Survey of hepatitis viruses in blood donor in blood transfusion center in -Al – Diwaniyah

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Abstract

The present study was done to survey the hepatitis infection in the main blood transfusion center in - Diwaniyah during 2019-2020, the ages of donors were 20-63. The sample of blood were drawn from donors 5ml by vein puncture using disposable syringes and the serum was separated by centrifuged. The detection of Hepatitis B virus and HCV by using HbsAg ELISA kit and Anti HCV antibody for detect hepatitis B and C respectively. The the study was included 27312 donor. The percentage of hepatitis viruses was 0.1% from all donor. The percentage of Hepatitis B and C the percentage of hepatitis B infection from total infection is 70% while, its percentage from all donor about 0.076. Hepatitis C infection 9 infection the percentage 30% while its percentage from all donor about 0.032.

The percentage of Hepatitis B and C from 30 hepatitis infections was 70% and 30% respectively. The age of donor was was divided into five groups as 20-69 years. the percentage of infection was higher in age 40-49 and the percentage was 40%, while the distribution of infection in age 20-29 and 50-59 was 20% the percentage of infection in age 30-39 was 16.6% and 3.33 in age 60-69. Also the research was studied blood group by agglutination method and found that A group and O group higher than other groups. The conclusion of this study the HBV more common than other and most patients in A groups.

Introduction

Hepatitis viruses are common worldwide, but their distribution patterns are different in every individual country. Although the existence of effective vaccines against hepatitis A and B, viral hepatitis is still a major global public health concern (Thuener;2017). Due to the abundance of asymptomatic or unreported cases, prevalence of such diseases is underestimated even under the best surveillance systems. Therefore, epidemiological studies in different geographical regions and among different population groups seem to be necessary to reveal the real prevalence and to estimate their true burden(Behzadi et al.;2019).

The risk of occupational acquisition of a blood-borne virus by a healthcare worker is related to the prevalence of the virus in the patient population, the efficiency of virus transmission after a single contact with blood, and the nature and frequency of occupational blood contact. Therefore, knowledge about the prevalence of these infections among autopsies is crucial to determine the risk of transmission and to
further enforce infection control safety measures in such environments (Roberts et al., 2016). Posttransfusion hepatitis has been a more famous problem and an under-recognized cause of morbidity in transfusion recipients. Transfusion-associated hepatitis is almost caused by viruses. These viruses include hepatitis viruses A through E, cytomegalovirus, Epstein-Barr virus, and possibly newly described hepatitis viruses (GBV-C, TTV, and SEN-V). Blood donors with HBV and HCV can have a prolonged asymptomatic carrier state (Jamali and Ness; 2004). Several studies have reported that ABO blood groups may be associated with HBV infection. So, Jing et al. performed a meta-analysis to investigate whether ABO blood groups were associated with HBV infection suggested that the blood group B was associated with a lower risk of HBV infection. More research is needed to clarify the precise role of the ABO blood group in HBV infection, his study (Jing et al., 2020). The aim of the present study was survey of hepatitis in donor and type of ABO group among patients.

Materials and methods

The sample of blood were collected from donors, in blood transfusion center in - Diwaniyah during 2019-2020, the ages of donors were 20-63 years. Five ml of blood was drawn by vein puncture using disposable syringes. 5 ml of blood was placed in disposable tube, kept to clot at room temperature, and then centrifuged at 3000 r.p.m for 10 min. Sera samples were carefully transferred to Eppendorf tubes and stored in aliquots at deep freezing until used.

Enzyme linked immunosorbent assay This kit is used for detection of hepatitis B surface antigen (HBsAg), Anti HCV antibody in human serum done according to Bioelisa- Slide technique was the recommended technique according the company. Prepare 35-45% suspension of test RBCs in phosphate buffer saline (pH=7.2). Place on a labeled glass slide, 1 volume of Plasmatec Anti-ABO reagent and 1 volume of RBCs test suspension. Using a disposable applicator stick, mix reagent and cells over an area of about 20×40mm, slowly tilt the slide back and forth for 30 seconds with occasional further mixing during the 2 minutes period, maintaining slide at room temperature. Then read macroscopically after 2 minutes over a diffuse light.

Ethical considerations

The approvals were obtained from all the participants (patients) and also agreed to study scientifically and morally by the medical committee in the Department of blood transfusion center in – Diwaniyah

Results and discussion

Thirty infection was appeared in 27312 donor in Al- Qadisiyah, table 1 showed the percentage of donors with hepatitis was 0.109, while without infection was 99.89. Hepatitis B was 21 infection, the percentage of hepatitis B infection from total infection is 70%, while its percentage from all donor about 0.076. Hepatitis C infection 9 infection the percentage 30% while its percentage from all donor about 0.032 Screening of hepatitis type in blood donors
and risky groups for detection fHBsAg by ELISA technique. The prevalence rate of HBV infection among blood donors throughout the study period was 0.1%. Similar results were obtained by other studies occurred in Diyala province who found the percentage of HBV was 1.5% (Shafiq et al., 2006).

