The prevalence of hepatitis – B and C serological markers among patients with thalassaemia in Mosul

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ABSTRACT

Background: Thalassaemic patients are known to have higher risk of developing hepatitis B and C than normal individuals .The aim of this paper is to determine the prevalence of hepatitis B and C among thalassaemic patients and to pinpoint its association with personal medical fators in the province of Mosul.

Methods: From August ٢٠٠٣ to March ٢٠٠٤ ,٦٢٦ patients under the age of ٢٠ years with thalassaemia were surveyed and screened for hepatitis HBs Ag and anti-HC Antibody (Ab) in the Thalassaemia Center in Ibn AL-Atheer Children Hospital in Mosul .

Results: ٥.٥٩% of the patients have positive HBs Ag (١.٩٢% have combined hepatitis B and C), ٢٨.١٢% have anti HC-Ab. The prevalence of hepatitis B and C was higher in patients older than ١٥ years.

Conclusion: Viral hepatitis is prevalent in thalassaemic patients in Mosul. Seropositivity is significantly related to age, vaccination, family history of hepatitis, history of splenectomy; number of blood transfusion per year,and severity of thalassaemia.

Keywords: Thalassaemia, HBs Ag, HCV, serologic markers-prevalence.

الخلاصة

هدف الدراسة: تهدف الدراسة الى معرفة مدى انتشار مرض الكبد الفيروسي نوع B و C في مرضى الثلاسيميا

طريقة العمل تمت مراجعه الملف الطبي ٦٢٦ مريض بداء الثلاسميا في مركز الثلاسميا في مستشفى ابن الأثير للفتره من اب ٢٠٠٣ إلى آذار ٢٠٠٤ . وقد استخدم فحص (ELISA) للكشف عن HBs Ag واستخدم الجيل الثاني لفحص ELISA للكشف anti-HCV ab **النتائج** وقد تبين من النتائج ان ٢٦.٢% من المرضى كانوا يحملون الأجسام المضاده لالتهاب الكبد الفيروسي. ٣.٦٧ من المرضى كانوا يحملون الأجسام من التهاب الكبد الفايروسي من نوع B و١.٩٢% تمتلك عدوى مركبه من التهاب الكبد نوع B,C وقد وجد ان العوامل ألاتيه لها أهميه بالغة في حدوث التهاب الكبد الفايروسي عند مرض الثلاسميا وهي : تقدم العمر ، تاريخ العائلي للمرض ، ورفع الطحال أو عدم رفعه ، عدد تكرار نقل الدم وأخيرا نوع (الشده) للمرض

الاستنتاج: ان برنامج التحصين ضد مرض التهاب الكبد الفايروسي كان فعال جدا في تقليل حدوث الالتهابات الفيروسيه .

B-thalassaemia constitutes one of the most serious health problems worldwide, accounting for a major number of childhood deaths per year primarily in regions of the world endemic for malaria.

Viral hepatitis continues to be a major health problem in developed and developing countries. The hepatitis B virus is globally distributed among humans. Though HBs Ag has been found in other primate, human remain the principal reservoir[١] HBV alone is estimated to have infected ٤٠٠ million people throughout the globe, making HBV one of the most common human pathogens.[٢]

Almost all of the parentrally acquired cases of what was previously known as non-A, non-B hepatitis.[٣] The virus is transmitted Primarily by blood and blood product, the majority of infected individuals have either received blood transfusion prior to ١٩٩٠ or have used intravenous drugs.

Little data are available on the seroprevalence of, and risk factors for hepatitis B and C viruses (HBV and HCV) infection in thalassaemic patients in Mosul.

The aim of this paper is to determine the prevalence of hepatitis B and C in the thalassaemic patients under the age of ٢٠ in the province of Mosul.

