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Correlation between SGPT Levels and Haemoglobin Levels on Patients with Hepatitis B at RSUD Haji Surabaya

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ABSTRACT
Hepatitis B is an infection caused by the hepatitis B virus that attacks the liver and can trigger acute and chronic disease with a prevalence of 21.8% in Indonesia and can even cause death. Hepatitis B virus can cause liver inflammation that triggers cell damage and makes SGOT and SGPT enzymes in the liver release into the bloodstream. Damage to liver cells also leads to increased synthesis of hepcidin which functions to transfer iron to the systemic circulation. Reduced iron will lead to reduced haemoglobin levels in the body. This study is to see the correlation between SGPT levels and haemoglobin levels in patients with hepatitis B at RSUD Haji Surabaya. This type of research is descriptive with a sample size of 60 hepatitis B patient data. This study used secondary data from the clinical pathology laboratory of RSUD Haji Surabaya in December 2023 - May 2024. This study shows that from the data of 60 patient samples conducted statistical tests using the chi square test, it was found that there was no correlation between SGPT levels and haemoglobin levels in patients with hepatitis B with a significant value (p) of 0.189 > 0.05. There is no correlation between SGPT levels and haemoglobin levels in patients with hepatitis B.

Keywords: SGPT, Haemoglobin, and Hepatitis B

INTRODUCTION

Hepatitis B is an infection caused by the hepatitis B virus (HBV) which attacks the liver and can trigger acute and chronic disease and even death in humans. It is known that the hepatitis virus consists of 5 types with the highest prevalence of hepatitis B virus (HBV) at 21.8% which attacks many Indonesians (Nurwananda & Sulaiman, 2022). Based on the Ministry of Health (2023), it is stated that hepatitis B in Indonesia reaches 18 million people and 2,159 people died from liver cirrhosis as a result of chronic hepatitis B.

Hepatitis can also be transmitted vertically from mother to baby. In 2020, the results of early detection of the hepatitis B virus in pregnant women were 45,108 (1.68%) of the 2,682,297 people examined. This data is confirmed by Riskesdas (2018), the prevalence of hepatitis is 0.4% of the population in Indonesia, of which 1-5% are pregnant women who are positive for the hepatitis B virus.

A person who is infected with the hepatitis virus can experience damage to the liver, causing inflammation and necrosis of the liver (Yulia, 2019). Viral pathophysiology begins when viruses that enter the body attach to membrane receptors and penetrate the cytoplasm. In the cytoplasm, HBV will form viral proteins until they exit the hepatocytes as antigens in the form of HBsAg (Robani et al., 2022).

HBsAg is a type of antigen from the hepatitis virus whose presence can be used as a screening test for the hepatitis B virus

in the body (N. Amalia & Sari, 2020). The virus will enter and damage liver cells, causing the SGOT and SGPT enzymes in the liver to be released into the bloodstream (Alwaali et al., 2023). Examination of SGPT levels is more accurate in determining liver function disorders and levels can be detected even in small amounts, so it is used as an indication of liver inflammation (Geni & Yahya, 2022).

Liver inflammation caused by the hepatitis B virus also causes an increase in hepcidin synthesis which functions to regulate iron in the blood. An increase in hepcidin can inhibit iron absorption which then affects the erythropoiesis process which causes a reduction in the number of erythrocytes and haemoglobin (Hb) levels in the body (A. Lestari & Wikaning Tyas, 2023).

Referring to the characteristics of the virus which does not cause symptoms and the high number of hepatitis B cases, Surabaya is one of the cities with quite a lot of hepatitis B in Indonesia. In line with research (Wungu et al., 2019) said that in Surabaya there were 36 samples of hepatitis B sufferers and as many as 20 patients (55%) had symptoms of liver disease. Therefore, researchers chose the city of Surabaya as the research location and RSUD Haji Surabaya as the location for collecting data because of the high number of positive cases of hepatitis B. Based on medical record data from RSUD Haji Surabaya in September - November 2023 there were 45 positive patients for hepatitis B and in November 2023 there were 15 positive patients. Hepatitis B who carried out SGPT and Haemoglobin examination at Haji Hospital Surabaya.

