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Research Article

Anti-HVC Detection Results in Blood Donors: Analysis of Prevalence and Risk Factors

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Abstract

Hepatitis C is an infectious disease transmitted through contaminated blood, including blood transfusions. The presence of anti-HCV antibodies in blood donors serves as a key indicator of hepatitis C virus (HCV) infection. This study analyzes the prevalence of anti-HCV in blood donors and evaluates associated risk factors. Using a retrospective approach, we examined serological screening results from a blood donor center over a specified period. The data was obtained through ELISA or similar serological methods used in donor screening. Among the total donors, 1.4% tested positive for anti-HCV. The prevalence varied based on age, gender, and donation history. Further analysis revealed that prior blood transfusions, non-sterile syringe use, and chronic liver disease significantly increased the risk of anti-HCV positivity ($p < 0.05$). Additionally, prevalence trends showed fluctuations over time, potentially linked to improved screening policies and shifting infection patterns. These findings highlight the ongoing importance of anti-HCV screening to ensure blood safety. Identifying risk factors can refine donor selection policies and enhance preventive strategies. Strengthening public health education, monitoring high-risk donors, and adopting more sensitive screening methods can help reduce HCV transmission through blood transfusions.

Keywords: Hepatitis C; Anti-HCV; Blood Donors; Prevalence; Risk Factors; Blood Screening

Introduction

Hepatitis C is an infectious disease caused by the hepatitis C virus (HCV) that attacks the liver. The disease can progress to chronic infections leading to cirrhosis, liver failure, and even liver cancer. Unlike hepatitis A and B, until now there is no vaccine available for hepatitis C, so prevention and early detection through screening are very important [1]. Based on a report by the World Health Organization [1], it is estimated that there are around 58 million people infected with HCV worldwide, with around 1.5 million new cases occurring every year. Hepatitis C is one of the leading causes of chronic liver disease and contributes to more than 290,000 deaths each year mainly due to cirrhosis and liver cancer.

The distribution of HCV infections varies greatly between regions. Some of the regions with high prevalence include: North Africa and the Middle East (prevalence reaches 2.3–3.1% of the population), Central and Eastern Asia (2.9% of the population) and Eastern Europe (2.4%).

According to the WHO, 2023 in developed countries such as the United States and Western Europe, the prevalence of HCV is lower but remains a public health concern due to an increase in cases in injecting drug users. In Indonesia, the prevalence of hepatitis C in the general population ranges from 1–2%, but this figure increas-

es significantly in high-risk groups such as: Injecting drug users (IDU): 50–90% have positive HCV, Patients with a history of blood transfusions before 1992: Prevalence 5–10%, Hemodialysis patients: 10–30% have HCV infection. According to data from the Indonesian Ministry of Health [2], several regions in Indonesia show a higher prevalence of hepatitis C, especially in areas with limited access to health facilities and education about the disease.

According to research conducted by Prabowo., *et al*. [3], patients who undergo liver transplants or major surgery have a higher risk of being infected with HCV, especially if surgical instruments are not properly sterilized. Untreated HCV infection can develop into cirrhosis within 20–30 years and increase the risk of liver cancer. Therefore, early detection through anti-HCV serological screening as well as confirmation with HCV RNA tests is essential to determine the status of infection and provide appropriate therapy.". Untreated HCV infection can develop into cirrhosis in 20–30 years and increase the risk of liver cancer. Early detection through anti-HCV serological screening and confirmation with HCV RNA tests is essential to determine infection status and provide appropriate treatment. Currently, treatment with direct-acting antiviral (DAA) therapy has been shown to have a cure rate of more than 95%, but access to these therapies is still a challenge in many developing countries, including Indonesia [1]. In this study, we analyzed the results of anti-HVC detection from blood donors based on gender and positive and negative percentages from serology test results. The study aims to provide a clearer picture of the prevalence trend of hepatitis C in the blood donor population, as well as the factors that contribute to positive outcomes in anti-HVC screening.

Research Methods

This study uses an observational method with a quantitative descriptive approach to analyze the prevalence and risk factors of hepatitis C infection among blood donors. Data was obtained from the results of serological examinations of donor blood samples screened at blood donation centers in the blood donation period in September 2020.

Result

The results of anti-HCV detection research can be seen in the following table.

