	
Severe	148	85.06	24	66.67	172	81.90	0.01*
Moderate	22	12.64	8	22.22	30	14.29	
Mild	4	2.30	4	11.11	8	3.81	
Total	174	100.00	36	100.00	210	100.00	

A = Hemophilia A , B = Hemophilia B , No = Sample Size , % = Percentages
(*) Statistical significant differences at (p < 0.05)

In the table 1 resulted that the highly percentage was severity more than moderate and mild at 148 , 22 , 4 (85.06 , 12.64 , 2.30) % respectively for hemophilia A , on the other hand the highly percentage of severity more than moderate and mild at 24 , 8 and 4 (66.67 , 22.22 and 11.11) % respectively for hemophilia B .

Table (2) : Distribution of Hemophilia Types According to Marital Status among Hemophilic Patients

Marital status	Types of Hemophilia						P-value
	A		B		Total		
	No	%	No	%	No	%	
Single	128	73.56	25	69.44	153	72.86	0.517
Married	46	26.44	11	30.56	57	27.14	
Total	174	100.00	36	100.00	210	100.00	

A = Hemophilia A , B = Hemophilia B , No = Sample Size , % = Percentages

Table (2) showed that hemophilia A among single was represented the highly percentage than married at 128 (73.56 %) , as well as hemophilia B among single was represented the highly percentage than married at 25 (69.44 %) , but the correlation between hemophilia types and marital status was not significant at p-value ≥ 0.05.

Table (3) : Distribution of Hemophilia Types According to Residence among Hemophilic Patients

| Residence | Types of Hemophilia | | | | | | P-value |
| | A | | B | | Total | | |
	No	%	No	%	No	%	
Urban	169	97.13	34	94.44	203	96.67	
Rural	5	2.87	2	5.56	7	3.33	0.414
Total	174	100.00	36	100.00	210	100.00	

A = Hemophilia A , B = Hemophilia B , No = Sample Size , % = Percentages

In the table 3 showed that hemophilia A in urban was represented the highly percentage than in rural at 169 and 5 (97.13 and 2.87) % respectively , also hemophilia B in urban was represented the highly percentage than in rural at 34 and 2 (94.44 and 5.56) % respectively , but the correlation between hemophilia types and residence was not significant at p-value ≥ 0.05. .
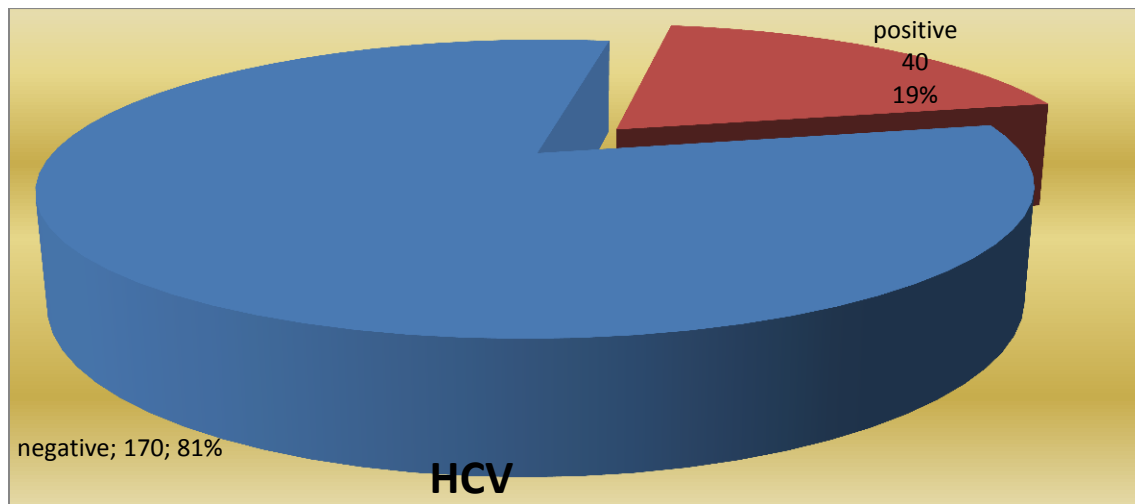

Figure (4) :The Percentage of Positive and Negative HCV Test among Hemophilic Patients

The highly percentage of HCV test at negative more than positive 170 to 40 (81 and 19) % respectively , this was noted in figure (4) .

Table (4) : Distribution of HCV Infection among Hemophilic Patients According to   HCV Test Results

HCV infection	HCV test						P-value
	Positive		Negative		Total		
	No	%	No	%	No	%	
Not infected	9	22.50	134	78.82	143	68.10	0.0001*
Infected before 1-5 weeks	1	2.50	0	0.00	1	0.48	
Infected before 1-5month	1	2.50	2	1.18	3	1.43	
Infected before 1-5 years	29	72.50	34	20.00	63	30.00	
Total	40	100.00	170	100.00	210	100.00	

HCV = Hepatitis C virus , No = Sample Size , % = Percentages
Highly statistical significant differences at p value ≤ 0.01

Table (4) presented that the highly significant differences between previous HCV infection among hemophilic patients and HCV test results was noted at p value = 0.0001 . The highly percentage among those were infected before $1-5$ years more than other patients at   29 (72.50 %) in positive HCV test results , on the other hand the highly percentage among those were no infected more than other patients at 134 (78.82 %) in negative HCV test results .

