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Prevalence rate of Hepatitis C virus among B- Thalassemia major patients in Misan/Iraq

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Abstract

Most cases of hepatitis C virus infection occur as a result of exposure to blood by unsafe practices of injection, transfusions of blood without screen, injection drug use, and unsafe sex that may lead to blood exposure. Many countries around the world are working to increase access to appropriate hepatitis C virus (HCV) treatment for patients with transfusion-dependent hemoglobin disorders including thalassemia.

To achieve the main objective of this study, data, and information were collected about infection with the hepatitis C virus and the ages and genders of thalassemia patients in Misan City, where a sample of (663) thalassemia patients was relied upon. It was found that (72) of them were infected with the hepatitis C virus, with a percentage (of 10.86%), the high percentage was (37.25%) in the age group of (30 - 34) years, and the low percentage was (0%) in the age group of 4 yrs and less. It was also found that the hepatitis C virus rate in male thalassemic patients was (11.14%). the high rate was (32.26%) in the age group 30 - 34 years, and the low rate was (0%) in the age group 4 years and less, while the rate of hepatitis C virus in female thalassemia patients was (10.51%), and the highest rate was (45%) in the age group 30 to 34 years, and the lowest rate was (0%) in the age group 4 years and less.

Keywords: Iraq, Misan, thalassemia, hepatitis C virus

Introduction

Thalassemia is a hereditary disorder of the blood; the chain production is deficient (of one or more) of the hemoglobin. This may lead to the formation of small hypochromic red blood cells. Thalassemia is widespread in the countries of the Mediterranean basin, the Middle East, India, Southeast Asia, and some African countries (1). There are two kinds of thalassemia, alpha and beta thalassemia. These diseases cause anemia of different degrees, varying from mild to severe and life-threatening anemia. and this flaw is passed down from parents to their

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offspring. The degree and kind of thalassemia vary; some children have symptoms from birth, while others only show up within the first two years of life, People who have a single gene disease, for example, might not exhibit any symptoms. Prevalence is a key to preventing and curing many diseases (2-3). Thus, knowing the prevalence of any disease is considered a crucial step to eradicating the illness. Thalassemia is one of the most challenging problems worldwide. Moreover, it is characterized by the inability of the body to produce enough amounts of hemoglobin, the protein in red blood cells responsible for carrying oxygen throughout the body (4-5). This condition is caused by mutations in the genes that control hemoglobin production, leading to abnormal red blood cells that are easily destroyed, which in turn causes anemia and a variety of other complications (6). Disease severity can vary widely, ranging from mild cases that require little to no treatment to severe forms that necessitate regular blood transfusions and ongoing medical care. These patients are particularly vulnerable to numerous blood-borne illnesses because they occasionally require blood transfusions. One crucial viral disease is Hepatitis (7).

The hepatitis C virus is a serious viral infection that affects the liver. It is a global health concern, as the virus can lead to both acute and chronic liver disease, including cancer and cirrhosis of the liver (8-10). Primarily, the Hepatitis C virus is transmitted through contact with infectious body fluids, such as blood, semen, and other bodily fluids, often through sexual contact, sharing of needles, or from mother to child during childbirth (11-12). While many people with acute hepatitis C recover fully and develop immunity to the virus, some may develop chronic hepatitis C, which can lead to long-term health issues. Worldwide, the hepatitis virus, specifically type C, is thought to be the most often detected virus type in thalassemia patients. Nevertheless, the frequency of Hepatitis B in thalassemia patients is rarely covered in reports (13). Therefore, the current report clarified the level of Hepatitis C prevalence in the province of Misan.

Study objectives:

The study aims to determine the prevalence rate of hepatitis C virus among thalassemia patients in Misan Governorate and to determine the incidence of hepatitis among males and females according to age groups.

