FREQUENCY OF HEPATITIS B AND C POSITIVE CASES AMONG BLOOD DONORS VISITING BLOOD TRANSFUSION CENTRES OF DISTRICT ABBOTTABAD

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ABSTRACT

Objective: *To determine the frequency of hepatitis B and C positive cases among Blood donors visiting Blood Banks of District Abbottabad.*

Materials and Methods: *A total of 23596 subjects were screened for HBs Ag and anti-HCV in this descriptive study conducted from 1st January 2017 to 30 June 2018. Patients of either sex and more than 18 years of age were screened for both hepatitis B and C. Patients with evidence of hepatitis B or C in the past were excluded. The HBs Ag and Anti-HCV screening was performed through Immunochromatographic (ICT) method. All sera showing reactivity were then confirmed with Enzyme Linked Immumo-sorbent Assay (ELISA). The information of the patients was recorded on a proforma and analyzed.*

Results: *The frequency of hepatitis B was found to be 928 (3.93%). Prevalence of hepatitis C was 294 (1.24%). Overall prevalence of hepatitis was more common in rural population than the urban population.*

Conclusion: *Hepatitis B is more common than hepatitis C in District Abbottabad. The high frequency of hepatitis needs to launch a major public awareness program and preventive measures to prevent its further spreading.*

Keywords: *Hepadena viruses, HCV, RNA virus, Abbottabad*

INTRODUCTION

Inflammation of liver is called hepatitis. Hepatitis may be viral and non-viral. Viruses are known as major causative agents of hepatitis nowadays. Hepatitis A and E are common causes of acute liver disease while hepatitis B and C are causative of chronic liver disease. Both viruses (B and C) progress to liver cirrhosis or eventually lead to hepatocellular carcinoma.[1] Hepatitis B virus is a partially double-stranded circular DNA virus and is a member of the Hepadnaviridae family. The virus has a core capsid which contains viral DNA and this is surrounded by an envelope having surface antigen. The clinical course of an HBV infection includes an incubation period (generally 4 - 12 weeks), acute illness (2 weeks – 3 months) and recovery for individuals who resolve their infection. Many HBV infections in grown up people are without symptoms of jaundice. Subjects in whom HBs Ag is present in their blood for more than six months are considered to be chronically infected with HBV. The most commonly used diagnostic and blood screening markers sought is Hepatitis B surface antigen (HBs Ag). An individual positive for HBs Ag is considered to be infected with HBV, and is

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therefore potentially infectious.[2] Mode of transmission of both viruses is through blood which spreads through contaminated needles, blood transfusion, hemodialysis, skin pierces, sexual intercourse and vertical transmission.[1] Hepatitis B is a DNA virus belonging to Hepadena viruses. It is 42 nm particles which comprises an envelope called hepatitis B surface antigen, 27 nm nucleocapsid called hepatitis B core antigen enclosing a 3.2 kb partially double stranded DNA genome. Hepatitis B surface antigen is used as diagnostic marker which is abundantly found in the serum. Hepatitis C is a lipid enveloped RNA virus of approx. 10000 nucleotides. Mode of transmission being the same as hepatitis B virus. 85 % of affected patients develop cirrhosis and cirrhosis related complications. About 7 % may develop hepatocellular carcinoma.[3]

MATERIALS AND METHODS

A total 23596 blood donors visited blood banks of Ayub Teaching Hospital and Benazir Bhutto Shaheed (BBS) Teaching Hospital, Abbottabad, Khyber Pakhhtunkhwa, Pakistan from 1st January 2017 to 30th June 2018. The study has been conducted in collaboration with Women Medical College, Abbottabad, Khyber Pakhhtunkhwa, Pakistan. After taking consent all donors were interviewed before blood donation and information were collected on the prescribed proforma. Ethical consideration was taken from ethical boards of Ayub Hospital and Benazir Bhutto Shaheed (BBS) Teaching Hospital, Abbottabad respectively.

