

## THE CORRELATION BETWEEN LEUKOCYTOSIS AND GALLBLADDER ADHESION ON CHOLECYSTECTOMY PATIENTS AT X HOSPITAL

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### ABSTRACT

**Background:** Gallbladder adhesion is a complication which causes difficulty in cholecystectomy. The author aims to seek for a test that could be used as a predictor factor for gallbladder adhesion. In this research, the elevated white blood cell (leukocyte) count is the factor studied.

**Aim:** This study aims to seek for correlation between leukocytosis and gallbladder adhesion on cholecystectomy patients.

**Method:** This research is an observational analytic study using cross sectional design. The independent variable in this research is leukocytosis, and the dependent variable is gallbladder adhesion. Analysis in this research is carried out with Chi-Square test, using a total sampling of 45 medical records of cholecystectomy patients at X Hospital.

**Result:** The majority of cholelithiasis patients in this research were between 50-59 years old (33,3%), with a mean of 51 years old. The number of cholelithiasis patient was dominated by female (62,2%). According to the cholecystectomy procedure, 26 patients underwent laparoscopic cholecystectomy (58,8%). According to clinical presentation, pain in the upper right of the abdomen was experienced by 25 patients (55,6%). Complication suffered by patients was mostly cholecystitis (n=44), yielding the number of 97,8%, followed by gallbladder adhesion in 34 patients (75,6%). Leukocytosis, which is assumed to be the predictor factor of gallbladder adhesion, was found in 15 patients (33,3%). The Chi-Square test showed no significant correlation between the two variable studied ( $p=0,62$ ).

**Conclusion:** There is no significant correlation between leukocytosis and gallbladder adhesion in cholecystectomy patients.

**Keywords:** Leukocytosis, Gallbladder Adhesion, Cholecystectomy

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## INTRODUCTION

Cholelithiasis is a stone that forms in the gallbladder or in the bile duct, or in both.<sup>1,2</sup> Colelithiasis is generally in Western countries, but its frequency in African and Asian countries continues to increase during the 20th century. this incidence has doubled since 1940.<sup>(3)</sup> prevalence of cholelithiasis in 2005, 10% of the adult population in America, where gallstones are found in 70% of all cases and the remaining 30% consists of

keywords: "stone gems "and" stones "<sup>(4)</sup> Where as in Indonesia it is still difficult because there are studies on cholelithiasis in Indonesia. Usually rubbish kolelithiasis with 4F namely fat (fat), women (women), fertile (fertile), and forty (time forty).<sup>(5)</sup> Other factors are genetic or special, use of exogenous estrogen, total parenteral nutrition, and increase blood fat levels. The main complications of gallbladder or cystic duct obstruction, which causes cholecystitis. 1.5 Factors that affect the on set of cholecystitis are bile stasis, bacterial infections and gallbladder wall ischemia.<sup>(6)</sup> Approximately 90% of cases of cholecystitis occur due to stones (calculous cholecystitis), while the remaining 10% are cases of calculese cholecystitis.<sup>(7)</sup> Of all the residents of the United States that cause cholelithiasis, about one third also suffer from cholecystitis.<sup>(8)</sup> Some other diseases of cholelithiasis are cholangitis, hydrops, empyema, and attachment. Sticking is a merger of 2 networks that don't. Sticking can be divided into congenital (from birth) and acquired (due to inflammation and / or post-surgery)<sup>(9)</sup>.

A diagnosis of adherence to the new gallbladder can correct when the action of cholecystectomy. If attachment

of the gallbladder is found, the tissue can immediately damage it at the same time.<sup>(9)</sup> With some things that can be predictive factors for the condition of the gallbladder attachment. Like a study in India in 2010, Khanday et al. Used medical records of 140 cholecystitis patients to surpass predictors of acalculous cholecystitis.<sup>(7)</sup>

Of all Americans who suffer from cholelithiasis, about bile, such as a history of pain in the right upper abdomen, nausea / vomiting, fever, Murphy's sign, increase in leukocytes, increase in liver enzymes, gallbladder edema, gallbladder distension, and gallstones.<sup>(15)</sup> The procedure is often performed on indications of symptomatic cholelithiasis is a surgical procedure, namely cholecystectomy.<sup>(6)</sup>

Cholecystectomy consists of open cholecystectomy and laparoscopically.<sup>(11)</sup> Data of the National Tabulation of the Ministry of Health of the Republic of Indonesia in 2009, describes surgery as ranked 11th out of 50 disease patterns in Indonesia with 12.8% and an estimated 32% of them are laparotomy surgery.<sup>(2)</sup> Laparoscopic cholecystectomy has become the standard standard for the management of gallbladder.<sup>12</sup> However, the procedure can turn into open cholecystectomy 0 there is severe attachment.<sup>13</sup> According to a journal by Sakpal, et al., 2010 in New Jersey , of 2205 patients with laparoscopic cholecystectomy, conversion to open cholecystectomi was performed in 109 patients. Of these populations, 23 patients were found with attachment to the gallbladder

## METHODS

This research is an observational and analytical study with cross sectional research design to study the relationship of

leukocytosis with adherence of gallbladder in patients with cholecystectomy. The study was conducted retrospectively using medical records of patients with cholecystectomy. Medical records are taken from Hospital X.