Significance of the study

The study gains its importance from the importance of its subject, which is the importance of hepatitis C infection and its negative effects on society. Through our continuous research, we did not find any study that addresses this subject in the city of Misan, so we took a sample of thalassemia patients and conducted the necessary analyses to determine infection with hepatitis C virus in order to help the responsible health authorities in taking the necessary measures to limit the spread of hepatitis C virus.

Patients and method

Our study was carried out on a sample of thalassemia patients in Misan City, where their number reached (663) patients. The ages of the patients were divided into age groups to determine which age groups were most affected by hepatitis C. The data was analyzed by Statistical Package for Social Sciences (SPSS), version twenty-five, and the Excel program was also used for graphical figures and charts.

Results

1. Distribution of Patients on age basis:

The shown data in the table (1) regarding the distribution of the Patients according to age categories, indicated that (5.1%) of the Patients ranged in age from 0 to 4 years, and (14.5%) of the Patients were aged from 5 to 9 years, and (20.7%) of the Patients were aged from 10 - 14 yrs, and (18.9%) of the Patients were aged from 15 - 19 yrs, and (14.3%) of the Patients were aged from 20 - 24 years, also (9%) of the Patients were aged from 25 to 29 years, and (7.7%) of the Patients were aged from 30 to 34 years, and (4.1%) of the Patients were aged from 35 to 39 years, and (5.7%) of the Patients were

aged from 40 and more, The (mean age) of all patients was 25.51 ± 9.015 yrs with a vary f 7 - 53 yrs.

2- distribution of patients according to gender:

Data in Table (2) and Figure (2) show the summary of thalassemia patients and how distributed the Patients were according to gender, revealed that the percentage of males was represented (44.5%), while the female percentage was represented (55.5%) of the study sample.

Table (1): The Repetitive Distributions and Percentage of Patients according to age

Age category	No.	Percentage%
0 to 4 years	34	5.1
5 to 9 years	96	14.5
10 to 14 years	137	20.7
15 to 19 years	125	18.9
20 to 24 years	95	14.3
25 to 29 years	60	9
30 to 34 years	51	7.7
35 to 39 years	27	4.1
40 years and more	38	5.7
Total	663	100
Mean ± SD	25.51± 9.015	
Range	7 - 53	

However, the Distribution and percentage of the Patients according to age were summarized in figure (1).

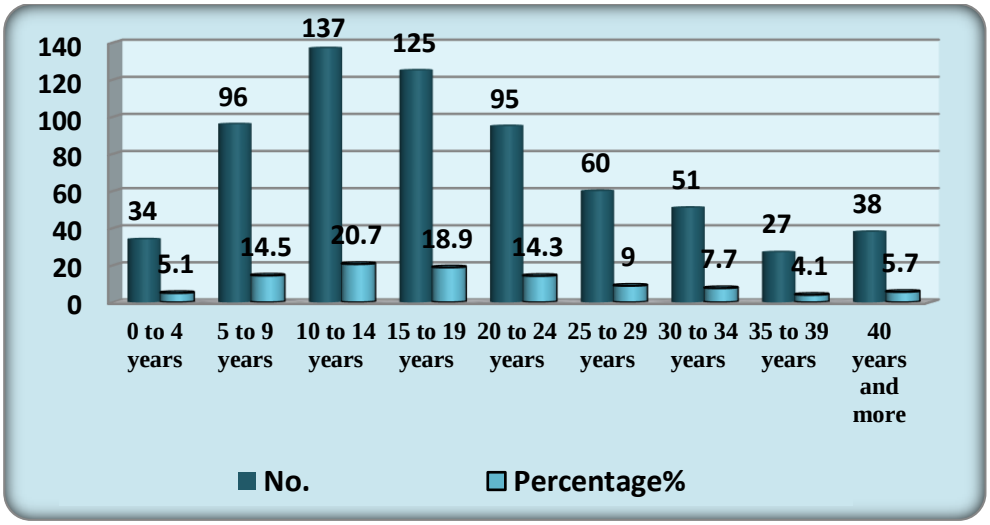

Figure (1) The numbers of HCV in thalassemia and the age correlation.

