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INVESTIGATION OF PREVALENCE HCV, AMONG THALASSEMIA PATIENTS IN THI-QAR PROVINCE SOUTHERN IRAQ

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ABSTRACT

Objective

This study aimed to detect the extent of prevalence of HCV infection among thalassemia patients, who attended a hereditary blood diseases center.

Method

In the duration of the study in the period from September 2016 to March 2017, a total of 645 patients with thalassemia in the hereditary blood diseases center, in Thi Qar have been screened and 91 patients have been shown clinical evidences with hepatitis C virus and performed the clinical examination of hepatitis C patient's samples via (ELISA) test.

Results

91 from 645 thalassemia patients were infected with HCV (14.10%), 46 males and 45 females, 94 splenectomies, 59 male and 35 females, also that blood group O was widespread and AB was least.

Conclusions

Viral hepatitis C is less prevalent in thalassaemic patients in Thi-Qar province (14.10%) from other cities. The important of the routine screening of Blood Donor Program in limited infection between blood recipients or their products.

KEYWORDS: Thalassemia, Hepatitis C Virus, Splenectomy

INTRODUCTION

The thalassemia syndrome is a heterogeneous group of inherited hemolytic anemias, characterized by deficient or absent production of one of the globin chains of hemoglobin. This leads to imbalanced globin chain synthesis, which is the hallmark of all the thalassemia syndromes.(Cappellini, 2012) This group of diseases is caused by mutations in human globin genes, which are classified into two categories: those that produce structurally abnormal globin (Hb variants) and those with impaired globin synthesis (thalassemia). (Galanello and Cao, 2011).

The term α-thalassemia trait describes a spectrum of phenotypes, spanning the clinical and haematological gap from normal individuals and those with HbH disease (steinberg *et al.*,2009). People carrying thalassemia variants are

concentrated in Southeast Asia, the Mediterranean area, the Indian subcontinent, the Middle East, and Africa (Piel and Weatherall, 2014).

The estimated number of carriers exceeds 270 million, and more than 300,000 children are born each year with one of the thalassemia syndromes, or one of the structural hemoglobin variants. The extremely high frequency of hemoglobin disorders, compared with other monogenic diseases reflects natural selection mediated by the relative resistance of carriers against (*Plasmodium falciparum)* malaria. (cappellini,2012).

While exact donor screening, testing procedures, and proper donor selection programs have large reduced transmission of HCV via transfusion of blood products, but there are still many countries where standards of blood product management do not adequately protect chronically- transfused patients especially thalassemia patients from this complication (Wonke *et al .,*1990; Alavian *et al.,*2005).

Hepatitis is inflammation of the liver. The term is generally used to refer to the diseases caused by the hepatropic viruses including the diseases hepatitis A virus (HAV) is a picornavirus, transmitted by the faecal-oral route, hepatitis B virus (HBV) belongs to the *hepadnaviridae*family of double-stranded DNA viruses and is the most common form of blood-borne hepatitis, hepatitis C virus (HCV), hepatitis D virus (HDV) hepatitis D is a circular single strand RNA satellite virus which can only propagate in the presence of the hepatitis B virus, hepatitis E virus(HEV) is the only known member of the *hepeviridae*family and hepatitis G virus (HGV), represents a major health problem worldwide. (Akiba *et al.,* 2005).HCV prevalence infection in Iraq 834 thousand (3.21%). (lavanchy,2011).Initial studies demonstrated that blood transfusions were the main transmission route that caused the HCV epidemic, especially prior to the period of HCV-contaminated blood screening in 1992 (Maclennan *et al.,*1994).

This paper is aimed to determine the prevalence of hepatitis C in the thalassaemic patients in Thi- Qar province.

PATIENTS AND METHODS

This study was carried out in hereditary blood diseases center and the central blood bank in the Thi-Qar province southern Iraq, during the period from September 2016 to March 2017 The medical records of 645 patients with thalassemia were surveyed and analyzed. All patients screened for anti-HCV.A blood sample was collected from patients with hepatitis for the purpose of confirming their HCV infection and using the Enzyme Linked Immune sorbent Assay (Elisa) kit. The following information were collected from medical record:

- Name, age and sex.
- Residence
- Blood group
- Duration and type of (thalassaemia).5- splenectomy
- Serological viral markers were screened third generation ELISAtest for anti-HCV.

RESULTS

The result of this study demonstrated that, the total number of the patients were 645, 344(53.33%) of them were male and 301(46.57%) were female .91(14.10%) of patients were HCV infected and 94 patients were splenectomy,

59 of them were males and 35 females,43 of them had hepatitis C virus. The number of patients with hepatitis C virus was 91 patients (14.1%) of the total number of patients, 46 of them were males and 45 females. Ranging in age from 1 to 49 years, the Patients were divided into six age categories, as shown in table 1.

