Prevalence of Hepatitis B, C and HIV Infection in Blood Donors of Multan Region

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Acute and chronic viral hepatitis are common public health problems in Pakistan, and associated with serious complications. The carrier rate of HB_SAg is quoted to be around 10% in general population while the prevalence of HCV in blood donors is 4.8 %. Data regarding the prevalence of hepatitis B and C virus infections among healthy blood donors is well established in Karachi, Rawalpindi, Islamabad, Faisalabad, Lahore and Abbotabad areas, but similar data is not available for Multan population. Data regarding the epidemiology of HIV infection among blood donors is not available at most of the blood transfusion centers. In this study six thousands (6000) consecutive young healthy voluntary blood donors (age 16-50 years) comprising of 5476 males and 524 females, belonging to Multan region were included from "Blood Transfusion Center Nishtar Hospital Multan" & "Fatmid Blood Transfusion Center Multan" and were tested for HbsAg, Anti-HCV and HIV. Prevalence of Hepatitis B, C and HIV Infection was 3.37%, 0.27% and 0% respectively. The reported prevalence figures for HBsAg & Anti-HCV in other studies are quite variable, depending upon screening protocol, study groups selected and methodology of testing. If data from all the blood transfusion centers of Pakistan is collected and published, we can get representative prevalence values of HBV, HCV and HIV infection of the general population.
Key words: HBsAg, Hepatitis B, Hepatitis C, HIV, Blood Groups

Viral hepatitis is a common public health problem in Pakistan.[1] Hepatitis B virus (HBV) and hepatitis C virus (HCV) are associated with clinically significant acute and chronic liver disease that may lead to hepatic cirrhosis. Post hepatitis B and C cirrhosis with its complications result in high morbidity and mortality and has high association with hepatocellular carcinoma[2,3].

Worldwide 5% of individuals are chronic carriers of HBV, among which upto 20% may develop cirrhosis.[1] One hundred and seventy million people are infected with hepatitis C worldwide, out of which 70% have chronic hepatitis and 15 to 20% will develop cirrhosis and its consequences[4].

In Pakistan, hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are endemic probably due to unsatisfactory hygiene, poor socioeconomic conditions and low literacy rate. The carrier rate of HB_SAg is quoted to be around 10% in general population while the prevalence of HCV in blood donors[5] is 4.8 %. Five to ten percent Individuals infected with HBV and approximately half of patients infected with HCV progress to chronic stage.[6] Cirrhosis is the most common cause of hepatitis B related chronic liver diseases in Pakistan accounting for 58% cases followed by hepatocellular carcinoma (22%) and chronic hepatitis (20%)[7].

By 1991, a total of16 cases of HIV infection were recorded at AFIP Rawalpindi, while more than 100 cases were reported at the national level. The estimated cumulative HIV infections were 10,700 in 1993 with 750 cases of full blown AIDS and 590 deaths due to the disease. Unfortunately, there has been marked under-reporting of the HIV infection during this period and the report issued by the National AIDS Control Programme of Pakistan has shown a total of 1262 cases of HIV infection with 142 cases of AIDS by October 1997. There is an urgent need for screening of HIV cases and collection and interpretation of data for effective control of the disease[8].

Data regarding the prevalence of hepatitis B and C virus infections among healthy blood donors is well established in Karachi, Rawalpindi, Islamabad, Faisalabad, Lahore and Abbotabad areas, but similar data is not available for Multan population. Data regarding the epidemiology of HIV infection among blood donors is not available at most of the blood transfusion centers. The purpose of this study is to determine the prevalence of hepatitis B, hepatitis C and HIV infections in the blood donors of Multan region.

Subjects and methods:

In this study six thousands (6000) consecutive young healthy voluntary blood donors of either sex belonging to Multan region were included from "Blood Transfusion Center Nishtar Hospital Multan" and "Fatmid Blood Transfusion Center Multan." The clinical details of these subjects were recorded on a proforma. The blood samples were collected by venepuncture using sterile disposable syringes.

Methodology for detection of HBsAg, Anti-HCV &HIV

Fresh serum samples were tested for the presence of hepatitis B surface antigen by commercially available kit (Surase B-96 (OPD) General Biologicals HBsAg EIA). The procedure was strictly followed as given in the kit. Negative and positive controls were run with each batch of samples. Anti-HCV antibodies were tested by commercially available kit (GBC Anti- HCV Rapid Tests). Anti-HIV antibodies were tested by commercially

available kit (HIVASE 1+2--96 General Biological Anti-HIV 1+2 EIA).

Methodology for ABO & Rh blood grouping

For ABO and Rh blood grouping the slide method was used.[9,10] Reagents used were anti-B serum (Trans clone "R" anti-B Sanofi diagnostic, Pasteur), anti-A serum and anti-D reagent.

Results:

A group of 6000 young healthy voluntary blood donors (age 16-50 years) comprising of 5476 males and 524 females were tested for blood groups and the prevalence of Hepatitis B, C and HIV infections. Prevalence of Hepatitis B, C and HIV Infection were 3.37%, 0.27% and 0% respectively (tables 1,2&3).