Table (2) The number of numbers of HCV in thalassemia female and male patients.

Gender	No.	Percentage
Female	368	55.5
Male	295	44.5
Total	663	100

The Distribution and percentage of the Patients according to Gender are shown in figure (2).

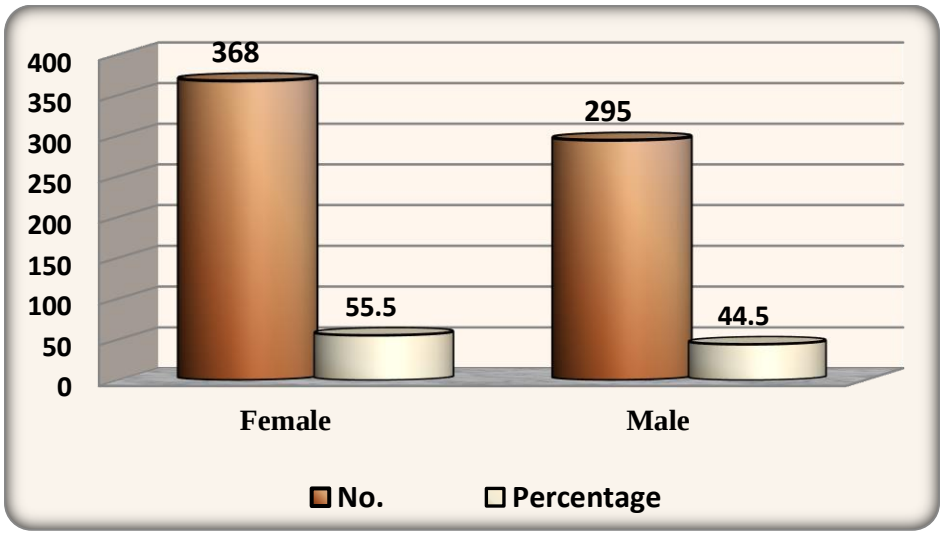

Figure (2) The number of numbers of HCV in thalassemia female and male patients.

3- Prevalence of viral hepatitis in males and females by age groups:

From Table (3), it is clear that the percentage of those infected with viral hepatitis (C) among males was (11.14%), and the highest infection percentage among males was for the age group 30-34, where it reached (32.26%), and the lowest rate was (0%) for the age group 0-4. As for females, the infection rate with viral hepatitis was (10.51%), and the highest percentage among females was for the age group 25-29, (26.09%), and the lowest rate was (0%) for the age group 0-4. The infection rate for the total sample was (10.86%), This percentage is considered low compared to the infection rates in previous studies, as the lowest infection rate with viral hepatitis among thalassemia patients was (20.49%) (6), and the highest infection rate was (45.98%) (5).

Nevertheless, the gender and age-wise number of HCV in thalassemia patients show that the highest infection was in age 30-34 and lost in 5-9 years old as demonstrated in figure (3)

Table (3): Gender and age-wise percentage of HCV in thalassemia patients.

Age	Male = 368			Female = 295			Overall (%)
	n	positive	percentage	n	positive	percentage	
0-4	13	0	0	21	0	0	0
5-9	52	1	1.92	44	2	4.55	3.13
10-14	75	3	4	62	2	3.23	3.65
15-19	64	5	7.81	61	6	9.84	8.8
20-24	62	7	11.29	33	5	15.15	12.63
25-29	37	7	18.92	23	6	26.09	21.67
30-34	31	10	32.26	20	9	45	37.25
35-39	14	4	28.57	13	1	7.69	18.52
40+	20	4	20	18	0	0	10.53
total	368	41	11.14	295	31	10.51	10.86

