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ANALYSIS OF HEPATITIS B TRANSMISSION POTENTIAL IN THE FAMILY OF PATIENTS USING HBsAg RAPID SCREENING TEST

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Abstract

Hepatitis B virus (HBV) is the cause of liver disease, found in human body fluids such as saliva, vaginal fluids, semen, and blood. HBV can be transmitted through sex, sharing syringes, baby-mother intercourse, and touching involving bodily fluids. The novelty of this study is that it analyzes the potential for hepatitis B transmission using the HBsAg Rapid Screening Test. The purpose of this study was to analyze the potential for transmission of hepatitis B to the families of patients with patients. This research uses a quantitative method with a descriptive type. The examination used was the immunochromatographic method on venous blood samples of 22 families. The results of the study showed that there were households where one member was detected as HBsAg positive, and 18 other households were HBsAg negative. Transmission of Hepatitis B Virus (HBV) in the family is as much as 9.09% with the family status of parents and children. It is suspected that children who contracted HBV were the result of close contact that lasted for quite a long time, which allowed HBV particles to move. Moreover, the child lives in the same house with the mother, who takes care of him. The conclusion of this study is that the patient's family who has close contact with hepatitis B sufferers can be infected with hepatitis B.

Keywords: Virus; Hepatitis B; Immunochoromatography.

INTRODUCTION

Infectious disease is a disease that can be transferred from one person to another, which is characterized by the presence of the causative agent of the disease. One of the diseases that can be transmitted is hepatitis B. According to (1), hepatitis B is a dangerous infectious disease that can cause Extraordinary Events (KLB) and is a public health problem worldwide, including in Indonesia. Hepatitis B is also a viral infectious disease that can attack the liver and will then develop into the hardening of the liver or liver cancer to cause death. This situation is very dangerous because the patient does not feel sick but continuously transmits the hepatitis B virus (HBV) to others so that an outbreak of Hepatitis B can occur and also experience complications, namely hardening of the liver called liver cirrhosis and can also develop

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into liver cancer called liver cancer. With hepatocellular carcinoma (2).

Families are members of society who are closely related to one another. The spread of hepatitis B disease can potentially be transmitted through the family (3). Currently, in the world, it is estimated that there are 350 million HBsAg carriers and 220 million (78%) of them are in Asia, including Indonesia. Based on the examination of HBsAg in the blood donor group in Indonesia, the prevalence of hepatitis B ranges from 2.50% - 36.17%. In Indonesia, hepatitis B virus infection occurs in infants and children. It is estimated that 25% - 45% of sufferers are due to perinatal infection. This means that Indonesia is an endemic area for hepatitis B disease, so it is a country that is called by WHO to carry out immunization prevention efforts (4).

The etiology of Hepatitis B virus is from the DNA virus group, where the incubation period from post-exposure ranges from 30-180 days. Hepatitis B virus, vertical transmission 95% occurs during the perinatal period (during childbirth) and 5% intra-uterine. Horizontal transmission is the transmission or spread of HBV in the community. Transmission occurs due to close contact with people with hepatitis B or patients with acute hepatitis B, for example, in people who live in the same house or have sexual relations with people with hepatitis B (5).

Viral hepatitis is an iceberg phenomenon, where there are fewer patients who are registered or who come to health services than the actual number of sufferers. The prevalence of hepatitis B in 2013 was 1.2%, twice as high as in 2007. The five provinces with the highest hepatitis prevalence were East Nusa Tenggara (4.3%), Papua (2.9%), and South Sulawesi (2.5%). %), Central Sulawesi (2.3%) and Maluku (2.3%) (6). Judging from the geographical location of these five regions, we know that they are the eastern part of Indonesia. This indicates that Gorontalo Province may also be included in the 5th largest category of hepatitis B sufferers in Indonesia, considering that Gorontalo Province is neighboring Central Sulawesi

and South Sulawesi, which are currently in the hepatitis B alert stage. Based on data from the Provincial Health Office. Gorontalo, recorded that there were 404 people infected with the hepatitis B virus from 2014 to 2016. This data was obtained from health centers and hospitals. However, people who are infected with the hepatitis B virus and do not come to health institutions are not identified by health workers. This situation becomes very dangerous because the symptoms that arise are not typical such as feeling lethargic, decreased appetite, low-grade fever, right abdominal pain, and weight loss (7). This situation causes the prevalence of the population infected with the Hepatitis virus to tend to increase because the number of sufferers continues to grow moreover there are carriers or carriers of the disease, and can become a Silent Killer for everyone without exception, and family members of hepatitis B carriers are those who most at risk of infection.

Based on the etiology of the Hepatitis B virus, where family members are the most at risk of being easily infected and do not cause visible clinical symptoms, the researchers wanted to analyze the potential for transmission through the families of hepatitis B positive patients in RS. Umum Daerah Gorontalo.

RESEARCH METHODS

The research method used in this research is the descriptive quantitative method. The technique of determining the sample criteria is by interviewing the families of hepatitis B-positive patients.