Table 1: Distribution of Age, Sex, HCV Infection and Splenectomy

Age Groups by(Years)	Sex	Thalassemia		HCV Infections		Splenectomy	
		No.	%	No.	%	No.	%
1-5	Male	76	53.1%	0	0.00%	0	0.00%
	Female	67	46.8%	1	1.5%	0	0.00%
6- 10	Male	93	58.4%	2	2.1%	1	1.0%
	Female	66	41.5%	4	6.06%	2	3.0%
11- 15	Male	68	49.2%	3	4.41%	10	14.7%
	Female	70	50.3%	8	11.42%	5	7.14%
16- 20	Male	57	60.0%	20	35.0%	24	42.1%
	Female	38	40.0%	19	50.0%	12	31.5%
21- 25	Male	27	58.69%	15	55.55%	12	44.44%
	Female	19	41.30%	6	31.57%	5	26.31%
26- Up	Male	23	35.93%	6	26.0$	12	52.17%
	Female	41	64.0%	7	17.0%	11	26.8%
Total	**Male**	**344**	**53.3%**	**46**	**13.37%**	**59**	**17.15%**
	Female	**301**	**46.6%**	**45**	**14.59%**	**35**	**11.62%**

Chi-square=12.624, d.f. =5, P-value =0.027(<0.05) (significant)(male-female)

Chi-square=6.365, d.f. =5, P-value =0.272(>0.05) (no significant) sex –HCV

The number of patients with hepatitis Cwho received blood transfusion, before the start of routine screening of donor blood for HCV in 2005 was 71 patients (78.02%), while 20(21.98%) patients after 2005. (as show in table 2).

Table 2: Comparison between Transfusion After/Before 2005

Group	No.	%of No.	Mean±SD of the Ages
Transfusion blood before 2005	71	87.01%	88.013±13.89
Transfusion blood after 2005	20	21.9%	28.669±15.17
Total	**91**	**100.0%**	**98.439±14.70**

In the blood group, the blood group (O) had the highest number of thalassemia patients 245 (37.98%) and HCV patients (37), while the lowest group (AB) 53(8.21%) patients and (6) HCV patients. (as show in table 3).

Table 3: Blood Groups Distribution

Blood Group	Number of Patients	HCV Patients
O	245	37
B	174	21
A	173	27
AB	53	6
Total	**645**	**91**

The largest number of patients registered in the district of Nasiriyah 286 (44.34%) and the lowest number of the district of Refai 44 patients (6.82%). Show in table (4).

Table 4: Residence Thalassemia Patient's Distribution

Residence	Number of Patients
Nasiriyah	286
Suq Alshyuq	156
Shatra	114
Jebaish	45
Refai	44
Total	**645**

DISCUSSIONS

The results of this study showed that, it is rate of infection in Thi- Qar province of southern Iraq, (14.10%) via thalassemia patients were HCV infected. Many studies have been done to determine HCV infection in chronic blood receivers. In Missan province the prevalence of HCV Among thalassemia patients were 19% (Hashim *et al.*,2013). And 26.2% of thalassemic patients were infected HCV in Mousl (Mustafa,2010). In the Ibn-Albalady Center of Thalassemia and Hemoglobinopathy in Baghdad (19.9%) were reported to have HCV infection (Albahadle et al,2013). It appears that prevalence of HCV infection in Thi Qar is less than several of the cities of Iraq.

The spleen is one of the prevalent and early organs to be affected in children with thalassemia, and the degree of splenomegaly is linked to the severity of thalassemia and compliance with regular blood transfusions (Casale *et al.*,2013; Al-Salem and Nasserulla,2002). Splenomegaly and hypersplenism are common complications between children with thalassemia, necessitating splenectomy. (Al-Salem and Nasserulla, 2014) in present study, 94 patients were splencetomy, 59 of them were males and 35 females.

The number of patients with hepatitis C was 91 patients, of which 71 patients were Transfusion blood before 2005 before the application of the routine screening of blood donors, while decrease the number of patients with hepatitis C after the application of the program, to 20 patients, and this confirms the importance of the routine screening of Blood Donor Program in limit Infection between blood recipients or their products.

This agree with the study of Mustafa in Mosul (2010) and a study of Albahadle*et al* in Baghdad (2013), Valizadeh*et al* (2015) in Iran.

Present study indicated that, the prevalence of HCV infection increaseswith increasing age, the highest rate of infection was in the age group (21-25) amounted (45.6%), due to increased prospect of exposure to infected blood or increase hesitation of admission to hospital, with increase possibility to exposure to contamination device or material. This result was documented in other studies (Ghafourian*et al.*,2009.).

The red blood cells (surfaces) contains different polysaccharides and proteins called (blood group antigens) plays a vital role in transfusion safety, understanding genetics, inheritance pattern, researching population migration patterns, and resolving certain medico-legal issues(Anonymous,2012; Lease and Bazuaye , 2008), Some blood groups can doing as a receptor and ligand forviruses, bacteria or parasites. The possible pathogenesis for this capability is that as numerous organisms that may bind to polysaccharide on cells and soluble blood group antigens may prevent this binding (Gerald and Douglas 2000).

In table (3) observed that blood group O was widespread and AB least this result is in agreement with other studies about distribution of the ABO blood groups in kurdstan northern Iraq (Mohamad, 2010),

(Haider and Almaliki, 2015) in Najaf province, (Salehand Abood,2016) in Baghdad, as well as (Aljooani *et al.,* 2012) in Iraq and (Naeini *et al*.,2010) in Iran, about relationship viral hepatitis with ABO.

In the present study, we observed that, the elevated number of patients was recorded in the districts of Nasiriyah, Suq al-Shuyukh and Shatrah, respectively, while the minimum number was recorded in the districts of Jebaish and Refa'i, respectively. Perhaps, this is because, we remote these districts from the center of the province or their consultion to nearby provinces such as Basra or Wasit or the use of folk medical procedures.

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