



SUMEJ
Sumatera Medical Journal



CHANGES IN *GLUTAMIC OXALOACETIC TRANSAMINASE* SERUM (SGOT) AND *GLUTAMIC PYRUVIC TRANSAMINASE* SERUM (SGPT) VALUE IN LAPAROSCOPIC CHOLECYSTECTOMY PATIENT AT USU HOSPITAL

Aziizah Gita Budiarti^{1*}, Adi Muradi Muhar²

¹Faculty of Medicine, Universitas Sumatera Utara

²Department of Digestive Surgery, Faculty of Medicine, Universitas Sumatera Utara

Abstract. Background. Laparoscopic cholecystectomy has become more widely used choice compared to laparotomy cholecystectomy. Laparoscopic cholecystectomy has now become the gold standard of abdominal surgery for abdominal surgery for gallbladder abnormalities, more than 90% of patients with gallstone disease are treated surgically by laparoscopy, but several studies have revealed an increase in SGOT & SGPT values in these surgical procedures. SGPT itself occurs due to the procedure of laparoscopy. In the procedure, there is a temporary increase in the pneumoperitoneum, the pressure on the pneumoperitoneum and its duration affect the severity of ischemia by causing an increase in this liver enzyme. Among several studies, one of them revealed that at 48 hours after laparoscopic cholecystectomy surgery an enzyme increase. **Objective.** The purpose of the study, this research was conducted to see the changes in SGOT & SGPT values in laparoscopic cholecystectomy surgery. **Method.** This research method is analytic with cross sectional study design conducted at North Sumatera University Hospital. This research was conducted by looking at secondary data, namely the medical record of patients with gallstones who underwent laparoscopic cholecystectomy surgery from January 2019 to November 2019. The sample was selected by using total sampling method. Data were then analyzed using statistical application software. The number of samples was 45 samples with a diagnosis of gallstones who performed laparoscopic cholecystectomy. **Results.** Wilcoxon test results showed a significant change between SGOT and SGPT levels before performing operations with SGOT and SGPT levels after surgery with $p=0.000$ ($p<0,05$). **Conclusion.** There are changes in SGOT & SGPT in laparoscopic cholecystectomy.

Keyword: Cross sectional study, surgery, pneumoperitoneum, liver function pneumoperitoneum, liver function

*Corresponding author at: Faculty of Medicine, Universitas Sumatera Utara

E-mail address: aziizahgitab@yahoo.com

1. Introduction

Laparoscopic cholecystectomy is a gallbladder removal procedure that has become the gold standard of abdominal surgery for gallbladder abnormalities since it was first introduced by Mouret in France in 1987. In Indonesia alone this operation was started in Jakarta by Ibrahim Ahmadsyah 1991.[1]

In a period of four years (1991-1994) the laparoscopic surgery technique was performed on 2687 patients in four centers in Indonesia and became the most common indication of a total of 2201 cases. Management of gallstone disease itself is divided into two, namely non-surgical countermeasures and surgical countermeasures. Meanwhile, surgical management itself consists of two types, namely laparotomy cholecystectomy and laparoscopic cholecystectomy. There is no difference in mortality and complications between laparotomy and laparoscopic cholecystectomy, but laparoscopic cholecystectomy has several advantages, including minimal pain, a fast recovery period, short treatment period, and the cosmetic benefits of minimal scarring, the wound will be minimal hidden in the umbilicus area.[2]

Tjiu in [3], reported that an increase in serum liver enzymes after laparotomy cholecystectomy and laparoscopic cholecystectomy, however an increase in liver enzymes was seen more significantly in laparoscopic cholecystectomy. An increase in liver enzymes in laparoscopic cholecystectomy is expected to occur due to the operating procedure it self.

