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Incidence of Hepatitis B in Volunteer Donors at Regional Blood Center (RBC) Peshawar

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Abstract: *The objective of our study was to assess the incidence of hepatitis B in volunteer donors at Regional Blood Center (RBC) Peshawar. The current study was prospective study carried out at the Regional Blood Center (RBC) Peshawar from 20/10/2022 31/12/2022. A complete clinical examination was carried out for all the volunteers. Under aseptic condition, 5ml blood sample was collected from all the enrolled individuals. The plasma was separated and was screened for HBsAg. Data analysis was done by using IBM SPSS. 23 version. In the current study, a total of 463 volunteer blood donors were included. The male volunteers were 460 (99.35%) whereas female volunteers were 3 (0.65%). The mean age (SD) in our study was 27.66 (4.63) years with maximum age of 55 years and minimum age of 18 years. The overall incidence of hepatitis B was 12 (2.59%). Our study concludes that hepatitis B is highly prevalent amongst volunteer blood donors.*

Key Words: Incidence, Hepatitis B, Volunteer Donors

Introduction

Donation of blood is a significant procedure that is often carried out in healthcare facilities. Blood donation that is done voluntarily is considered to be an act of charity and is not compensated (Abril, 2016; Onyango et al., 2018). When there is a medical or surgical emergency, blood transfusions are vital life-saving procedures (Abdullah, 2013). A major health concern in transfusion medicine is the transmission of infections via the transfusion of blood products. Hepatitis B and C viruses are the most common diseases amongst transfusion transmitted infections (TTIs) (Al-Hindi, Khabour, Alzoubi, & Al-Sawalha, 2018). Hepatitis B virus infection affects 350 million individuals worldwide, and hepatitis C virus infection affects 200 million people (Hussein, Haj, Almizori, & Taha, 2017). Around the world, these viral infections are a significant source of illness and death. These may result in liver cirrhosis, hepatic failure, and liver cancer, among other liver illnesses. Hepatitis B and C incidence rates are 2.5% and 4.8%, correspondingly, in Pakistan (Ali, Donahue, Qureshi, & Vermund, 2009). All blood donations should be subject to quality testing, such as ELISA, for hepatitis B, C, HIV, and syphilis, according to the World Health Organization (WHO). An estimated 1.5 million blood components or products are transfused annually in Pakistan (Zaheer & Waheed, 2014). Hepatitis viruses are a leading cause of chronic liver conditions like chronic hepatitis, liver cirrhosis, and hepatocellular carcinoma. A serious risk to public health is posed by the fact that over 350 million people globally have chronic hepatitis B. even though it is widespread throughout the world; the Asian region continues to have a high endemicity of the disease (Aguiar et al., 2001; Lok, 2002). Additionally over 75% of these 350 million individuals belong to South East Asia and

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the Western Pacific region. One to two million people each year die from hepatitis B infection, making it a significant public health issue (Lok, 2002). The World Health Organization estimates that there are 2 billion HBV carriers, 200 million HCV carriers, and 33.4 million HIV carriers worldwide (Aguiar et al., 2001; Khumalo, Managa, & Mkhabela, 2012; Landrigan & Fuller, 2015; Lok, 2002). HBV is 10 and 100 times more contagious than HCV and HIV, according to the US Centre for Disease Control and Prevention (Sievert et al., 2013). Patients with HBV infection are more likely than those with HCV to suffer from hepatocellular carcinoma (James, 2010). Poor, unclean, and subpar practices caused by financial constraints, use of unsterilized equipment, tattoo piercing, blood transfusions, and intravenous drug misuse are risk factors that are a significant source of viral infection transmission (Alaei, Sarwar, & Alaei, 2018; N. U. Khan, Zalan, Petruzziello, Haq, & Hayat, 2018). Immune chromatographic techniques (ICT), enzyme-linked immunosorbent assays (ELISA), and testing based on nucleic acid are are some of the methods utilized for diagnosing transfusion-transmittable pathogens (Farooq et al., 2017). In our setting so such study has been carried out on the incidence of hepatitis B amongst healthy blood donors. The current study was therefore carried out to assess the incidence of hepatitis B in volunteer donors at Regional Blood Center (RBC) Peshawar.

