Prevalence of Hepatitis B & Human Immundifficiency Virus Among β Thalassemic Patients in Diyala

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Abstract

Background: Hepatitis B and human immundifficiency virus (HIV)infection is a major health problem in multi-transfused patients and in general population world wide .Vaccination with hepatitis B vaccine and routine screening of transfused blood are mandatory measures for prevention.

Aim: To identify the prevalence of hepatitis B and human immundifficiency virus infection among thalasemic patients in Diyala and to show some relations to some personal factors.

Results: High prevalence of hepatitis B among Thalassemic patients (P value =0.000), Incompletely vaccinated patients are liable for infection even when received screened blood (P value =0.000). There is no patient with positive test for human immunodeficiency virus (P value =0.0000). There is no significant association with splenectomy and number of blood transfusions during last year.

Conclusion: High prevalence rate of hepatitis B among Thalassemic patients, in comparison with the rate registered in other countries.

Key words: Hepatitis (B); HIV; β -Thalasimea.

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Introduction

Hepatitis B carrier rate varies widely from 0.01 % to 20% through the world [1].

Transfusion-dependent patients are more prone to acquiring various transfusion-transmitted infections such as hepatitis B virus (HBV) and human immunodeficiency virus (HIV)[2]. The risk for hepatitis B and HIV infection can be reduced with screening of blood but cannot be eliminated. For example the residual risk for HBV was estimated to be 9.78 per million donations in Spain [3] and 1 per 400,000 in France [4], while the residual risk For HIV was estimated to be 2.48 per million donation [1] in Spain and 1 per 1,400,000 million donations in France [2] .

In 1990, hepatitis B vaccine was introduced in Iraq as part of the expanded program on immunization [5]. Prevalence of hepatitis B among blood donors in Iraq was 3.6% in

1973[6] and 2.5% in 1986, these figures dropped to 1.2% in 2001[7]. Prevalence varies from 2% to 11% in India[8] and 2.6-

According to the percentage of HBV chronic carriers among the adults in the general population, the countries were classified into three categories as low endemicity (<2%), intermediate endemicity (2%-5%), and high endemicity (>5%) [11] . According to this classification Iraq is classified as low endemicity country. In context of low endemicity of hepatitis B in Iraq and of routine screening of blood, we carried this study to identify its prevalence and to identify the prevalence of HIV infection among thalasemic patients receiving multiple blood transfusions in Diayla province and to show some relations to some personal factors.

Material and Methods

Survey was conducted from the 1st January 1999 to the 31st Dec. 2000 in thalasemic unite at Al-Battol Hospital in Diyala governorate. The sample of the study consist of 110 thalassemic patients diagnosed

as β-thalassemia major and intermedia by Hb electrophoreses which represent all thalassemic patients registered at thalassemia

10% in Jordan[9] , 8- 10.1% in Egypt [10] 2% to 5% in UAE and 7.4% to 17% in Saudi Arabia[9].

center. Data sheet was designed for collection of information for patients enrolled in the study these information were age ,gender , Hepatitis B vaccination status, No. of times blood needed during last year ,whether splenectomized or not , and virology test results regarding Hbs Ag and HIV ,using 3d generation ELISA technique (Biotest). We did not consider the total number of pints of blood received because of lack of registration for old patients before their registration to thalassemic unites.

Statistical methods used in analyzing and assessing results include:

Descriptive statistics and Inferential statistics using fissure exact probability test (F.E.P) and Qi square $\chi 2$-test . Results are considered as highly significant at $P<0.01$, significant results at $P<0.05$ and non significant results at $P>0.05$.

Results

Table 1: Prevalence of hepatitis B and HIV and observed frequencies, percentages and cumulative Percent of some related variables.

Some related variables	Groups	Frequency	Percent	Cumulative Percent	C.S. P-value
Age Group	0 - 4	32	29.1	29.1	χ^2-test P =0.000 HS(*)
	5 - 9	40	36.4	65.5	
	10 - 14	18	16.4	81.8	
	15 - 19	10	9.1	90.9	
	20 and more	10	9.1	100	
Gender	Male	65	59.1	59.1	B-test P=0.028 S
	Female	45	40.9	100	
Splenectomy	Yes	43	38.2	38.2	B-test P=0.070 NS
	No	67	61.8	100	
No of Blood Transfusions during last year	5 - 9	19	17.3	17.3	χ^2-test P =0.000 HS
	10 - 14	57	51.8	69.1	
	15 - 19	19	17.3	86.4	
	20 and more	15	13.6	100	
HB Vaccine Status	Not vaccinated	20	18.2	18.2	χ^2-test P =0.199 NS
	Vaccinated with 1 dose	29	26.4	44.5	
	Vaccinated with2 doses	24	21.8	66.4	
	Vaccinated with3 doses	37	33.6	100	
	Total	110	100		
HBS Ag Status	Positive	7	6.4	6.4	B-test P=0.000 HS
	Negative	103	93.6	100	
	Total	110	100		
HIV	Negative	110	100	100	B-test P=0.000 HS
	Positive	0	0		

(*) HS (Highly Sig. at P<0.01) , S (Sig. at P<0.05) , NS (Non – Sig. at P>0.05)

Table (1) shows general characteristics of the sample. The prevalent age group is 5-9 years of age (36.4%). Males constitute 59.1% of the sample. 61.8% of cases are not splenectomized. 51.8% of cases receive 10-14 blood transfusions /year. 33.6% of cases are fully vaccinated. Prevalence of Hepatitis B is 6.4% prevalence. No one is positive for HIV Ab.