Inclusion Criteria:

- Age: between 20 to 50 years.
- Sex: both genders.
- Weight: more than 45 Kg
- Hemoglobin: more than 13.5 g/dL in male and 12.5 g/dL in females.

Exclusion Criteria:

- Donor having history of previous infectious diseases.
- Drug abuse, blood or blood component transfusion history within last three months.
- Renal, Cardiac, Pulmonary, Hepatic diseases.
- Pregnancy, lactation and menstruation in females.

2-3 mL of venous blood was collected in clotted gel vacutainer tubes. Serum was separated by centrifugation at 3000G for 5 minutes immediately after blood collection. Hepatitis B antigen and Anti HCV screening was performed using Immumade Immunochromatography device. The protocol mentioned in kit literature was followed. All positive cases for hepatitis B and C were analyzed by Enzyme Linked Immunosorbant Assay provided by Bio Rad Technology, USA. All protocols were followed as advised by the manufacturer.

RESULTS

In the current study 23596 blood donors were included, in which 23290 were male and 306 were female. All male donors were between 20 to 50 years of age while females between 20 to 42 years. All male and female donors having previous history of infectious, drug abuse, blood or blood component transfusion history within last three months, renal, cardiac, pulmonary, hepatic diseases, underweight and had blood donated three months before were excluded from the study. Females with pregnan-cy, lactation and menstruation were also deferred. Among 23596 blood donors 1222 (5.18%) were seropositive for either anti HCV or HBs Ag. Among them 928 (3.93%) were anti HCV positive and 294 (1.24%) were HBs Ag positive.

Table: 1

Parameters	Males	Females	Total
Total Blood Donors	23290	306	23596
Anti HCV Positive	890	38	928 (3.93%)
HBs Ag Positive	282	12	294 (1.24%)

DISCUSSION

Hepatitis B and C carriers remains undetectable for many years because in carrier stage the disease is asymptomatic for years and even for decades. The carriers are highly risk group for transmitting viral hepatitis. Blood transfusion from such infected persons to non-infected person is one of the major causes of increasing trend of seropositive cases for hepatitis B and C. Hence donor selection criteria adopted nationally by Safe Blood Transfusion Program Pakistan should be strictly followed. Seropositive rate of hepatitis B and C is high in developing countries as compared to developed countries. It may be due to lack of awareness, poor living standards,

unavailability of vaccination for hepatitis B, poor quality and non-uniform laboratory screening techniques for viral markers. In our study the prevalence of hepatitis B and C infection among blood donors is low as compared to studies conducted by Khattak et al., 20021. According to Iranian study conducted at the Kohgiluyeh and Boyer Ahmad Blood Transfusion Center Tehran, prevalence of HBV was 0.13% and HCV was 0.06%. This Viral screening was carried out on 180304 voluntary blood donors.[4]

Prevalence of HCV infection is more frequent than HBV infection in our study as it is also evident from a study by Khattak et al., 2002 and Barnes et al., 1992 while in contrast to other studies like Cenac et al., 1995, Hadiwandowo et al., 1994, Irshad and Achacva, 1994 and Tong et al., 1996.[5] In German population, HCV infected donors were more likely to report heterosexual exposure, imprisonment, piercing.[6]

From 1995 to 2014 a study conducted at Dutch showing blood donors infected with hepatitis B virus and hepatitis C virus were interviewed by trained medical counselors to identify risk factors associated with Transfusion Transmitted Infections. A total of 972 new donors and 381 repeat donors had TTIs. New donors had higher rates of TTIs compared to repeat donors.[7]

All the results were confirmed by more sensitive technique i-e., third generation ELISA. In anti HCV 92.92% cases were showing correlation on EELISA while in HBs Ag only 87.68% cases were showing correlation. With advancement in technologies, nowadays CLIA and NAT techniques are also in use in good centers.[8-10]

CONCLUSION

Proper screened blood is the safest blood for transfusion and is very crucial before donating blood to patients. Awareness of local population, clinicians and patients who need blood transfusion like thallassemia, oncology and patients with other blood disorders are need of the day.

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