Discussion :

The current   study demonstrated that the   prevalence of HCV was 19 % among 210 hemophilic patients , this result was similar to   Naini , *etal* (2007)[6] in Isfahan – Iran, which showed that the prevalence of HCV infection among hemophilic patients was 22.6 % of 553 hemophilic patients . But Abd Al-hameed (2013) [7], was resulted 9.9 %   of 384 hemophilic patients   were infected with HCV in Iraq . This differences may be due to Abd Al-hameed's study included only   hemophilic patients   up to 18 years while our study included hemophilic patients

from all ages . Asif , *etal* (2009)[8] found that   the prevalence of HCV infection among hemophilic patients in different countries of the   world as Islamabad , Peshawar , Lahore , West India , Brazil , Holland and Iran was (36 , 25 , 56 , 23 , 44 , 54   and 15)% respectively .   The   differences between our study and others may be due to differences in samples age or common modes of transmission among these countries .

The present study , patients who infected with hemophilia A were   more than those infected with hemophilia B.

In comparison with some neighbor countries this finding supportive evidence is available in a study stated that (1057) patients were 86 % infected with hemophilia A , 8.5 % were infected with hemophilia B and 5.5 % were infected with other congenital bleeding disorders[9] . On the other hand there were other supportive evidence available in a study carried out by Nassirtoosi ,*etal* in Iran that found 73% had hemophilia A , 10% hemophilia B, and 17% had other types of congenital coagulation disorders of 236 patients included in his study [10]. While other study by Tahiraj A. showed 80 % of 20 hemophilic patients in Yemen and 80 % of 40 hemophilic patients in Germany were infected with hemophilia A [11]. This differences may be due to genetic or environmental factors differences between our study and other studies .

The present study found that highest percentage of hemophilia A and B was among 20 – 29 years age groups 26.7 % of 210 hemophilic patients , this study disagreed with other studies which indicated that highest percentage of hemophilia A and B was among 6 – 15 years age groups 33.3 % of 60 hemophilic patients in Al-Ramadi city / Iraq [12]. While in Brazil [13] and in Cuba [14] the highest percentage of hemophilia A and B among age groups 11 – 20 years and 20 – 39 years were 23.4 % of 664 and 39.30 % of 229 hemophilic patients respectively .This differences probably due to differences in health and religion education .

This study was noted that , the highly percentage for degree of hemophilia
severity 82 % of 210 hemophilic

patients . Goes with finding supported by other studies one resulted that 49 % severe hemophilic patients of 638 hemophilic patients in the Netherlands [15]. And the other found that 62% had severe hemophilia of 1226 hemophilic patients were severe hemophilia in Turkey[9].This differences may be due to differences in inherited factors among these countries and sample size .

The result of the current study demonstrated that severe hemophilia was represented the highly percentage for both hemophilia A and B which was 85.06 % and 66.67 % respectively. This study is in agreement with finding of study carried out in Iran which reported severe hemophilia was represented the highly percentage for hemophilia A 74.9% had severe hemophilia of 171 hemophilic A patients of 236 total hemophilic patients[10]. As well as other study in India found similar results where 43% had severe hemophilia of 80 hemophilic A patients of 100 hemophilic patients [16]. This result may be due to the differences in inherited factors among different countries .

The results of the current study showed that the highest percentage of hemophilia was among unmarried patients 39.05 % of hemophilic patients but this association was not significant where p value ≥ 0.05. This study is in agreement with finding of study carried out by Yazdani , *etal* in Isfahan where p value ≥ 0.05 [17].
The highly percentage of hemophilia for both types A and B in this study was in urban areas more than rural areas 96.67 % of hemophilic patients but this result was not significant where p value ≥ 0.05 .

This study disagreed with other Iraqi studies which indicated that 64.3 % of

56 hemophilic patients was lived in rural area [18]. Another study revealed that 50% of 60 were rural hemophilic patients [12]. On the other hand there were supportive evidence available in a studies found that the highly percentage of hemophilia was among urban areas 85.7 % of 63 hemophilic patients the result was not significant [19].Another study in Yemen revealed 70 % of 20 hemophilic patients in Yemen were lived in rural areas[11]. These differences may be due to sample size and samples were collected from different areas .

In the present study , HCV positive test results was more among patients had HCV infection in the past (before 1 – 5 years or more) than other hemophilic patients 72.50% of 40 hemophilic patients, this result was highly statistical significant differences at p-value **<** 0.05 (p-value = 0.0001*) **.** This study dissimilar with other studies in Netherlands and Brazil which indicated that the highly percentage of HCV positive test results was more among those who not infected with HCV in the past so they found that there results were not significant at p value ≥ 0.05 at 54 % of 638 and 55 % of 602 hemophilic patients respectively[15, 20] . The result may be due to some countries used cryoprecipitate or plasma derived clotting factors concentrates which increase chance for acquiring HCV infection as a treatment for hemophilic patients instead of recombinant factors concentrated that are produced without addition of human plasma because it may be unavailable in this countries . Also there are some mode of HCV transmission such as sexual transmission spread in this countries more than our countries .

This study aimed to evaluate the seroprevalence of anti - HCV and studying the correlation between hemophilia and risk factors for acquiring HCV such as age and occupation among hemophilic patients. Which may be increased the risk to contract hepatitis C , moreover in this study we tried to identify the prevalence of HCV among hemophilic patients in Baghdad / Iraq and compare it with prior studies in the other countries .

Recommendations:

1. Increasing of health education level among general population and specially health workers and hemophilic patients about mode of transmission and how to prevent and control of HCV infection to reduce spread of this infection .
2. Commitments doing periodic HCV infection screening for all hemophilic patients by centers of hemophilia to make ensure safety of HCV infection among hemophilic patients also for early diagnosis to make medical treatment more effective and to prevent further spread.
3. Strictly screening of blood and its products and keep precautions during chain of transfusion until its received by patients .
4. Study effecting the quality of life for acquiring HCV infection among hemophilic patients .
5. Study of differences between the percentage of current infection by HCV infection and compare with old infection by HCV and why treatment of HCV infection was effective among some patients while other patients were not response for this treatment .

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