Patients and Methods

This study was carried out in the Thalassaemic center in Ibn Al-Atheer Children Hospital in Mosul during the period from August ٢٠٠٣ to March ٢٠٠٤. The medical records of ٦٢٦ patients with thalassaemia were surveyed and analyzed. All patients screened for hepatitis HBs Ag and anti-HC Antibody (Ab). The following data were collected from each medical record:

١. Name, age and sex.

٢. Residence, family history of hepatitis and past surgical history.

٣. Vaccination history whether complete or incomplete.

٤. Frequency of blood transfusion per year (monthly or more than once per month).

٥. Duration of disease (B-thalassaemia) and type of thalassaemia.

٦. Serological viral markers were screened second generation ELISA test for anti-HCV Ab and by ELISA test for HBs Ag which were done once for each patient.

The results were analyzed using the Chi-square (X^2), P<٠.٠٥ was considered significant.

Results

The prevalence of anti-hepatitis C Ab and HBs Ag in thalassaemic patients are significantly high. ٥.٥٩% of the patients had positive HBs Ag (١.٩٢% have combined hepatitis B and C), ٢٨.١٢% have anti HC-Ab. The prevalence of hepatitis B and C was higher among older age group (older than ١٥ years) (P<٠.٠٠٠١).

Seropositivity is significantly related to age, vaccination, family history of hepatitis, history of splenectomy, frequency of blood transfusion per year, and severity of thalassaemia.

The sex has no significance in the prevalence of hepatitis B and C in thalassaemic child.

Vaccination against hepatitis B was crucial factor that affect the rate of prevalence of hepatitis; ١١.٢٦% of the patients were not vaccinated and only ٠.٣٧% of the patients vaccinated (p <٠.٠٠٠١). Thalassaemic patients with splenectomy have higher rate of hepatitis B and C prevalence (٥٢.٧٤%) in comparison with those without splenectomy (١٩.٠٢%) (p<٠.٠٠٠١). There was clear and evident relationship between the frequency of transfusion and prevalence of hepatitis B and C with more than ١٢ blood transfusion per year. ٤٢.٠٢% are hepatitis positive while only (٢٠.٦٧%) with less than ١٢ per year where positive.

The type (severity) of thalassaemic has strong relation to the prevalence of hepatitis B and C, (p<٠.٠٠٠١) were it was found that there is ٢٣.٩٢%of thalassaemia major have positive hepatitis; as ٢.٢٥% of patients with thalassaemia intermedia have positive hepatitis. With disease duration for more than ٦ years (i.e. before screening program application) ٤٦.٣١% of them where hepatitis positive and the disease for less than ٦ years (i.e. after screening program application) ١٤.٦٣% of them where hepatitis B positive.

The total number surveyed were ٦٢٦; ١٦٤ (٢٦.٢٠%) of them were hepatitis C positive, ٢٣ patients (٣.٦٧%) were hepatitis B positive and ١٢ patients (١.٩٢%) had both hepatitis B and C as shown in the Table ١. Anti-HC Ab were positive in ١٦٤ patients (٢٦.٢٠%).

There is a direct relationship between the age and the seropositvity to anti-HCV Ab and HBs Ag. (p<٠.٠٠٠), DF=٣ (very highly significant) were ٦٩.٥٦% of the hepatitis positive patients where older than ١٥ years patients with (١٠.٨٧% for hepatitis B, ٥٠% for hepatitis C and ٨.٦٩% for co-infection with hepatitis B and C) while only ١٤.٠٤% of the patients younger than ٦ year. There is no significant relation between sex and the prevalence of hepatitis B and C.

There is no relation between the residence and the prevalence of hepatitis B and C.

The interfamilial transmission of hepatitis B and C in thalassaemic patients was highly significant; where ٦٢.٣٧% of the patients had positive family history of hepatitis while only ١٨.٨٦% had negative family history of hepatitis (p<٠.٠٠٠١).