Several studies have reported that screening of blood donors for HBsAg has greatly reduced the prevalence of infection (Cher et al., 2000; Ghavanini and Sabri, 2000).

The present study found the HBV infection more than HCV infection this similar with Tarky et al., who found that the national estimate of HBs antigen prevalence rate was 1.6%, while that of HCV antibodies was only 0.4%. The data of a national survey conducted by the MOH (Ministry of Health) in Iraq in the period 1st of January 2005 to 31st of December 2006. The study used a nationally representative random sample of households. A total of 9610 persons, were recruited by surveying. All apparently healthy family members of the household were eligible for inclusion in these study. The prevalence of infection with HBV varies from one country to another depending upon a complex behavioral, environmental and host factor (Tarky et al., 2013).

Other study in Mosul showed that the prevalence of hepatitis type B is higher than hepatitis C among hemodialysis patients with the proportions of 16.4% and 14.2% respectively (Sharif et al., 2017).

Table (1) Distribution of hepatitis virus in blood donor

| Donor                                    | Number | Percentage% |
|------------------------------------------|--------|-------------|
| Donor with hepatitis viruses             | 30     | 0.109       |
| Donor without infection                  | 27282  | 99.89       |
| Total                                    | 27312  | 100         |

| Type of hepatitis from all donor         | Number | Percentage% |
|------------------------------------------|--------|-------------|
| Hepatitis B                              | 21     | 0.076       |
| Hepatitis C                              | 9      | 0.032       |
| Total                                    | 30     | 0.109       |

The age of donor was divided into five age groups, from 20-69 years. In 20-29 years the number of donor was 3, 30-39 and 40-49 the number of hepatitis B was 4 donors while one donors and 3 had hepatitis C respectively. Also in the percentage of infection was higher in age 40-49 and the percentage was 40%, while the distribution of infection in age 20-29 and 50-59 was 20% the percentage of infection in age 30-39 was 16.6% and 3.33 in age 60-69 (Sharif et al., 2017).
Table (2) Distribution of hepatitis patients among age groups

| Type of hepatitis | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | Total | Percentage% |
|-------------------|-------|-------|-------|-------|-------|-------|-------------|
| Hepatitis B       |       |       |       |       |       |       | 6           |
| Hepatitis C       |       |       |       | 2     | 0     |       | 6           |
| Total             | 6     | 5     | 12    | 6     | 1     |       | 40          |
| Percentage%       | 20    | 16.6  | 40    | 20    | 3.33  |       |             |

The result was appeared patients with hepatitis B the most of them was A group and O group while less appeared in B and AB groups. Patients with HCV were distributed in A, Band O group. In table 1 showed the percentage of blood groups according hepatitis type B and C, there were 47.61%, 9.52%, 9.52% and 33.33% in group A, B, A and O in donors with hepatitis B while the percentage of patient who had hepatitis C was 33.33%, for B and O and 0% for AB. The result of present study found the infection higher in age 40-49 years this agreed with Hassab et al. (2016) their results appeared older age (age < 30) was significantly associated with the detection of anti-HBc alone as factor transmitted to infection Said et al. reported that the age above thirty were the most significant risk factor for prediction anti-HBc positive among blood donors (Said et al., 2013). Other study also showed anti-HBc prevalence increased with age, this due to that sexual activity may contribute to transmission of this infection among adult (Baiani et al., 2010). Young blood donor in Pakistan are already more for HBV exposure (Bhatti et al., 2007). This significant association of HBV infect prone with older age could also due to the increased number of years of exposure, lack awareness and infrequent HBV vaccination in adults (Habibollahi et al., 2009).

Table (3) The percentage of blood groups in hepatitis B & C infection groups

| Blood groups | HBV | | | HCV | | |
|--------------|-----| | | No | % | No | % |
| A*           | 10  | 47.61 | 3  | 33.33 |
| B*           | 2   | 9.52  | 3  | 33.3 |
| AB*          | 2   | 9.52  | 0  | 0   |
| O*           | 7   | 33.33 | 3  | 33.3 |
| Total        | 21  | 100   | 9  | 100 |

Blood group reagents will cause direct agglutination of test red blood corpuscles that carry the corresponding ABO antigen. No agglutination generally indicates the absence of the corresponding ABO antigen. The results of the present study found that A+ and O+ were high percentage in HBV infection while HCV appeared higher in B+ group. ABO blood groups are one set of agglutinogens, which are genetically determined carbohydrate molecules carried on the surface of membranes of red blood corpuscles (Umit et al., 2008; Jefferys and Kenneth, 2005).

The present study was agreed with other study who study the blood groups among hepatitis patients. The blood groups of donors do not follow the usual pattern of statistical distribution in the general population, the results of this study demonstrate that a possible association between HBV & HCV infections and blood group antigens.
can not be ruled out. Other studies revealed that blood groups of patients not related to the hepatitis infections (Alaoddooleho et al., 2007).

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