The number of samples of this study were 45 people in the form of medical record data. 45 data were cholelithiasis patients at X Hospital during 1 January 2016 to 31 December 2016. The inclusion criteria for this study were patients with a diagnosis of cholelithiasis who underwent cholecystectomy, with data history and complete blood examination. Exclusion criteria for this study were patients with a history of abdominal surgery before cholecystectomy, patients with intra-abdominal malignancy, patients with a history of intra-abdominal tuberculosis, patients with a history of generalized peritonitis. The data in this study are data on patients with cholecystectomy by surgeon at X Hospital. Data used in this study are secondary data, medical records.

The data taken is a data collection from 1 January 2016 to 31 December 2016. The data analysis technique used in this study is the Chi-Square test.

## RESULT

Distribution of cholecystectomy patients based on age with average and age range, sex, open cholecystectomy, laparoscopic cholecystectomy, conversion, average duration of operation, clinical symptoms (right upper abdominal pain, heartburn, nausea, vomiting, bloating, occurrence leukocytosis), and complications (cholecystitis, attachment of the gallbladder, empyema, gangrene, and liver abscess) for the period of January 1,

2016 to December 31, 2016 can be explained in the following table:

Table 1 Distribution of Patients with Cholecystectomy Period 1 January - 31 December 2016

	<b>Cholelithiasis</b>	<b>(+)Sticking</b>	<b>(-)Sticking</b>
<b>Number of samples / N</b>	45	34	11
<b>Age (years)</b>			
30-39 age	11 (24,5%)	8 (72,7%)	3 (27,3%)
40-49 age	7 (15,6%)	4 (57,1%)	3 (42,9%)
50-59 age	15 (33,3%)	13 (86,7%)	2 (13,3%)
60-69 age	10 (22,2%)	8 (80,0%)	2 (20,0%)
> 70 age	2 (4,4%)	1 (50,0%)	1 (50,0%)
Average age (years)	51	52	47
Range of ages (years)	33 - 75	33-73	36 - 75
<b>Gender</b>			
Female	28 (62,2%)	18 (64,2%)	10 (35,8%)
Male	17 (37,8%)	16 (94,1%)	1 (5,9%)
<b>Cholecystectomy</b>			
Open Cholecystectomy	19 (42,2%)	13 (68,4%)	6 (31,6%)
Average duration of OC (minute)	78	82	69

Cholecystic-tomy	26 (58,8%)	21 (80,8%)	5 (19,2%)	<b>Complication other than sticking</b>
Laparoscopic				
Average duration of LC (minute)	120	97	93	
Conversion	2 (4,4%)	2 (100%)	0 (00,0%)	
Average duration operation (minutes)	89	125	0	Cholecystitis
				Empyema
				Gangrene
				Liver abscess
Average duration of post-operative hospitalization (days)	3	3	4	
<b>Clinical Symptoms</b>				
Upper Right Abdominal Pain	25 (55,6%)	20 (80,0%)	5 (20,0%)	
Heartburn	6 (13,3%)	3 (50,0%)	3 (50,0%)	
Nausea	14 (31,1%)	11 (78,6%)	3 (21,4%)	
Throw up	9 (20,0%)	6 (66,7%)	3 (33,3%)	
Bloated	5 (11,1%)	4 (80,0%)	1 (20,0%)	
<b>Leukocytosis</b>				
There is leukocytosis	15 (33,3%)	12 (80,0%)	3 (20,0%)	
There is no leukocytosis	30 (66,7%)	23 (76,7%)	8 (23,3%)	
Average number of leukocytes	9.720	9.777	9.240	

Indonesia Based on table 1, 11 patients (24.5%) were 30-39 years old, 7 patients (15.6%) aged 40-49 years, 15 patients (33.3%) aged 50-59 years, 10 patients (22, 2%) aged 60-69 years, and 2 patients (4.4%) aged over 70 years. The average age of the patient is 51 years, with the youngest age being 33 years and the oldest age is 75 years. Then the number of female patients was 28 patients (62.2%) and male patients namely 17 patients (37.8%). Furthermore, open cholecystectomy was performed in 19 patients (42.2%), laparoscopic cholecystectomy in 26 patients (58.8%), and conversion from laparoscopic cholecystectomy to open cholecystectomy was performed in 2 patients (4.4%), with duration of surgery the average lasts 89 minutes.