Table 2: distribution of HBS Ag according to gender.

Gender	HBS Ag +ve	%	HBS Ag-ve	%	Total	%	C.S. P- value
Male	5	4.5	60	54.5	65	59.1	F.E.P.
Female	2	1.8	43	39.1	45	40.9	P=0.396(Non Sig.)
Total	7	6.4	103	93.6	110	100	C.C.=0.065 P=0.493 (Non Sig.)

Table (2) Shows that prevalence is higher among males (4.5%) with non significant association.

Table 3: distribution of patients with HBS Ag according to age.

Age in years	HBS Ag +ve	%	HBS Ag-ve	%	Total	%	P value
0-4	1	0.9	31	28.2	32	29.1	χ^2=4.5
5-9	2	1.8	38	34.5	40	36.4	P=0.399
10-14	1	0.9	17	15.5	18	16.4	(Non Sig.)
15-19	1	0.9	9	8.2	10	9.1	
20 and more	2	1.8	8	7.3	10	9.1	C.C.=0.188
Total	7	6.4	103	93.6	110	100	P=0.39 (Non Sig.)

Table (3) shows that hepatitis B is distributed in all age groups younger age groups are similarly affected as older age groups.

Table 4: distribution of patients with HBS Ag in relation to splenectomy**.**

Splenectomy	HBS Ag +ve	%	HBS Ag-ve	%	Total	%	C.S. P value
Yes	5	4.5	38	34.5	43	38.2	F.E.P.
No	2	1.8	65	59.1	67	61.8	P=0.061(Non Sig.)
Total	7	6.4	103	93.6	100	100	C.C.=0.170 P=0.07 (Non Sig.)

Table (4) shows that HB is more prevalent in splenectomized patients.

Table 5: distribution of patients with HBS Ag in relation to No. of blood transfusions during last year.

No. of blood Transfusions / last year	*HBS Ag +ve*	*%*	*HBS Ag-ve*	*%*	*Total*	*%*	*P value*
5 - 9	1	0.9	18	16.4	**19**	**17.3**	χ^2=2.594
10 - 14	4	3.6	53	48.2	**57**	**51.8**	P=0.459
15 - 19	0	0	19	17.3	**19**	**17.3**	(NS)
20 and more	2	1.8	13	11.8	**15**	**13.6**	C.C.=0.152
Total	7	6.4	103	93.6	110	100	P=0.459 (NS)

Table (5) shows that HB is more prevalent in 10-14 blood transfusion during year followed by those 20 or more.

Table 6: distribution of patients with HBS Ag in relation to vaccination status.

Vaccination status	HBS Ag +ve	%	HBS Ag-ve	%	Total	%	P value
Not vaccinated	0	0	20	18.2	20	18.2	χ^2=20.88 P=0.000 (HS) C.C.=0.319 P=0.000 (HS)
One dose	7	6.4	22	20	29	26.4	
2 doses	0	0	24	21.8	24	21.8	
3 doses or more	0	0	37	33.6	37	33.6	
Total	7	6.4	103	93.6	110	100	

Table (6) shows that all infected patients had received just one dose of vaccine. It is shown that also 18.2% patients had not been vaccinated. 37 patients were fully vaccinated and all of them are negative for HBV infection (HS).

Discussion

Younger age groups and males constitute the major groups of patients in this study(HS) but the study did not show relation between HBV infection and age and gender .Thalasemia runs in families with autosoml mode of inheritance but high prevalence among males make our suggestion to study the routine follow up and mortality rate among females compared to males to verify these findings.

The prevalence of hepatitis B Among thalassemics infection in form of HBS Ag positivity in this study was 6.4% which is considered high, especially in the presence of low donor prevalence and routine screening of blood, one important explanation for this is the incomplete vaccination among the study group. In other countries the prevalence of hepatitis among thalassemic patients is 0.53% -1.5% in Iran[12,13] , 5·7% -6.6 in India [14,15], 8% in eastern Sicily (Italia) [16], 0.75% in Turkey [17], 22.4% Malaysia [18]. Prevalence in other places in Iraq is 9% among thalassemic patients from different places in Baghdad and governorates[19] ,1.75% in Ibn albaladi hospital in Baghdad [20], 10.4 as estimated in AIDS &Hepatitis research and studies center in Baghdad [21] and 1.5% Thiqar [22] .

There was no relation to number of transfused blood finding in this study and in another study in Sicily in Italy , while the number of blood transfusions was associated with hepatitis C infection in the later study

[16],Hepatitis infection in this study is not associated with age groups or with number of blood transfusions per last year but there is highly significant association with vaccination status in form of that no one who gets two or three dose of vaccine catch the disease, This finding indicate the role of vaccination in protection against the disease.

Screening of blood for HBsAg reduces the risk of transmission, but cannot eliminate it entirely, because of the window period and low titer HBV infections, with HBV variants [23]. Therefore, it is necessary to vaccinate all thalassemia major patients for hepatitis B infection.

There was no HIV positive patient among study group this finding was also noticed in other studies conducted in Iraq [19,20] Iran [13], Turkey [17], While it was 2.5% in India [24].

We conclude that there is high prevalence of hepatitis B among Thalassemic patients, incompletely vaccinated patients are liable for infection even when received screened blood. There is no positive patient who test positive for HIV.

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