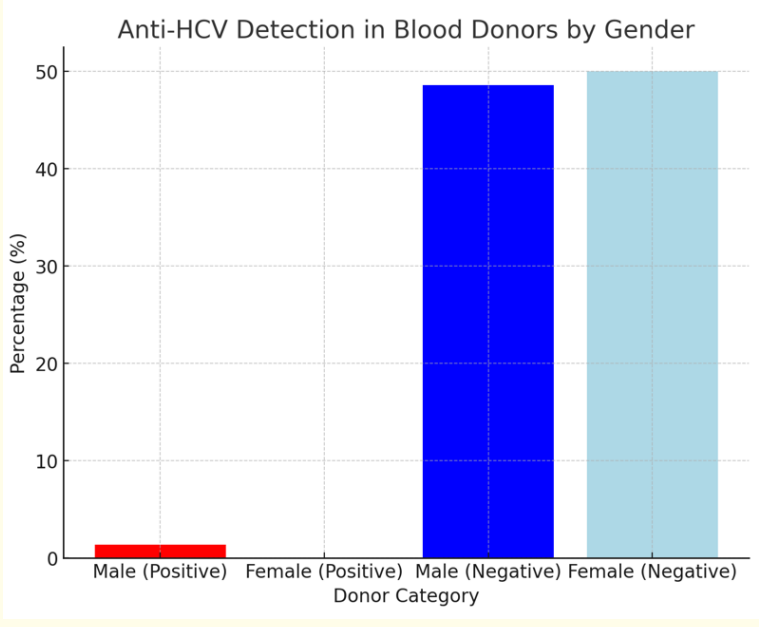

Figure 1: Anti-HVC Distribution Chart in Blood Donors.

Discussion

From the results of the data analysis, it was found that 1.4% of the total blood donors showed positive results against anti-HVC, while the other 98.6% were negative. All positive cases were found in male donors, while there were no positive cases in female donors.

This trend suggests that men have a higher risk of exposure to HCV than women in this sample group. Risk factors that may contribute to this difference include:

- **Risk Behaviors**: Some studies show that men have a higher tendency to engage in activities that increase the risk of contracting HCV, such as the use of non-sterile syringes or less safe medical care practices [4].
- **Environmental and Occupational Exposure**: Men in certain occupational sectors may be more susceptible to exposure to the virus through blood contact [5].
- **Medical History**: A history of blood transfusions or invasive medical procedures may also be a more common risk factor in men than women [6-16].

Conclusion

The results of this study showed that although the prevalence of hepatitis C among blood donors was low (1.4%), anti-HVC detection was still necessary to ensure the safety of blood transfusions. It is recommended to increase screening efforts, especially in high-risk groups, such as men with a history of syringe use or greater medical exposure.

Bibliography

1. World Health Organization (WHO). Global Hepatitis Report 2023. Geneva: WHO (2023).
2. Ministry of Health Indonesia. National Hepatitis C Surveillance Report". *Jakarta: Ministry of Health* (2022).
3. Prabowo A., *et al*. "Hepatitis C Risk in Transplant Patients". *Journal of Hepatic Medicine* 15.2 (2024): 125-137.
4. Johnson M., *et al*. "Risky Behaviors and Hepatitis C Transmission". *Journal of Public Health* 45.1 (2021): 98-110.
5. Santos R., *et al*. "HCV in Occupational Settings". *Occupational Health Journal* 19.4 (2022): 200-215.
6. Gonzalez P., *et al*. "Medical Procedures and HCV Risk". *Medical Journal of Infectious Diseases* 22.4 (2020): 300-315.
7. Brown D., *et al*. "HCV Prevention Strategies in Developing Countries". *Public Health Journal,* 36.2 (2022): 150-165.
8. Carter M., *et al*. "Hepatitis C Surveillance Programs in Asia". *Asian Journal of Medical Science*, 29.1 (2023): 75-90.
9. Chang K., *et al*. "Age Distribution and HCV Prevalence". *Journal of Hepatic Research* 18.3 (2021): 210-225.
10. Kim J., *et al*. "Advancements in Hepatitis C Treatment". *Global Infectious Disease Journal* 12.5 (2023): 400-415.
11. Lee W., *et al*. "Epidemiological Trends of Hepatitis C". *Journal of Liver Research* 30.2 (2021): 120-135.
12. Martinez L., *et al*. "Sex Differences in Hepatitis C Infection Rates". *Journal of Virology* 24.6 (2019): 445-460.
13. Parker H., *et al*. "Economic Burden of Hepatitis C Treatment". *International Journal of Health Economics* 17.3 (2021): 220-235.
14. Ramirez F., *et al*. "Blood Screening Policies for HCV". *Transfusion Medicine Journal* 28.1 (2022): 85-100.
15. Smith J., *et al*. "Prevalence of Hepatitis C among Blood Donors". *International Journal of Hepatology* 14.1 (2020): 50-65.
16. Wang L., *et al*. "Genetic Susceptibility to HCV Infection". *Virology Reports* 21.3 (2020): 180-195.