There is highly significant relation between vaccination and the prevalence of hepatitis B

seropositivity, hepatitis B was positive in ١١.٢٦% of those patients who were

Table ١: Thalassemic patients with hepatitis B and C.

	Hepatitis B Number	Hepatitis C Number	Hepatitis B and C Number
Age(year)	No.	No.	No.
٠-٥	٥	٢٧	١
٦-١٠	٦	٤٧	٣
١١-١٥	٧	٦٧	٤
١٦-٢٠	٥	٢٣	٤
Total	٢٣	١٦٤	١٢
Sex			
Male	١١	٩٠	٩
Female	١٢	٧٤	٣
Total	٢٣	١٦٤	١٢
Residence			
Urban	١٠	٧٥	٥
Rural	١٣	٨٩	٧
Total	٢٣	١٦٤	١٢
Family history positive	١٣	٩٣	١٠
Family history nagative	١٠	٧١	٢
Hepatitis B Vaccination status			
Positive	١		
Negative	١٧		
Incomplete	١٧		
Splenectomized patient	١٤	١٠٢	٩
Non-splenectomized patient	٩	٦٢	٣
Thalassemia type			
Major	٢٣	١٦٠	١٢
Intermediate	٠	٤	٠
Transfusion frequency	٦		
<١٢ per			
>١٢ per	٦	٥٣	٣
	١٧	١١١	٩
Disease duration			
٠-٥ year	٦	٣٥	١
>٦ year	١٧	١٢٩	١١

not vaccinated while only ٠.٣٧%of thalassaemic patients were completely vaccinated regime (p<٠.٠٠٠١).

There is highly significant relation between splenectomy and the prevalence of hepatitis B and C, where ٥٢.٧٤% of splenectomized patients had positive hepatitis (٥.٩١% with hepatitis B, ٤٣.٠٣% with hepatitis C and ٣.٨% with co-infection) while only ١٩.٠٢% of the non-splenectomized patients were hepatitis positive (p<٠.٠٠٠١).

There is highly significant association between the type (severity) of thalassaemia and the seropositivity of hepatitis B and C, where the prevalence of hepatitis was high in thalassaemia major (٢٣.٩٢%) while only ٦.٢٥% in thalassaemia intermedia had hepatitis (p<٠.٠٠٠١).

The seropositivity for hepatitis B and C is significantly related to the frequency of blood transfusion per year, where ٢٠.٦٧% of the hepatitis positive patients received ١٢ or less transfusion per year (٢% for hepatitis B١٧.٦٧% for hepatitis C and ١% for co-infection) while ٤٢.٠٢% of the hepatitis positive patients received more than ١٢ transfusion per year (٥.٢١% with hepatitis B, ٣٤.٠٥% with hepatitis C and ٢.٧٧% for co-infection (p<٠.٠٠٠١).

There is highly significant relation between the prevalence of hepatitis B and C and the duration of the disease, where ٤٦.٣١% of the patients whom disease duration more than ٦ years (٥.٠١% with hepatitis B, ٣٨.٠٥% with hepatitis C and ٣.٢٤% with co-infection) while only ١٤.٦٣% of the patients with the disease less than ٦ years (p<٠.٠٠٠١).

Discussion

The prevalence of hepatitis B and C was higher in patients older than ١٥ years in Mosul and also in Taiwan.[٤] The residence was not risk factor for hepatitis in Mosul and also in Egyptian.[٥]

Vaccination against hepatitis B was crucial factor that affect the prevalence of Hepatitis and this has been shown previously.[٦] Family history was a significant risk factor (p-value<٠.٠٠٠١) this has also been shown previously.[٦,٧,٨] The positive relationship between the severity of thalassaemia, the duration of the disease and frequency of transfusion and prevalence of hepatitis B and C was shown in this study and previous studies.[٤-١١]

In conclusion, seropositivity is significantly related to age, vaccination, family history of hepatitis, history of splenectomy, number of blood transfusion per year; and severity of thalassaemia.

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