

Epidemiological Study of Seropositive Infection HBV, HCV and HIV in Male healthy blood donors of Gadap Town, Karachi

SHAZIA AZHAR¹, MUHAMMAD IFTIKHAR³, MUHAMMAD USMAN³, SOBIA ZEESHAN⁴, MUNAZZA SALAHUDDIN

ABSTRACT

Aim: To determine the prevalence ratio of seropositive infection of HBV, HCV, and HIV in healthy blood donors of low socioeconomic areas of Gadap town Karachi.

Methodology: The Epidemiology study was conducted on 2400 healthy blood donors. Blood sample was collected in camp, which was arranged by the Fatimid Blood Foundation at Gadap town Karachi. Only male subjects were selected for this study, whose age criteria between 18-50 yrs. After collection of blood samples and measurement of BMI (body mass index), W/H (waist hip ratio) of donors participants, these samples sent for further analysis of Hb (haemoglobin) and seropositive infection of HBV, HCV, and HIV at Fatimid Blood Foundation of Fatimid Blood Foundation. BMI, W/H was measured by according to national heart lung of blood institute. Whereas estimation of haemoglobin was determined by Sysmex machine and estimation of seropositive samples was performed by Architect I-2000 auto analyzer.

Results: in our cross-sectional study we observed in our study we selected 2400 donors. These donors were of the age groups of 25–40 years. The study was carried out by arranging free camp for blood donation in Gad town Karachi Pakistan. Among 1600 donors was serological positive in out of 2400. In our study we also noted that BMI (31.68 ± 0.53) and waist hip ratio (1.16 ± 0.14) of donor subjects shows in (table 1), it was noted that donors are nearly obese whereas estimation of haemoglobin (14.16 ± 0.556).

Conclusion: we concluded in Epidemiological study of seropositive infection, HBV infection is mostly common in Male healthy blood donors as compares with HCV and HIV infections in Gadap town Karachi.

Keywords: Cross-sectional study, Seropositive blood donors, HCV, HIV, HBV.

INTRODUCTION

Infectious diseases can be transmitted by blood transfusion¹. These infectious diseases caused by, hepatitis B (HBV), hepatitis C (HCV) and Human immunodeficiency virus (HIV). The occurrence of these infections in the blood donors, they can easily spread infections in community^{2,3}. Blood can transfuse many types of infections which can be classified into viral, bacterial and parasitic infections^{4,5}. These viral infections like Hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) are blood borne pathogens. The transmission route by blood, sex, transmission from infected mothers to their babies, intravenous drug use, needle stick injuries, haemodialysis, tattooing, multiple sexual partners, parenteral routes like un-sterilized needles, syringes⁵. Moreover in low socio-economic areas, transmissions of these infections by the infected family member have also been identified⁷. Hepatitis B virus (HBV) is responsible for hepatitis, liver cirrhosis and hepatocellular carcinoma. Approximately 2 billion people are infected with HBV worldwide⁸. In Pakistan, transmission of HBV, HCV, HIV and malarial infection, may be reduced by public awareness programmes like public health education programmes on safe sex, blood transfusions, injection, and standardize and ensure safety in blood banks^{9,10}. Whereas in local areas of Pakistan where absence of appropriate blood screening and lack of public awareness, prevalence ratio of these infections is decreased¹¹. In developed countries have been successful to prevalence of these blood borne infections

like HBV, HCV, HIV infections through vaccination¹². Pakistan also initiated universal HBV, HCV vaccination for neonates through its expanded program of immunization with the assistance of Global Alliance for Vaccines and Immunization¹³. The number of volunteer blood donors is increasing as compared with healthier donors in our community. We can differentiate between healthy blood donors and volunteer blood donors on the basis of blood screening test like Hb, HBsAg, HCV, HIV, and malarial parasites¹⁴. If donors have positive status they cannot fulfill our requirement they are rejected. The purpose of our epidemiological study to determine prevalence ratio of HBV, HCV, HIV in male volunteer blood donors in low socio-economically area of Gadap town Karachi, because these low socioeconomic areas are affected than other developing areas, in these areas prevalence ratio decreases due to lack of public awareness and health facilities¹⁵.

MATERIALS AND METHODS

This study was carried out by arranging free camp for blood donation in Gad town Karachi Pakistan. A predesigned questionnaire was used to gather data, various exposures to blood and blood products, exposure to harmful chemical or drug abusers. We selected 2400 donors for this purpose of study. These donors belong to the age groups of 25--40 years. Among 1600 donors was serological positive in out of 2400. BMI and waist hip ratio was determined by following criteria of the national heart and lung and blood institute. Whereas estimation of haemoglobin was determined by Sysmex machine and estimation of seropositive samples was performed by Architect I-2000 system. It is totally automated instrument which works

¹Assistant Professor, ²Professor and Principal,

³Associate Professor & Director,

⁴Demonstrator, Baqai Institute of Medical Technology, Baqai Medical University Karachi, ⁵Medical Technologist, Tappa Heart Institute of Cardiovascular Diseases, Karachi

Correspondence to Dr. Shazia Azhar

Email: :shaziahashem@hotmail.com03323383315

chemiluminescent microparticle immunoassay (CMI) is a technology use to determine presence of anti analysis microparticle with captures molecule and acridinium labeled conjugate is made to react with sample analyte. A magnet attracts the paramagnetic microparticle to the wall of the reaction vessel .This reaction then measured by machine.

