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HEPATITIS VIRUS INFECTION IN REPEATEDLY TRANSFUSED THALASSEMIA PATIENTS

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ABSTRACT

Patients of thalassemia who are conventionally treated by a regular transfusion regimen, are at a risk of developing transfusion transmitted infections, including hepatitis. The present study was conducted to evaluate the prevalence of hepatitis virus infection in repeated transfused thalassemia patients. A total of 83 patients of thalassemia who had received at least 10 transfusions were tested for HBs Ag, anti HBs and anti-HCV using ELISA. Amongst these patients, HBs Ag, anti HBs and anti HBC were detected in 1.2%, 26.5% and 12% patients respectively. the prevalence of HBV and HCV infection were in agreement with the findings in other study.

Key words: *Thalassemia, repeated transfusion, Hepatitis viral infection*

INTRODUCTION

Thalassemias are inherited disorders of hemoglobin (Hb) synthesis. Their clinical severity widely varies, ranging from asymptomatic forms to severe or even fatal entities. Worldwide, 15 million people have clinically apparent thalassaemic disorders. Reportedly, disorders worldwide, and people who carry thalassemia in India alone number approximately 30 million. These facts confirm that thalassemias are among the most common genetic disorders in humans; they are encountered among all ethnic groups and in almost every country around the world. Thalassemia major (Cooley anemia) is characterized by transfusion-dependent anemia.¹

The management of thalassemia major essentially comprises of regular blood transfusion and a life long iron-chelation therapy. Thalassemia patients are prone to develop complication such as transfusion transmitted infection particularly hepatitis virus infection.^{2,3}

In developed country, prevalence of Hepatitis B infection in blood dependent patients are varies from 0.53% in Shiraz Iran to 22,5% in Palestine.^{4,5} Meanwhile Hepatitis C infection prevalence varies from 15.7% to 37.9%.³⁻⁵

In case of hepatitis B, since an effective vaccine is available, immunization against this virus before transfusion management is started would effectively protect against transfusion transmitted hepatitis B. However, since no

such vaccine is so far available against hepatitis C, the only effective protective measure against this virus is provision of HCV negative blood for transfusion. Therefore, screening of transfused blood for HCV in not only mandatory, but also it is essential to use the most sensitive screening methods with least possible false-negative results.

The aim of this study was to look into the prevalence of Hepatitis virus infection in repeated transfused thalassemia major patients in our setup.

PATIENTS AND METHODS

This study was conducted at Hematology Oncology Outpatient Clinic, department of Pediatric, dr Soetomo Hospital Surabaya from June to November 2009. A total of 83 cases of Thalassemia that have been followed up routinely and had been transfused, as a part of their management, irrespective of their age, sex, and history of jaundice were included in this study. A detailed clinical data was noted included age, interval of transfusion, Hemoglobin level and Hepatitis B immunization status.

All the patients who met the inclusion criteria tested for HBs Ag, anti-HBs and anti-HBC using ELISA. Informed consent was taken for each patient involved. About five ml of patient's blood sample was collected by a clean venepuncture. Positive result of HBs Ag was

considered as Hepatitis B infection and anti-HCV positive was considered as Hepatitis C infection. The result was reported descriptively and expressed as mean \pm standart deviation (SD).

RESULT

In a total of 83 patients of thalassemia enrolled the study, 49 were males and 34 were females. The age at the time of this study ranged between 2 yrs and 18 yrs with a mean age of 10.6 yrs. The interval between transfusions varied between 2 to 6 weeks in different patients with Hemoglobin level ranged between 4,4 – 12 g/dL with mean 7,62 g/dL.

HBs Ag were detected in 1 (1,2%) patient and Anti HBs antibodies were detected also in 22 (26,5%) patients. Eleven (13%) of patients have no history of Hepatitis B immunization. Anti-HCV antibodies were detected in 10 (12%) of patients. All of these patients have no history of jaundice and clinical evidence of hepatitis viral infection before entered the study. The characteristic of patients were summarized in tabel 1.

Table 1. Characteristic of Patients with Non Hepatitis Infection, HBV Infection and HCV Infection

	Non Hepatitis infection (n= 72)	HBV infection (n=1)	HCV Infection (n=10)
Sex			
M	44 (61.1%)	1	6 (60%)
F	28 (38.9%)	-	4 (40%)
Age (years)	10.6 \pm 3.6	8	10.8 \pm 4.3
Interval of transfusion (weeks)	3–6	4	2–6
History of HBV vaksinasian			
Yes	41 (56.9%)	-	1 (100%)
No	31 (43.1%)	1	-
Hemoglobine level (g/dL)	7.6 \pm 2.4	8.9	8.1 \pm 2.6

DISCUSSION

Patients with severe thalassemia require medical treatment, and a blood transfusion regimen was the first measure effective in prolonging life. In the process of experimenting with blood transfusion, it was found to provide patients with many benefits, including reversal of the complications of anemia, elimination of ineffective erythropoiesis and its complications, allowance of normal or near-normal growth and development, and extension of patients' life spans. Blood transfusion should be initiated

at an early age when the child is symptomatic and after an initial period of observation to assess whether the child can maintain an acceptable level of Hb without transfusion.¹

The major complications of blood transfusions are those related to transmission of infectious agents, especially HCV, HBV and HIV infections.^{1,2} In this study prevalence of HBV infection was 1.2%. Among developed country, study in Iranian patients showed the prevalence varied from 0.53–6% [4,6], but it is lower than in Palestine patients which revealed 22.5% of the blood transfusion dependent patients. [5] Report from England in 1991–1997 showed that the prevalence of Hepatitis B infection associated with transfusion was 0.57%.⁷

HBV infection can be prevented by a immunization. Although 11 (13%) of our patients have no history of HBV infection, only 1 or 83 Thalassemia patients in this study has HBs Ag positive. Means, screening of HBs Ag done by Indonesian Red Croos was effective to prevent Hepatitis infection in the transfusion dependent patients.

HCV infection has gained importance particularly as one of the major complications in multiply transfused patients during the last decade. This is especially true for counties where HCV is more prevalent in general population and therefore also amongst blood donors. The prevalence of HCV seropositivity in multiply transfused β -thalassemia patients has been observed to vary greatly, varies from 15.7% to 37.9%.^{3–5} But study by Younus resulted a high prevalence of HCV seropositivity (42%).² In our study, Anti-HCV antibodies were detected in 10 (12%) of patients, which was lower than previous study in developed country.

Although Indonesian Red Croos' screening of HBV and HCV infection was effective and the prevalence of HBV and HCV infection were in agreement with the findings in other study, serious attempts have to be made to ensure a safe blood transfusion, so as to cut down the prevalence of HCV hepatitis in multiply transfused thalassaemic patients. Education regarding transfusion transmitted infections, including HCV, HBV & HIV infections, is of prime importance.

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