PREVALENCE OF HEPATITIS C VIRUS ANTIBODY IN HETEROGENEOUS POPULATION OF BLOOD DONORS

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ABSTRACT

The transfusion of blood and blood products exposes recipients to both infectious and non-infectious adverse effects. Information on HCV infection in India is still sketchy. Data on small numbers of volunteer including replacement blood donors tested by ELISA has shown rates of 0.2-4%.

6602 volunteer including replacement blood donors reported to the Department of Transfusion Medicine, Armed Forces Medical College, Pune with effect from 01 September 97 to 31 July 98. Screening for anti-HCV antibody was done by third generation ELISA kits. 29 donors were positive for anti-HCV antibody. The prevalence rate of HCV infection is 0.44% which compares with the studies from other centres. The prevalence rate was higher in the replacement donors as compared to voluntary donors. There is a need to include anti-HCV to the list of mandatory tests for screening of blood donors.

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KEY WORDS: Blood donor; HCV prevalence.

Introduction

The transfusion of blood and blood products exposes recipients to both infectious and non-infectious adverse events. The increased number of blood transfusions during World War II led to the recognition of Post-transfusion hepatitis. The first association of blood transfusion with the development of hepatitis was reported in 1943. Discovery of Australia antigen by Blumberg in 1965 and subsequent widespread realisation of Transfusion Associated Hepatitis B, induced to screening of blood donor for HbsAg. In 1989, the major aetiological agent responsible for non A, non B hepatitis, Hepatitis C Virus (HCV) was identified [1]. Information on HCV infection in India is still sketchy. Data on small numbers of voluntary donors tested in various blood transfusion centres all over the country by Enzyme Linked Immuno Sorbent Assay (ELISA) has shown rates of 0.2%-4% [2,3].

We present data on the prevalence of HCV infection in volunteer blood donors including replacement donors based on third generation ELISA test.

Material and Methods

6602 volunteer including replacement blood donors who reported to the Department of Transfusion Medicine, Armed Forces Medical College, Pune were screened for HCV antibody with effect from 01 Sep 97 to 31 July 98. The third generation ELISA kits from Innogenetics, USA, and Ortho, USA were used, each according to the manufacturer's instructions. The third generation ELISA test detects antibodies to core-100-3 a part of nonstructural (NS) region, core 22c and core 200 from NS3-NS4, core 33c from NS3 alone and antigen from NS5 region. All reactive tests were re-

peated in duplicate, by both kits before labelling a sample as HCV positive.

Results

Out of a total of 6602 blood donors screened from 01 Sept 97 to 31 July 98, 29 were found positive for HCV antibody as shown in Table 1. There were 9 voluntary donors and 20 replacement donors. Age and sex groupwise distribution is shown in Table 2. 14 donors were of the age group 21-30 years. There were 25 males and 4 females. The prevalence of HCV infection was 0.44%. Seropositivity for HCV infection was significantly lower in voluntary donors as compared to replacement donors. Multiple infections were seen in 2 donors in the form of HbsAg and HCV positivity in one donor. The second donor had Rapid Plasma Reagin test positive for syphilis alongwith HCV positivity by the third generation ELISA test.

Discussion

The prevalence of HCV infection in blood donors, in the present study is 0.44% by the third generation ELISA test. This compares well with the studies from other centers which varied from 0.2-4% [4-7]. The low prevalence may be due to the larger number of voluntary donors reporting for blood donation in our blood donation centre.

The parenteral route of HCV transmission is responsible for almost two thirds of Hepatitis C cases and constitutes the most commonly recognised and best characterised transmission mechanism of HCV. Anti-HCV testing has largely confirmed that HCV is responsible for the vast majority of hepatitis cases in which transfusion of blood or blood products or obvious percutaneous exposure to blood are involved [8].

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TABLE 1

Voluntary and replacement donors positive for anti HCV antibody

No. of Donors	Voluntary				Replacement			
	No	%	Anti HCV +ve	%	No	%	Anti HCV+ve	%
6602	3664	55.5	9	0.14	2938	44.5	20	0.68

TABLE 2

Age and sex groupwise distribution of Anti-HCV antibody positive blood donors

Age group	Total No.	Male		Female		Anti HCV +ve	
		No	%	No	%	No	%
18-20	1986	1895	95.4	91	4.6	02	0.1
21-30	2326	2196	94.4	130	5.6	14	0.60
31-40	1604	1529	55.3	75	4.7	11	0.69
41-50	571	530	92.8	41	7.2	02	0.35
51-60	115	112	97.4	03	2.8	—	—
Total	6602	6262		340		29	

A voluntary donor service would reduce the number of infectious donors considerably. Large number of voluntary donors in India belong to a higher social class, are better educated and can comprehend the implications of the donor questions. However, infection rates can be further reduced, if individual donors are interviewed by a qualified person and motivated to donate repeatedly. Replacement donors, on the other hand, are compelled to donate blood within a given time frame, at the time of admission and treatment. The majority of replacement donor (over 95%) found reactive to Anti-HCV antibody are found to be from low socioeconomic strata. This renders questions pertaining to the donor's health and sexual habits ineffective [9].

While the need to change over to a total voluntary donor service and devising effective donor screening cannot be overemphasized, there is also need to include anti-HCV to the list of mandatory tests for screening blood donors [10]. It is felt that there is need to analyse large statistical data across the country to know and evaluate the quantum of infection in the healthy population there being subclinical infection in Hepatitis C.

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