RESULT

In our study we selected 2400 donors. These donors belong the age groups of 25-40 years. The study was carried out by arranging free camp for blood donation in Gad town Karachi Pakistan. Among 1600 donors was serological positive in out of 2400. In our study we also noted that BMI (31.68±0.53) and waist hip ratio (1.16± 0.14)of donor subjects shows in (table1), it was noted that donors are nearly obese whereas estimation of haemoglobin (14.16± 0.556) was determine by systmex machine, it was also noted that haemoglobin of donors subjects and estimation of seropositive samples was performed by Architect I-2000 system.

Table 1: Comparative study of body mass index, waist hip ratio

Parameter	Donors (n=2400)
BMI	31.68±0.53
Waist/Hip	1.16± 0.14
Haemoglobin	14.16± 0.556

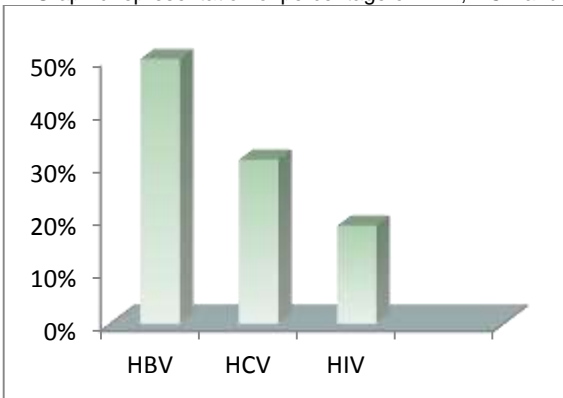
Table 2: Positive cases of HBV, HCV and HIV

Parameter screening for	Positive patients (n=1600)	
	No.	%
HBV	800	50.0
HCV	500	31.5
HIV	300	18.5

Table 3: Positive cases of HBV, HCV and HIV in various age groups

Age (years)	HBV	HCV	HIV
25-30 (n=600)	300 (50%)	200 (33%)	100 (16%)
31-35 (n=900)	600 (66%)	200 (22%)	100 (11%)
36-40 (n=900)	500 (55%)	400 (44%)	-

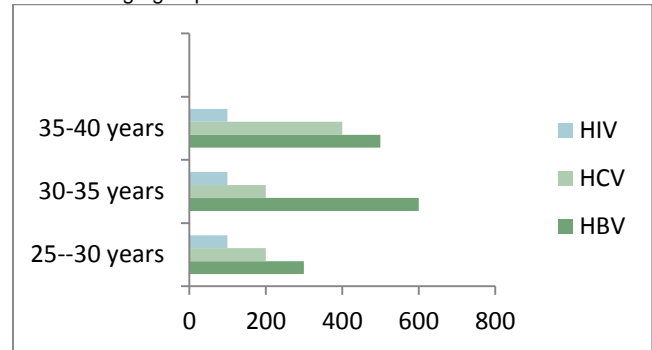
Fig. 1: Graphic representation of percentage of HBV, HCV and HIV



It is totally automated instrument which works chemiluminescent microparticle immunoassay (CMI) is a technology use to determine presence of anti analysis microparticle with captures molecule and acridinium labeled conjugate is made to react with sample analyte. A

magnet attracts the paramagnetic microparticle to the wall of the reaction vessel .This reaction then measured by machine. Screening of BMI, waist hip ratio, estimation of hemoglobin, HBV, HCV and HIV was done. Statically analysis was applied on BMI, waist hip ratio and hemoglobin. Whereas HCV, HIV and HBV was calculated in percentage .we find out HBV 50% in 33% HCV and 16% HIV 25-30 years, whereas 66% HBV, 22% HCV and 11% HIV was found in 30-35 years and 55% HBV,44% HCV whereas no HIV case was detected in 35-40 years (Tables 1-3, Figs.1-2).

Fig. 2: Graphic representation of percentage of HBV, HCV and HIV in various age groups



DISCUSSION

Hepatitis B, Hepatitis C, and Human immunodeficiency virus are one of the major causes of death, because it is the major cause of hepatotoxicity, These infections are transmitted by infected blood transfusion, infected needle, semen, breast milk, body piercing tattooing, street garbage picking alcohol of drugs, sexual transmission, poor hygiene and infected instruments like shaving brush and hair cutting¹⁶. We should educate people even globally is through social media whether Face book, twitter, instagram or through development of a detailed website with information on these disease¹⁷.

According to National Hospital of Tropical Diseases (NHTD) is located in Hanoi, Viet Nam, is working since the year 2003, they are working under the guidelines of WHO, They find out infection of HBV were 53.2%, HCV was 51.6%, and HIV was 50.5% in male healthy donor.¹⁸Our study correlates with Vietnam study we find out HBV 50%, HCV 31% and HIV 18.5%, but in our country HCV and HIV is uncommon. In our study which was conducted in Gadap area we also find out that these infections mostly spread by infected needle and injection,because in our society there is no concept to use needle and blades in laboratories and barber shops, their waste disposal not up to the mark.¹⁹ Drug added persons use these discarded needles, and in the same ways barber shops they don't care proper hygiene's they used blades infected person to person, which is responsible for spreading HBV, HCV and HIV infections.²⁰HBsAg destroy immune system's B cells, which produce antibodies to eradicate HBV's antigens. When young children and healthy person are infected, these B-cells become paralyzed or exhausted HBsAg engulfing them and they don't have antibodies to fight against infection. There is currently no vaccine to protect

against hepatitis C and HIV. Unlike hepatitis A and B, those persons who having hepatitis C and HIV can be re-infected after completed successful treatment²¹.

CONCLUSION

We concluded that HBV infection is mostly common in Male healthy blood donors as compares with HCV and HIV infections in Gadap town Karachi.

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