The object of the research is the family of patients with hepatitis B at the regional general hospital province Gorontalo (RS. Prof. Dr. Aloei Saboe dan RS. Toto Kabila) with proportional sampling method sampling as many as 20-30 heads of families with the following criteria:

1. Live in the province of Gorontalo
2. Families of patients with hepatitis B who are hospitalized RS. Prof. Dr. Aloei Saboe dan RS. Toto Kabila.
3. Willing to be a respondent (Sign a statement letter)
4. Location/place of residence of the sample candidate that can be reached

Data were obtained from families of hepatitis B-positive patients with certain criteria. To get the desired data, the researcher prepares a questionnaire for prospective respondents, and if they meet the requirements, they can be used as respondents. The sample used is a sample of venous blood.

After the sample is determined, venous blood is taken from each sample, which will then be processed in the laboratory and examined for HBsAg using the HBsAg rapid screening test.

The principle of this method is the reaction of immunochromatography, which uses a colored membrane to detect HBsAg in serum. The membrane coated with anti-HBs in the test area (T) can react by capillary action to form a red line.

HBsAg in the serum will form two red lines on the stick, which are visible approximately 15 minutes after the stick is inserted into the serum.

The data analysis technique in this study was carried out by describing the data from the questionnaire results and the HBsAg examination using the rapid screening test method for the families of hepatitis B-positive patients.

RESULTS AND DISCUSSION

Sample examination is carried out in the laboratory RSUD Toto Kabila, where laboratory facilities allow for Hepatitis B examination according to the standards set in the research method and according to the operational standards (SOP) of a health laboratory.

Sampling was carried out in each respondent's house spread across several districts, including in Bone Bolango and city district Gorontalo. Sampling in the district Bone Bolango precisely in the village Dutohe Barat, Po'owo Barat, Iloheluma, dan Dutohe Barat. And two sub-districts in the district of the city, namely Ward Ipilo dan Limba B. For other respondents, researchers took samples at the hospital Toto Kabila.

Table 1. Characteristics of Respondents by Age and Gender

No	Age	Total	Gender	
			L	P
1	0-20 Year	7 Person	5	2
2	21-55 Year	31 Person	19	12
3	≥56	4 Person	2	2
	Total	42 Person	26	16

Table 2. Characteristics of Respondents based on Family Relationships

No	Family relationship	Total
1	Husband and wife	13 Person
2	Siblings	10 Person
3	Cousins	3 Person
4	Child	8 Person
5	Brother-in-law	3 Person
6	son-in-law	2 Person
7	Parent	3 Person
8	Total	42 Person

The familial relationship between patients with Hepatitis B and respondents is one of the references to consider the results obtained in the field.

Table 3. Hepatitis B Infection in Families of Patients with Hepatitis B.

No	Infection Status	Total	Percent (%)
1	Positive (+) HbsAg	2 Head of family	9.09%
2	Negative (-)	20 Head of family	90.91%
	Total	22 Head of family	100%

The picture of Hepatitis B infection in the family shows the potential for transmission, which is marked by the discovery of 2 heads of families whose one member is infected with hepatitis B.

Based on the results of the study using the HBsAg Screening Test, it was found that the results were positive (+) in 2 families and 20 families were negative (-). These results indicate that there is a potential for transmission through family relationships. Close contact with people with hepatitis B, that lasts for a long time allows the transfer of hepatitis particles to other individuals (family). The discovery of 2 HHs, each of which was a positive HBsAg family member, was caused by several factors. The authors found that both HBsAg positive respondents had familial status as mother and child, with the patient with the initial YP and the respondent as his child with the initial TM, then the PVG patient as a child and the HA respondent being the mother of PVG who was also HBsAg positive. Positive HBsAg in respondents was caused by several factors, namely very close family relations, living in one house, and being in contact every day.

Negative HBsAg in respondents is supported by age, which is closely related to the body's defense system or antibodies. Adults can be said to have more complete antibodies than children and the elderly. The age of children with antibodies is still in the developmental stage, and the elderly have entered a period of decline in the immune system. Based on the data obtained, there are 31 adults ages 21-55 years old, 0-20 years old, as many as 7 people, and the elderly or age 56-over as many as 4 people. This data can be one of the supporters of the respondent's non-infection. This is in line with the opinion of (8), who said that hepatitis B infection most often occurs in infants and school-age children, respectively, in the range of 90% and 23-46 % while in adults only 3-10%.

Negative HBsAg in respondents was supported by gender, also related to the immune system, where the findings or results of the study found that there were more male respondents than women, 26 and 16 people, respectively. A man's immune system is more resistant to antigens than female antibodies, whereas (8) said women are at three times higher risk than men.

CONCLUSION AND RECCOMENDATION

Transmission of Hepatitis B Virus (HBV) in the family is as much as 9.09% with the family status of parents and children. It is suspected that children who contracted HBV were the result of close contact that lasted for quite a long time, which allowed HBV particles to move. Moreover, the child lives in the same house with the mother, who takes care of him.

Overcoming the problem of transmission of the hepatitis B virus (HBV) in the family environment is not by avoiding / isolating family members who are positive for hepatitis B but by embracing together and encouraging them to provide opportunities for healing because with confidence they can respond to the body's defense system to fight a disease agent.

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