Materials and Methods

The current study was prospective study carried out at the Regional Blood Center (RBC) Peshawar. The study duration was from 20/10/2022 31/12/2022. The ethical approval of the study was taken from the hospital ethical and research committee. The overall sample size of our study based on WHO sample size calculator was 463. The inclusion criteria of our study were all the volunteer blood donors of both the gender and age range of 18-60 years having weight more than 45kg, 96 – 98°F body temperature, hemoglobin level of more than 12 g/dl, systolic blood pressure of 100-180 mm, 60- 100 mm diastolic blood pressure, pulse rate of more than 65/min. The exclusion criteria of our study were all the individuals who are apparently not healthy or malnourished and having Hb levels < 12g/DL, pregnant women and menstruating females, individuals with any previous incidence of viral infections. Additionally, all the volunteers were asked for any kind of drug abuse, heart problems, lung problems, liver and kidney problems. A complete clinical examination was carried out for all the volunteers. A consent form in written was signed from all the volunteers included in the study. Under aseptic condition, 5ml blood sample was collected from all the enrolled individuals. The blood samples were processes within two hours of sample collection. Centrifugation of the blood samples was done for five minutes at 8000rpm. The plasma was separated and was screened for HBsAg. All the data collection was done on a proforma specially designed for our research work. Data analysis was done by using IBM SPSS. 23 version. Frequency and percentages were determined for variables like hepatitis B incidence and gender while mean and standard deviation was computed for age.

Results

In the current study, a total of 463 volunteer blood donors were included. Based on gender distribution, the male volunteers were 460 (99.35%) whereas female volunteers were 3 (0.65%). (Figure 1) Based on age wise distribution, 294 (63.50%) volunteers were in age range of 18-30 years, 142 (30.67%) individuals were in age group 31-40 years, 23 (4.97%) in 41-50 years while only 4 (0.86%) individuals were 51-60 years old. (Figure 2)The mean age (SD) in our study was 27.66 (4.63) years with maximum age of 55 years and minimum age of 18 years. The overall incidence of hepatitis B was 12 (2.59%). (Figure 3)

Figure 1

Frequency of Volunteer Blood Donors based on Gender

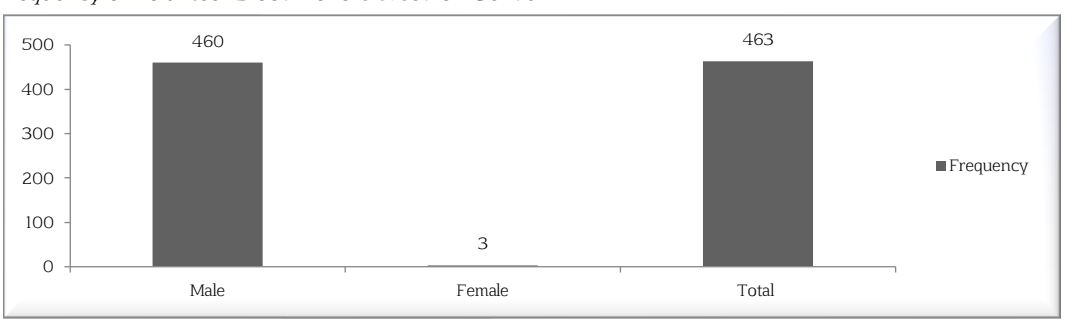


Figure 2

Frequency of Volunteer Blood Donors based on Age

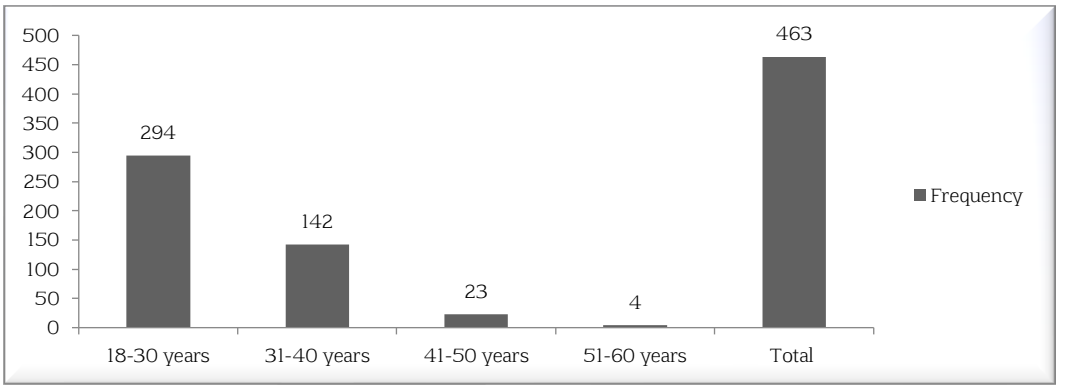
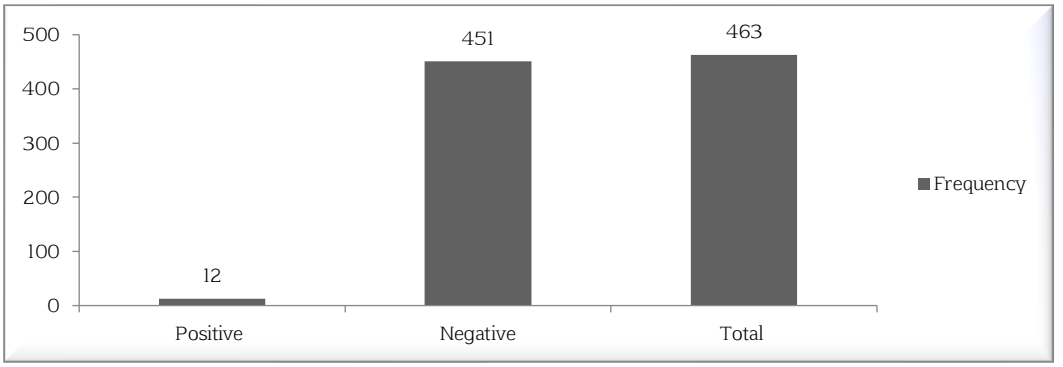