Of the 45 patients, pain in the upper right abdominal region was felt by 25 patients (55.6%) and pain in the pit of the stomach was felt by 6 patients (13.3%). Then other complaints such as nausea were present in 14 patients (31.1%), vomiting in 9 patients, and bloating in 5 patients (11.1%). Diabetes mellitus was found in 13 patients (28.9%), hypertension in 11 patients (24.4%), and leukocytosis was found in 15 patients (33.3%). The most common complications of

cholelithiasis are cholecystitis in 44 patients (97.8%), gallbladder adhesions in 34 patients (75.6%), empyema in 5 patients (11.1%), gangrene in 1 patient (2, 2%)

Table 2 Distribution of Samples based on Leukocytosis with Adhesion of Gallbladder in Patients with Cholecystectomy Period 1 January - 31 December 2016

Leucocytos	Sticking to the gallbladder		Total
	Yes	No	
Yes	12 (80,0 %)	3 (20,0 %)	15 (100,0 %)
No	22 (73,3 %)	8 (26,7 %)	30 (100,0 %)
<b>Total</b>	<b>34</b> <b>(76,7 %)</b>	<b>11</b> <b>(23,3 %)</b>	<b>45</b> <b>(100,0 %)</b>

Based on table 2, it can be said that patients with leukocytosis who experienced gallbladder attachment were 12 patients (80.0%). While patients with leukocytosis who did not experience gallbladder attachment were 3 patients (20.0%). Then patients who were not leukocytosis but had adherence to the gallbladder were 22 patients (73.3%). While patients who did not leukocytosis and did not experience adhesions were 8 patients (26.7%).

## DISCUSSION

This study used 45 medical records of patients with cholecystectomy in Hospital X. 44 patients (97.8%) were found with the incidence of cholecystitis. But in this study only 34 patients (75.6%) were found with attachment to the gallbladder. Whereas according to

Khanday's research, all of the cholelithiasis patients in their study had leukocytosis, and in all cholecystectomies it was found to complicate gallbladder attachment.<sup>14</sup> Leukocytosis was found in 15 patients (33.3%). 4 patients (26.7%) had a leukocyte count of more than 18,000 / mm<sup>3</sup>. In 3 patients (75.0%), gallbladder adhesion was found, and only 1 (25.0%) was found to be attached to the gallbladder. In this study, no significant association was found between leukocytosis and adherence of the gallbladder. This can occur because in a study by Khanday, et al., All patients were diagnosed with acute cholecystitis, so it is likely that blood samples were taken during the event of acute cholecystitis. Whereas in this study it does not rule out the possibility that blood samples taken outside the episode of cholecystitis, so that the level of leukocytes has decreased. In addition, this can occur because of the limited number of samples, namely 45 medical records, and limited research period, which is only during 2016. Because in the research of Khanday, et al., 140 medical records were used, and the research was conducted from May 2003 to December 2008.

In addition, according to Nidoni, all leukocytosis cannot be used as a predictor factor for the incidence of gallbladder attachment. Because in his study only 8 patients (4.4%) of 180 patients had leukocytosis, although there was cholecystitis in all patients (100.0%). However, according to him leukocytosis can be a predictor of conversion due to complications found in laparoscopic cholecystectomy. In his research, complications were in the form of adhering to the gallbladder. This was proven through research conducted in

India during October 2010 until October 2014, found leukocytosis in 8 of 36 conversion patients (22.2%), and no leukocytosis was found in only 2 of 144 conversion patients (1.4% ).

However, the researchers were unable to ascertain leukocytosis as a predictor of conversion from laparoscopic cholecystectomy. Because in this study there were only 2 conversion patients, 1 patient had leukocytosis, and 1 other patient did not experience leukocytosis.

## CONCLUSION

Through the results of research on the relationship of leukocytosis with the attachment of the gallbladder in patients with cholecystectomy in Hospital X, then conclusions can be taken as follows:

1. Based on general data, the proportion of patients with cholelithiasis was highest in the 50-59 year age group (33.3%), with an average age of 51 years, female sex (62.2%).
2. Based on surgical management, the highest proportion was laparoscopic cholecystectomy with 26 patients (58.8%), based on complaints obtained the highest proportion was upper right regional abdominal pain in 25 patients (55.6%), based on complications the highest proportion was cholecystitis in 44 patients (97.8%), and followed by adhering to the gallbladder in 34 patients (75.6%).
3. The Chi-Square test results found that there was no significant difference between leukocytosis and adhesion of gallbladder in patients with cholecystectomy ( $p = 0.62$ ;  $p > 0.05$ ).

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