The frequency distribution of ABO blood groups showed that Group B (36.95%) was the commonest followed by Group O (33.8%), and Group A (21.92%). Group AB (7.33%) was the least common.. The frequency distribution of Rh-antigen showed that 92.17% of the subjects were Rh-positive and 7.83% Rh-negative

Table-1 Prevalence of Hepatitis B in blood donors

Subjects	HbsAg+	HbsAg-
Male (n=5476)	180(3.29%)	5296(97.71%)
Female (n=524)	22(4.2%)	502(95.80%)
Total (n=6000)	202(3.37%)	5798(96.63%)

Table-2 Prevalence of Hepatitis C in blood donors

Subjects	Anti HCV+	Anti HCV-
Male (n=5476)	14(0.25%)	5462(99.75%)
Female (n=524)	2(0.38%)	522(99.62%)
Total (n=6000)	16(0.277%)	5984(99.73%)

Table-3 Prevalence of HIV Infection in blood donors

Subjects	Anti HCV+	Anti HCV-
Male (n=5476)	00	5476(100%)
Female (n=524)	00	524(100%)
Total (n=6000)	00	6000(100%)

Discussion:

The epidemiological studies for diseases due to infection are important to assess the magnitude of the problem in the community and to understand the methods to control its transmission. Hepatitis B and C virus (HBV and HCV) infection have been the cause of significant morbidity and mortality worldwide, but more so in the developing countries like Pakistan. The studies to determine the prevalence of HBV and HCV have been done on healthy blood donors, health care workers, patients suffering from hepatic diseases and general population. The reported HBsAg prevalence[11] for healthy blood donors (2-10%), health care personnel (5-9%), patients with liver disease (10.2%) and for the general population (3.6-18.6%) is very high. Similarly anti-HCV prevalence[11] for healthy blood donors (4%), health care personnel (4-25.7%), patients with liver disease (29.63%) and for general population (00-20.89%) is also alarmingly high. These are heterogeneous groups and there is great variation in the prevalence among different groups, so these are not representative of the general population.

In the current study, 6000 voluntary blood donors were included. Prevalence of Hepatitis B, C and HIV Infection were 3.37%, 0.27% and 0% respectively. Of the other 10 studies[12-21] on the prevalence of HBV and HCV in healthy blood donors (table-4), 4 addressed HBV only, 3 focused on HCV while 3 studies estimated both B and C prevalence. The studies were reported from Abbottabad, Rawalpindi, Faisalabad, Lahore and Karachi.and different methods were used for HbsAg and Anti-HCV testing. The number of subjects in each study varied from 91-27057. The total number of healthy blood donors studied in all these 10 studies across the country was 50241. The estimated prevalence rates for HbsAg for healthy blood donors ranged between 2-14 %. The HCV prevalence was recorded between 00-20.89 % for the same group.

The prevalence of Hepatitis C seromarkers (anti-HCV) was very low (0.27%) in the present study. In Pakistan, the real extent of hepatitis C virus infection is not known and the data about anti-HCV positivity in normal healthy population is not available for Pakistan.

Fortunately all the 6000 subjects were HIV negative. The exact prevalence of HIV in the general population of Pakistan is not known. As HIV test is being routinely done at the blood transfusion centers, it is recommended that data from all the centers should be collected and published.

Table 4. HBV and HCV prevalence studies in healthy blood donors.

Year	Author	Station	No of Patients	HbsAg	Anti HCV	HIV
1996	Rehman N et al[12]	Karachi	07209(B) 02557(C)	3.4	0.6	NC
1996	Bhatti FA et al[13]	Rawalpindi	00750	6.5	4.8	NC
1996	Tanwani AK et al[14]	Islamabad	20787	2.67	NC	NC
1996	Chaudhry NT et al[15]	Lahore	00200	2.0	NC	NC
1999	Bukhari SM et al[16]	Lahore	27057	3.4	NC	NC
1999	Hashmi ZY et al[17]	Faisalabad	00435	2.06	NC	NC
1999	Hashmi ZY et al[18]	Faisalabad	426	NC	20.89	NC
1999	Jadoon HA et al[19]	Abbotabad	80	NC	0.0	NC
1999	Lone DS et al[20]	Lahore	186	NC	4.3	NC
1999	Rehman K et al[21]	Lahore	91	14	14	NC
1998	**Current Study**	**Multan**	**6000**	**3.37**	**0.27**	**0.0%**

*NC----Not Checked

Conclusion"

The reported HbsAg antigen prevalence figures for healthy blood donors (2-10%), health care personnel (5-9%) and for the general healthy population (3.6-18.6%) are quite variable. Similarly anti HCV prevalence for healthy blood donors (4%), health care personnel (4-25.7%) and for general population (00-20.89%) is also highly variable. These prevalence studies were done on heterogeneous groups and are not representative of the general population. What is the exact prevalence of HBV and HCV in the general population of Pakistan? Do the previous studies can be regarded as the representative of the 140 million population? There is lack of community based epidemiological work. Apart from the studies done on the healthy blood donors, the number of subjects studied in other sections appears very small. Similarly, there is a great variation in the method of testing for the markers of HBV and HCV. The studies also lack representation from all over the country. However, prevalence studies of healthy blood donors for HBV, HCV and HIV may be regarded as near estimates of the prevalence in the general population. As mandatory testing for HBsAg, anti-HCV and HIV along with blood grouping is being done in the blood transfusion centers, this facility should be utilized for prevalence studies. If data from all the blood transfusion centers of Pakistan is collected and published, we can get representative prevalence values of HBV, HCV and HIV of the general population.

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