In the procedure, during this operation, there is a temporary increase in the pneumoperitoneum, the pressure on the pneumoperitoneum and its duration affect the severity of ischemia by causing an increase in liver enzymes. The impact of pneumoperitoneum on liver function in patients undergoing laparoscopic cholecystectomy procedures is considered in several studies that show an increase in the value of serum *glutamic oxaloacetic transaminase* (SGOT) and serum *glutamic pyruvic transaminase* (SGPT). This increase in enzymes occurs in patients who have performed laparoscopic cholecystectomy.[4] Among several studies, one of them revealed that at 48 hours after laparoscopic cholecystectomy surgery an increase in enzymes was found.[5]

This certainly must be considered if the patient who is undergoing this operation has a concomitant liver disease. Based on the description above, researchers are interested in conducting research on "Changes in SGOT and SGPT values in laparoscopic cholecystectomy".

2. Method

This research uses observational analytic research method with cross-sectional study approach (cross sectional study). This study was conducted to analyze changes in SGOT and SGPT values after undergoing laparoscopic cholecystectomy. Data collection methods used in this

study are secondary data, namely by taking data obtained from the medical records of patients undergoing laparoscopic cholecystectomy at USU Hospital Medan. Data processing will go through the following processes, editing (To check data completeness), coding (Data that has been collected and has been checked for accuracy and completeness has been manually coded before being processed with a computer), entry (Data is coded and then entered into a computer program), cleaning (All data that has been entered into the computer must be checked again) and saving (Data storage for analysis).

3. Result

Data obtained by the total sampling method, the technique of taking the total sampling method is a sampling technique where the number of samples is equal to the total population. The population of patients with gallstone disease at the University Hospital of North Sumatra in the period January 2019 to November 2019 was recorded 45 patients containing the patient's sex, patient age, along with serum transaminase values, namely Serum *Glutamic Oxaloacetic Transaminase* (SGOT) and Serum *Glutamic Pyruvic Transaminase* (SGPT) before laparoscopic cholecystectomy management and 48 hours after laparoscopic cholecystectomy management. The data that has been collected is then analyzed so that the research results obtained as described below :

Table 1 Distribution of characteristics

Characteristics	Sum	Percentage (%)
Gender		
Female	26	57.8
Male	19	42.2
Age		
21-30 years	6	13.3
31-40 years	8	17.8
41-50 years	15	33.3
51-60 years	6	13.3
61-70 years	6	13.3
71-80 years	4	8.9
Total	45	100.0

Showed that patients who underwent laparoscopic cholecystectomy in January 2019 to November 2019 were 45 people, where the most patients were in the age group 41-50 years, as many as 15 people (33.3%) followed by the age group 31-40 years were found 8 patients (17.8%). The age groups of 21-30 years, 51-60 years, and 61-70 years were found as many as 6 people (13.3%), and the group 71-80 years as many as 4 people (8.9%). The frequency of

cholelithiasis increases with age, especially those aged 40 years and over who are more at risk of developing this disease.[6]

In the gender group, the most patients were found in women, numbering 26 people (57.8%), while men were found in 19 people (42.2%). Stinton and Shaffer (2012) state that the role of sex hormones in women, the use of oral contraceptives and the use of estrogen replacement are risk factors for cholelithiasis.[7]

4. Discussion

The analysis begins by testing the normality of the data in advance using the Shapiro-Wilk test, because the respondents surveyed numbered ≤ 50 . [8] Normality test results in the SGOT and SGPT groups in the Pre-Operations and Post-Operations obtained p value of 0,0001 ($p < 0.005$). The data is not normally distributed, therefore the analysis conducted is the non-parametric test, the Wilcoxon Test.