RESEARCH METHOD

This type of research is analytical which aims to determine the correlation between SGPT levels and Haemoglobin levels in hepatitis B patients at RSUD Haji Surabaya in the period December 2023 – May 2024.

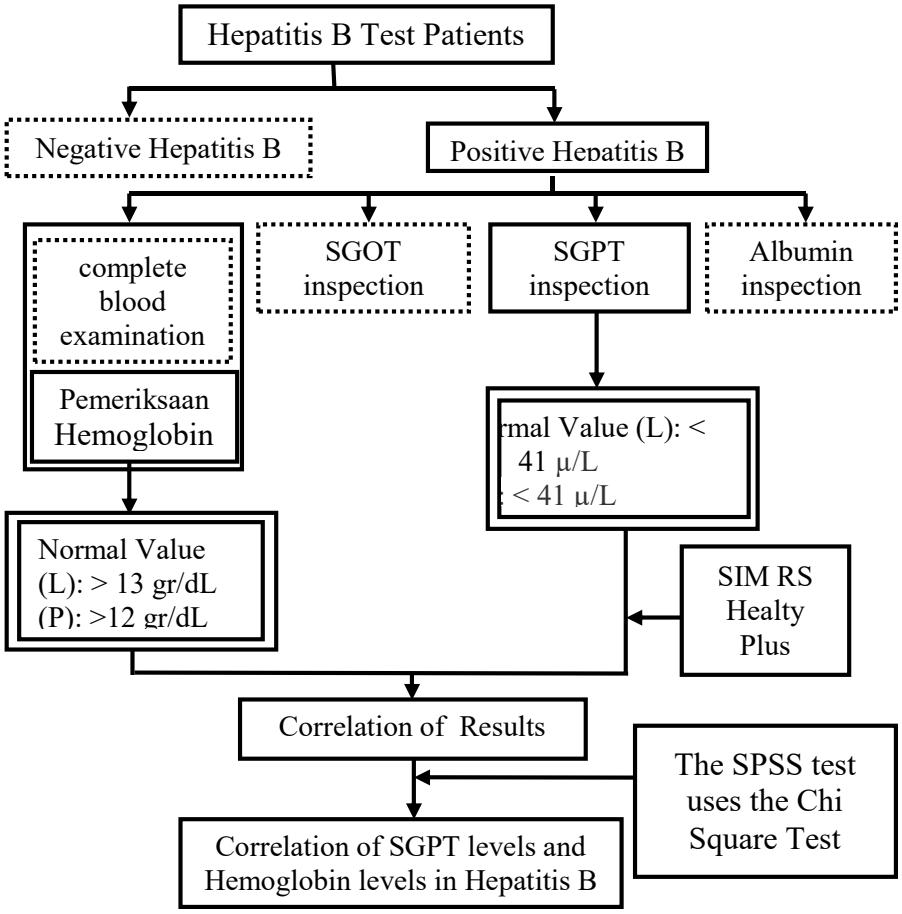

Figure 1. Research Design

The population in this study is data from hepatitis B patients who had their SGPT levels and Haemoglobin levels checked in the month December 2023 – May 2024 as many as 60 patient data were taken from the Health Plus Medical Record Hospital SIM at Haji Surabaya Hospital.

The sample for this research is the total data population of hepatitis B patients who had their SGPT levels and haemoglobin levels checked in December 2023 – May 2024 at Haji Hospital Surabaya. The sampling technique in this study was non-probability sampling using a total sampling technique by taking all the data of the total sample population.

The data analysis technique in this research is using the Statistical Package for the Social Science (SPSS) and analyzed using the Chi Square test.

RESULT AND DISCUSSION

From the results of data collection and analysis, the SGPT levels in 60 hepatitis B positive patients were obtained as follows:

Table 1. SGPT Levels In Patients Suffering From Hepatitis B at RSUD Haji Surabaya

SGPT	Levels	Amount	Percentage
Normal	< 41	44	73%
Abnormal	> 41	16	27%
Total		**60**	**100%**

Based on table 1, SGPT levels were normal in 44 patients (73%), while SGPT levels were abnormal in 16 patients (26.7%). From the results of data analysis, it shows that hepatitis B patients predominantly have normal SGPT levels of 73%.

