SHORT COMMUNICATION

Prevalence of Hepatitis B Virus Infection in Blood Donors Based on Titer Hepatitis B Surface Antigen Examination (HBsAg)

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Hepatitis B remains a global public health problem. Infection from hepatitis B virus (HBV) can be transmitted through a blood test or a blood transfusion. This study was conducted to identify the prevalence of HBV infection in blood donors based on examination of HBsAg titers. Blood donors from Tuban Red Cross used as sample. The method used in this research is HBsAg titers examination performed by ELISA according to the procedure outlined in the Kit. HBsAg titers positive mostly found in men. In men from 13 samples (8.67%) are HBsAg titers positive of 150 samples while in woman all negative for HBsAg titers from 137 samples. The average titer positive was 3.095 with a standard deviation of 0.187. While HBsAg titers negative have average of 0.03 with a standard deviation of 0.14. This study showed that the prevalence of HBV infection in blood donors is most numerous in men with HBsAg titers positive number of 8.67%.

Key words: blood donor, HBsAg titer, HBV

Hepatitis B is one of several major human diseases, is a serious global public health problem. About two billion people (WHO 2000) or one third of the world's population has been infected with hepatitis B. More than 350 million people among them are suffering with hepatitis B virus (Manesis et al. 2001) located mostly in Asia or Africa (Lavanchy et al. 2004).

Until today in Indonesia hepatitis B virus infection (HBV) is a major health problem. In the world itself, an increase number of patients annually infected with the hepatitis B virus both acute, chronic or cirrhosis liver (Handajani et al., 1997). In human HBV infection is often not causing much different, in some cases it's detected accidentally during blood test.

Eventhough in some infection HBV on human can also occur with symptoms of acute HBV infection.

HBV can also a cause of fulminant hepatitis. Most patients recover completely within 6 months but when neonates 10% of adult patients and 90% of patients who are infected with HBV will become chronic. There are 80% hepatocellular carcinoma patients caused by HBV infection (Sastri 2008).

Detection of HBsAg is one of the easiest and cheapest ways to detect HBV infection, by that reason researchers interested in conducting research in the donor blood in Tuban regency since HBV infection can be detected in a blood test as well as the blood transfusion process. Objective of this study is to identify the prevalence of HBV infection in blood donors based on HBsAg titers examination.

The method used in this research was a laboratory experiment. Research conducted in the laboratory at Biology University Ronggolawe (Unirow) Tuban and the Institute of Tropical Disease Airlangga University (Unair ITD) in Surabaya from March to April 2012.

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Sample for this study were taken from Tuban Red Cross’s blood donors. HBsAg Examination conducted using enzyme-linked immunosorbent assay (ELISA) kit from Abbott. Inspection done in accordance with the instructions on the kit.

As many as 150 blood samples collected from the blood donors in Tuban Red Cross. The results of the study are presented in Table 1.

From Table 1, majority of donors are 148 men (98.7%) and 145 donors (96.7%) were age over 20 years. Donors were male as much as 148 and 2 female. From the younger than 20 years old age group as many as 3 people and older than 20 years old age group as many as 147 people.

Titers negative with most numbers is range on 0.021 to 0.040 (45.3%) of the total 140 samples. Blood donors for this study were tested using HbsAg examination. HBsAg positive are 13 samples on men, while HBsAg negative are all samples are 2 samples. HBsAg titer positive from female donor has average of 0.03 with a standard deviation of 0.14.

In phase window period, the recovery phase, Occult Hepatitis B (OHB) (Akahane et al. 2002; Allain et al. 2006), and post infection the amount of antigen (HBsAg) are less. This can cause negative result of HBsAg examination, but in this phase HBV is found (Akahane et al. 2002; Chan et al. 2003).

Intravenously drugs users and blood transfusion recipients, including hemodialysis patients are a high-risk group for HBC (Levinson et al. 2003). The risk of HBV transmitted by blood transfusion has been reducing drastically with the screening of HBsAg routinely from all blood donors (Brooks et al. 2011). To prevent transmission of HBV through blood transfusion, Indonesia generally imposes standard for HbsAg examination to screen for HBV.

Based on the results of research and discussion can be summarized as follows: the prevalence of HBV infection in blood donors is based on examination of HBsAg titers most men has 13 samples (8.67%) of positive HBsAg titers, the average of positive HBsAg titers were 3.095 with a standard deviation of 0.187 whereas in women were all HBsAg negative.

**Table 1 Age of Donors whose blood taken as sample**

| No. | Sex  | Age (Years) | Total Sample (bags) (%) |
|-----|------|-------------|------------------------|
| 1.  | Male | 3 ≤20 | 145 | 148 bags (98.7%) |
| 2.  | Female | 0 ≥20 | 2 | 2 bags (1.3%) |
| Total |       | 150 |  |

**Table 2 Results of HBsAg titer examination with negative result**

| Titer HBsAg | Frequency | % |
|-------------|-----------|---|
| 0.01 - 0.020 | 17 | 12.4 |
| 0.021 - 0.040 | 62 | 45.3 |
| 0.041 - 0.060 | 18 | 13.1 |
| 0.061 - 0.080 | 19 | 13.9 |
| 0.081 - 0.100 | 21 | 15.3 |
| Total | 137 | 100 |

is 27%, mainly in males aged 20-29 years (44.4% from population) with blood type O.

The averages and standard deviation of HBsAg titers in blood donors in Tuban Red Cross can be seen in Table 4.

In Table 4 the HbsAg titers positive from male donor has average standard deviation of 3.095 to 0.187 while the HBsAg titers positive from female donor are zero. HBsAg titers positive from female donor has average of 0.03 with a standard deviation of 0.14.

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