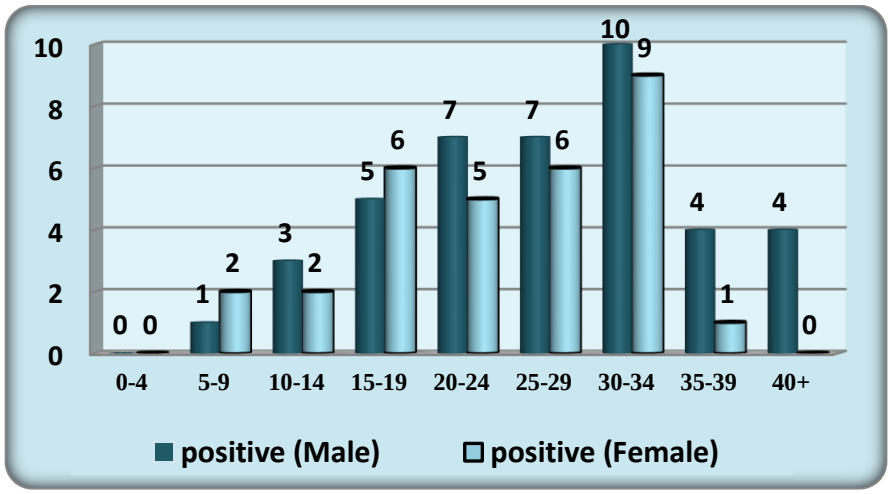

Figure (3): Gender and age-wise number of HCV in thalassemia patients

Discussion

The current study aimed to determine the prevalence of hepatitis C virus among thalassemia patients in Misan City. Since thalassemia patients need continuous transfusions of blood, which makes them more susceptible to blood transfusion infections, including hepatitis C virus (11-12).

As for thalassemia patients, their ages vary (7 - 53) years, with the highest percentage for the age group 10 - 14 yrs, reaching (20.7%), and the lowest percentage was (4.1%) for the age group 35 - 39 years, and the average age of patients was 25.51± 9.015. As for gender, the percentage of male patients was (44.5%), while the percentage of females was (55.5%) (13-15).

Regarding hepatitis C in thalassemia patients, the percentage was (10.86%) the highest percentage was (37.25%) in the age group 30 - 34 yrs, and the lowest percentage was (0%) in the age group 4 years and less. This is considered a low percentage compared to the percentage of hepatitis C infection in thalassemia patients in previous studies, as the lowest percentage was (20.49%) in Iraq and the highest percentage was (45.98%) in Pakistan (8,16,17).

As for males, the rate of viral hepatitis C in thalassemia patients was (11.14%), and the highest

rate was (32.26%) in the age group 30 to 34 years, and the lowest rate was (0%) in the age group 4 years and less. As for females, the rate of viral hepatitis in thalassemia patients was (10.51%), and the highest rate was (45%) in the age group 30 - 34 yrs, and the lowest rate was (0%) in the age group 4 years and less (18,19).

Limitations and Recommendations:

One of the limitations of the current study is its focus on only a single geographic location and this may not be displaying the HCV prevalence in Iraq for thalassemia patients. Thus, the nationwide study may be indigency to cover all states and explain the dynamics of HCV transmission among transfusion-dependent populations. More importantly, patient education on virus transmission and protection will influence and improve patient outcomes.

In conclusion, even though the current study showed that thalassemia patients are not vulnerable to HCV infection when compared with other studies. However, preventive measures, improved screening policies, and targeted healthcare interventions are the most important hygiene which will reduce HCV transmission and decline the HCV worldwide to protect this vulnerable population from bloodborne infections.

Author Contributions

The study design and performed experiments were done by Husam Al-hraishawi and Alaa Shamikh Hassan. In addition, all authors analyzed the data and wrote the manuscript.

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Ethics:

The study protocol was reviewed by the Human Ethics Committee of the College of Medicine, University of Misan, Iraq.

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Conflict of interest:

There is no conflict of interest.

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