Table 2. Haemoglobin Levels In Patients Suffering From Hepatitis B at RSUD Haji

HB	Levels	Amount	Percentage
Normal	(L) : >13 (P) : >12	25	42%
Abnormal	<13,2	35	58%
Total		60	100%

Based on table 2, the results of the analysis of Haemoglobin (Hb) levels in hepatitis B patients mostly found that 35 patients (58%) had abnormal Hb levels, while 25 patients (42%) had normal Hb levels.

Table 3. Chi Square Test for SGPT Levels and Haemoglobin Levels in Hepatitis B Sufferers at Haji Hospital Surabaya

Inspection	Significant Levels (p)	
	SGPT	Haemoglobin
SGPT		.183
HB	.183	

In table 3, the statistical test using the Chi Square test shows a significant value (p) for SGPT levels = 0.183 for Haemoglobin levels, so that the value (p) > 0.05 from the results of the analysis using the Chi Square test can be interpreted as meaning that there is no relationship or correlation between SGPT levels. with Haemoglobin levels in patients suffering from Hepatitis B.

Based on table 1, the results of data collection and analysis show that 44 patients (73%) had normal SGPT levels, while 16 patients (26.7%) had abnormal SGPT levels. From the results of data analysis, it shows that hepatitis B patients predominantly have normal SGPT levels of 73%. The characteristics of the hepatitis B virus are quite unique because the virus can attack without symptoms and organ damage (non-cytopathic). Throughout the world there are 300 million people with hepatitis B virus and around 5% suffer from hepatitis B without symptoms (Siregar et al., 2019).

Based on table 2, the results of the analysis of Haemoglobin (Hb) levels in hepatitis B patients mostly found that 35 patients (58%) had abnormal Hb levels,

while 25 patients (42%) had normal Hb levels. Abnormal Hb levels occur because the hepatitis B virus can cause liver inflammation which can increase hepcidin synthesis and then block the transfer of iron in the systemic circulation. The reduced iron content absorbed affects the erythropoiesis process, causing a decrease in the number of red blood cells and Hb levels in the body (A. Lestari & Wikaning Tyas, 2023).

Abnormal SGPT levels are not necessarily due to liver inflammation caused by the hepatitis B virus, SGOT and SGPT levels that are slightly above normal do not always indicate someone is sick, it could be that the increase occurs not due to liver problems, another factor is fatigue, excess iron and taking certain medications, such as statins (Alwaali et al., 2023).

Based on research analysis, it was concluded that not all hepatitis B virus infections cause liver damage because they are non-cytopathic without damaging cells and do not affect liver function examinations (Yulia, 2019). Meanwhile, low Hb levels can be caused by several factors, in line with research by Sugiritama, et al (2022) which states that the habit of consuming drinks that can inhibit iron absorption such as coffee, tea and medicines is also correlated with the level of anemia or a decrease in Hb levels at age. carry on.

According to research by Mulya & Prasetyawati, (2022) the hepatitis B virus usually has very varied symptoms and signs. In this case, usually no complaints or symptoms are found with the hepatitis virus and liver function examinations such as SGPT results are normal. This can be caused because the Hepatitis B virus does not cause complications in the liver.

CONCLUSION AND RECOMMENDATION

The results of research on the correlation of SGPT levels and Haemoglobin levels in hepatitis B sufferers at Haji Hospital Surabaya in December 2023 - May 2024 with a total of 60 data concluded that:

1. Based on the characteristics of this study, it is known that 44 people (73%) had normal SGPT levels and 16 people (27%) had abnormal SGPT levels.
2. Based on the results of data analysis of Haemoglobin levels in this study, it is known that 25 people (41%) had normal Hb levels and 35 people (58%) had abnormal Hb levels.
3. From the results of the tests carried out in this study, it was found that there was no significant relationship between SGPT levels and Haemoglobin levels in hepatitis B sufferers at RSUD Haji Surabaya.

Recommendation:

1. The public is expected to be able to protect themselves from risk factors such as free sex, unsterilized injection needles, and other behavior that can cause hepatitis B transmission.
2. Health workers are expected to be more alert and take care of themselves by using apd to avoid transmission of hepatitis B through patients at work.

It is hoped that future research will be more specific in patients suffering from acute hepatitis B.

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