Prevalence of Hepatitis B, Hepatitis C and Human Immunodeficiency Virus infection among Thalassemia patients in Ninavha Governorate/Iraq

انتشار الإصابة بفايروس التهاب الكبد نمط B و C وفايروس العوز المناعي البشري بين مرضى الثلاسيميا في محافظة نينوى/ العراق

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Abstract

Regular blood transfusion in patients with hereditary hemolytic anemia, particularly thalassemia, has improved their overall survival, but carries a definite risk of acquisition of blood-borne virus infection. Between march 2012 until May 2012, a total of 480 blood samples were collected from B thalassemia major patients attending thalassemia center in Ibn-Alatheer hospital in Ninavha governorate. out of 480 patients 273 (57%) males and 207 (43%) females. 50 out of 480 (10.4%) patients were found Anti- HCV positive, 44 out of 50 (88%) were found HCV RNA positive among Anti- HCV positive patients, 2 out of 480 (0.4%) were found HBSAg positive, and no any Case were reported from HIV positive among patients. The prevalence of HCV infection is much higher compared to HBV and HIV infection due to possibly infected blood transfusion among thalassemia major patients.

Key words: Hepatitis B, C, Human Immunodeficiency, Thalassemia

المستخلص:

يحسن نقل الدم المنتظم حياة مرضى فقر الدم الوراثي وخاصة مرض الثلاسيميا ولكنه يحمل خطورة الإصابة بالفيروسات المنقولة عن طريق الدم. جمعت 480 عينة دم من مرضى الثلاسيميا الكبرى المراجعين لمركز الثلاسيميا في مستشفى ابن الأثير في محافظة نينوى للفترة بين آذار – أيار لسنة 2012. شملت الدراسة 480 مريضاً 273 (57%) ذكوراً و 207 (43%) إناثاً, ظهر 50 (10,4%) مريضاً موجباً لفحص anti-HCV و 44 (88%) مريضاً موجب لفحص HCV RNA من بين المرضى الموجبين لفحص anti-HCV و 2 (0,4%) مريضاً موجباً لفحص HBSAg بينما لم تسجل أي إصابة بفايروس العوز المناعي البشري بين مرضى الثلاسيميا في محافظة نينوى.

الكلمات المفتاحية: التهاب الكبد نمط B و C، وفايروس العوز المناعي البشري، الثلاسيميا

Introduction

Regular blood transfusion in patients with hereditary hemolytic anemia, particularly thalassemia, has improved their overall survival, but carries a definite risk of acquisition of blood- borne virus infection, especially viral hepatitis, vaccination a giants hepatitis B has efficiently been able to restrict the transmission of hepatitis B virus (HBV) infection, however, post transfusion transmission of hepatitis C virus (HCV) has still remained a major health concern in thalassemia patients[1], in addition, since marked liver iron over load, which is often investable in patients on regular blood transfusion, and HCV infection have been shown to have a potentiating effect on fibrogenesis in thalassemia patients[1]. Chronic hepatitis C has been indicated as a progressive disease that dramatically increase the morbidity and mortality rates among these patients due to liver failure or heaptocellular carcinoma[2].

HCV is responsible for 80-90% of post transfusion hepatitis in patients who recied blood transfusion prior to the introduction of routine blood products screening in1990 [3].Although the compulsory screening of donated bloods has decreased the incidence of both post transfusion HBV and HCV [4].

Amis of study

The aim of this study was to determine the prevalence of HBV, HCV and HIV infection among thalassemia major patients in thalassemia center in Ibn- Alatheer hospital in Ninavha Governorate.

Patients and Methods

All 480 thalassemia patients who are on regular blood transfusion at least every 2-8 week in the Ibn-Alatheer day care center recruited into this study. Informed consent was taken from the parents and from the patients who are above 18 years of age. The patient's blood samples were taken and the following tests were performed using standard methods.

Serological tests

The serological analyses were performed in Virology unit in Mosul central blood bank. Anti-HCV anti bodies were screened using third generation ELISA assay (plasmatic, UK), while the HBSAg and anti- HIV anti bodies using qualitative third generation micro particle enzyme immunoassay (plasmatic, UK).

Molecular biology study

The quantitative HCV RNA was performed in PCR center in Ibn- Alatheer hospital using (q tower, analytic jena, Germany).

Statistical analysis:

The data was entered and analyzed using Spss9 software. The sero prevalence for infection by each virus was calculated.

Results

The demographic data from 480 patients included in this study was shown in Table (1).

Table (1): Characteristics of thalassemia patients screened for transfusion related viral infection.

Characteristics	No. of patients n= 480	%
Sex		
Male	**273**	**57**
Female	**207**	**43**
	Age group (years)	
1-5	**60**	**12.5**
6-10	**150**	**31.2**
11-15	**100**	**20.8**
16-20	**90**	**18.90**
>20	**80**	**16.6**
Total	**480**	**100%**

There were 273 (57%) males, and 207 (43%) females. Sixty patients between 1-5 years, 150 between 6-10 years, 90 between 16-20 years. And 80 above twenty years of age.

The sero prevalence of HCV, HBV and HIV amongst this group of 480 multiple transfused thalassemic was shown in Table(2).

Table(2): Sero positivity of HBV, HCV and HIV in thalassemia patients.

Viral marker	No. of positive Results	%
Anti- HCV	**50/480**	**10.4**
HCV RNA	**44/50**	**88**
HBSAg	**2/480**	**0.4**
Anti-HBSAg	**398/480**	**83**
Anti- HIV & 2	**0/480**	**0**

Fifty out of 480 (10.4%) patients had positive anti-HCV while forty four out of fifty (88%) anti- HCV positive patients had positive result for HCV RNA with viral load more than 150,000 copies /ml. two out of 480 patients tested positive for HBSAg, whilst none tested positive for HIV.

Discussion:

Transfusion transmitted infection (TTI) have always been a major problem in multi transfused patients in past. As the magnitude of problem was always a topic for various studies, with advent of improved technology and universal screening of blood, the risk is decreased but surely present, HIV transfusion through donated blood has become very rare after testing became mandatory for HIV-1 on 1989 and HIV-2 1993 [5].

This study is the most comprehensive to data on ascertaining the sero prevalence of transfusion related viral infections amongst a group of thalassemia in Ninavha Governorate/Iraq, One of the most revealing data is the fact that 10.4% of the patients studied tested positive for anti-HCV antibodies.

Studies from other countries where shown that the thalassemia is common public health problem and showed varying rates of HCV sero positivity, for example, Egypt, Italy and India have sero prevalence rate of 75%, 44% and 16.7% respectively [6,7,8].

The percent of anti- HCV in our study lees than that from another study which the risk of acquiring HCV infection is believed to be dependent on the prevalence of HCV amongst blood donors. Hence blood and blood donors are now routinely screened for HCV, studies have shown that the use of the third generation anti- HCV screening tests on blood donors can successfully reduce the incidence of post transfusion hepatitis from 13.8% to 2.7% [8]. We found that most patients who have positive anti- HCV antibodies started receiving regular blood transfusion prior to 1995, suggesting that HCV screening in blood donors could prove vital in the prevention of HCV infection. Positivity for anti-HCV anti bodies does not equate to active infection as there is the possibility of false positivity. The active infection of HCV in our study when using PCR technique were 88% the rest was false positive of results only two patients were positive for HBSAg giving sero prevalence rate of 0.4%. This is comparable to rates from other countries, for example 2.5% in France and 5% in Italy [10].Our results also indicate that 83% of patients tested had positive for anti- HBSAg, the rest of patients should be vaccinated. It's reassuring to Note that none of patients tested positive for HIV.

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