Figure 3

Overall Incidence of Hepatitis B amongst Volunteer Blood Donors



Discussion

Health care providers across the globe have a significant challenge in preventing and treating HBV infections. By rigorously immunizing their populations and reducing risk factors, the majority of industrialized countries have effectively overcome this obstacle. But this challenge still exists in many emerging and underdeveloped nations, including Pakistan (Ullah, Khan, & Saeed, 2017). This may be because the healthcare sector still has a long way to go in many respects. Parenteral injection use was the most often reported risk factor among the population according to previous studies (F. Ahmed, 2015) (J. Khan, Fida, Parvez, Rafiq, & Syed, 2011). Additional prevalent risk factors include surgery, dental work and having a first-degree relative with the infection. Spousal transfer, hemodialysis treatment sexual exposure, and vertical transfer were a few other risk factors. Overall, it is accurate to state that the transmission of this illness relies on a number of risk factors and that not a single risk factor caused the infectious situation in the patients, since a lot of them claimed to have been exposed to numerous possible risk factors (F. Ahmed, 2015). In addition, giving injections even for mild ailments in rural regions is a fairly frequent practice in our healthcare environment and culture. Our resistance to these illnesses has been further compromised by a lack of knowledge, poor socioeconomic level, insecure health practices, and unscreened transfusions of blood (J. Khan et al., 2011). Viral infections especially hepatitis B and C viruses are among the common causes of transfusion transmitted infections (Ali et al., 2009). Prevalence of these infections usually varies among different regions and countries of the world.

In the current study, a total of 463 volunteer blood donors were included. Based on gender

distribution, the male volunteers were 460 (99.35%) whereas female volunteers were 3 (0.65%).

In accordance with our study, another study reported also reported male predominance as volunteer blood donors in comparison to female (Fatimah, Tehrim, Fayyaz, Sadiq, & Bhatti, 2020). Another study also reported high frequency of male as volunteer blood donors (Ishtiaq Ahmed, Shah Sattar, Rehan, Muhammad Asif, & Ashraf Ali, 2007). Based on age wise distribution, 294 (63.50%) volunteers were in age range of 18-30 years, 142 (30.67%) individuals were in age group 31-40 years, 23 (4.97%) in 41-50 years while only 4 (0.86%) individuals were 51-60 years old. The mean age (SD) in our study was 27.66 (4.63) years with maximum age of 55 years and minimum age of 18 years. Another study done by fayaz et al. also reported high frequency of volunteer blood donors in age group 18-30 years and reported a mean age of 28 years (FAYYAZ, Khan, QAZI, DinChaudhary, & AHMED, 2006). The overall incidence of hepatitis B was 12 (2.59%). A study done by Tunio SA et al. reported a lower incidence (1.82%) of hepatitis B amongst volunteer blood donor which is not in accordance with our findings (Tunio et al., 2013). Another study done by Pervaiz A et al. reported 3.8 % incidence of hepatitis B which is not in accordance with our study (Pervaiz, Sipra, Rana, & Qadeer, 2015). A previous study carried out by Humayun et al. reported 1.17% prevalence of hepatitis B which is also lower than our prevalence of 2.59% (Humayun, Afsar, Saeed, Sheikh, & Sheikh, 2011). In contrary to our results a study piloted by Ahmed et al. reported a lower incidence of hepatitis B amongst volunteer blood donors (T. Ahmed et al., 2016). In contrary to our findings a study done by Mujeeb et al. reported a very high hepatitis B incidence amongst 6.2% volunteers (Mujeeb & Pearce, 2008). In accordance with our study, a study done by fayaz et al. reported 2.69% incidence of hepatitis B amongst volunteer blood donors which is almost similar with our findings. The main drawback of the current study was that it was conducted in a single centre other studies based on multiple centre with large sample size should be carried out to get more reliable results.

Conclusion

Our study concludes that hepatitis B is highly prevalent amongst volunteer blood donors. To lower the incidence of Hepatitis B in the general population, strict awareness campaigns, screening procedures, and health guidelines are needed. Since blood is the primary means by which the illness is transferred, it is crucial to screen blood before transfusion in order to stop the infection from spreading. Additionally, Hepatitis B can be prevented easily through vaccination.

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