Table 2 Normality test

SGOT/SGPT	Normality Test (P-Value) (Uji Shapiro-Wilk)
Pre-Operasi SGOT	p = 0,0001
Post-Operasi SGOT	p = 0,0001
Pre-Operasi SGPT	p = 0,0001
Post-Operasi SGPT	p = 0,0001

Table 3 Pre-operative and post-operative serum transaminase values of patients in laparoscopic cholecystectomy

	Pre-Operasi	Post-Operasi	Perubahan	P-Value (Uji Wilcoxon)
SGOT	26 (12,00-385,00)	50 (16,00-190,00)	23 (1,00-195,00)	0,0001
SGPT	27 (9,00-619,00)	45 (20,00-514,00)	23 (1,00-362,00)	0,0001

Based on the above table, the median SGOT pre-operative level is 26, with a minimum value of 12.00 and a maximum of 385.00, while post-operative SGOT has a median of 50 with a minimum value of 16.00 and a maximum of 190.00, in addition to the median value of SGOT changes obtained 23 with a minimum value of 1.00 and a maximum value of 195.00. For the SGPT value, the median SGPT pre-operative level was 27 with a minimum value of 9.00 and a maximum value of 619.00 while the post-operative SGPT obtained a median of 45 with a minimum value of 20.00 and a maximum value of 514.00, besides the median value the SGPT changes obtained 23 with a minimum value of 1.00 and a maximum value of 362.00

Based on the Wilcoxon Statistical Test in obtaining a p value of 0.0001 ($p < 0.05$) in the SGOT and SGPT groups, this shows significant differences in SGOT and SGPT levels before and after surgery.

5. Conclusion

In the frequency distribution of gallstone patients undergoing laparoscopic cholecystectomy based on sex in USU Hospital in the January 2019 to November 2019 period, the highest number of patients was female, with 26 people with a percentage of 57.8. In the frequency distribution of gallstone patients undergoing laparoscopic cholecystectomy based on age at USU Hospital in the January 2019 to November 2019 period, most patients were in the age group of 41-50 years, namely 15 people with a percentage of 33.3%. There was an increase in SGOT value after undergoing laparoscopic cholecystectomy by $13,422 \text{ U / L} \pm 42,603$ and an increase in SGPT value after undergoing laparoscopic cholecystectomy by $5,266 \text{ U / L} \pm 69,293$. These results prove that there is a relationship between SGOT and SGPT values in the blood in laparoscopic cholecystectomy surgery.

Reference

1. Lalisang, T. J. M. 2012. Kolesistektomi Laparaskopi. Sagung Seto, Jakarta.
2. Lesmana, L. A. 2015, Penyakit Batu Empedu dalam Buku Ajar Ilmu Penyakit Dalam. 4th Ed. Pusat Penerbitan Departemen Ilmu Penyakit Dalam Fakultas Kedokteran Universitas Indonesia, Jakarta.
3. Tjiu, V. V. 2014. Perubahan Serum Transaminase Post-Operatif Pasien Kolelitiasis yang Menjalani Kolesistektomi Laparaskopi dan Kolesistektomi Terbuka di RSUP H. Adam Malik Tahun 2014. Fakultas Kedokteran. Universitas Sumatera Utara. Skripsi.
4. Erylimaz, H. B., D. Memis, A. Sezer, dan M. T. Inal. 2012. 'The Effects of Different Insufflation Pressures on Liver Functions Assessed with LiMON on Patien Undergoing Laparoscopic Cholecystectomy'. *The Scientific World Journal* 2012 : 172 – 575.
5. Singh, K., D. Singh, A. Chandra, M. Alam, P. Agrawal. 2019. 'Liver Function and Serum Amylase Alterations Following Laparoscopic and Open Cholecystectomy
6. Dani dan Susilo, L. 2012, Karakteristik Pasien Cholelithiasis di Rumah Sakit Immanuel Bandung Periode 1 Januari 2012–31 Desember 2012. *Fakultas Kedokteran Universitas Kristen*.
7. Stinton, L. M dan E. A. Shaffer. 2012. 'Epidemiology of Gallbladder Disease: Cholelithiasis and Cancer'. *Gut and Liver* 6(2): 172 – 187.
8. Dahlan, M.S. 2017, Statistik untuk kedokteran dan kesehatan. 3th Ed. Salemba Medika, Jakarta.