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Clinical outcome of patients who are diagnosed with acute cholecystitis in emergency department

조선대학교 대학원

의 학 과

신민호

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응급실로 방문한 급성 담낭염 환자의 임상적 경과

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초록

응급실로 방문한 급성 담낭염 환자의 임상적 경과

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서론

현재까지 본원에서는 급성 담낭염 환자의 치료에 있어 임상 의사의 경험과 판단 에 의해 그 치료 방법이 결정되어왔다. 이에 2010년 1월부터 2011년 12월까지 조 선대학교 응급실을 통해 내원한 급성담낭염 환자의 치료 방법과 이에 따른 경과를 기존의 다른 연구 문헌의 결과와 비교해 봄으로써 향후 치료 방법 결정에 있어 도 움을 얻고자 하였다.

환자 및 방법

총 128명의 환자가 포함되었으며, 증상 발생 7일째를 기준으로 하여 수술 시기 에 따라 조기 수술 집단(EARLY group)과 지연 수술 집단(LATE group)으로 구분하 였으며, 수술 전 경피적 담낭조루술을 시행한 집단과 시행하지 않은 집단을 세부 분류하여 임상적 경과를 비교 하였다. 각 집단의 특성은 나이, 성 비율, 기저 질 환 유무로 평가 하였으며, 임상적 결과는 복강경 수술 중 개복 전환률, 합병증 발 생률, 각종 재원기간으로 평가 하였다.

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결과

조기 수술 집단(42.2%, 54/128)에서 지연 수술 집단에서 보다(57.8%, 74/128) 개복 전환률(5.6% 대 24.3%, p=.005)이 낮았으며, 수술 후 재원기간(5.38일 대 7.29일, p=.029)이 더 짧았다. 경피적 담낭조루술은 주로 지연 수술 집단에서 시 행되었는데, 담낭조루술을 시행한 집단에서 더 높은 개복 전환률을 보였다 (p=.011).

고찰

최근의 다른 연구들에서, 급성 담낭염의 치료 시 조기 수술을 시행하였을 때 더 짧은 재원기간을 보이며, 합병증 발생률은 늦은 수술과 차이가 없는 결과를 보여 주고 있어 급성 담낭염의 조기 수술이 옹호되고 있다. 본 연구에서도 비슷한 결과 가 도출되었다. 하지만 후향적 연구의 한계로 지연 수술 집단의 환자들에게 임상 결과에 영향을 줄 수 있는 다른 인자들이 포함되어 있었다. 이는 비슷한 합병증 발생을 보이지만 고령이거나 기저질환이 있는 환자에게 수술이 보다 늦게 시행되 었음을 보여준다.

결론

본 연구에서 지연 수술 집단에 속한 환자들은 고령과 많은 기저질환의 특성을 가지고 있어 수술을 준비하는 기간이 길어졌으며, 수술의 시기 보다는 환자 집단 자체가 가지고 있는 특성에 의해 임상 결과가 달라졌다고 생각할 수 있다. 다른 최근의 연구들과 본 연구의 결과로 볼 때, 수술 시기에 따른 합병증의 차이가 없 고, 조기 수술 집단에서 재원기간이 짧다면, 고령에 기저질환이 있다 하더라도 조 기에 수술을 받을 수 있도록 전신상태에 대한 평가와 처치를 빠르게 시행할 수 있 는 체계가 필요하다.

중심 단어 : 급성 담낭염, 조기 복강경 치료, 경피적 담낭조루술

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Introduction

Patients who complain abdominal pain in the emergency department are frequently diagnosed with acute cholecystitis. Definitive treatment of acute cholecystitis is a surgical resection of the gall bladder and laparoscopic cholecystectomy has almost completely replaced an open approach during the last two decades with acceptable results [1].

Although laparoscopic cholecystectomy has become a routine surgical procedure, there need multidirectional approaches in decision making for the treatment of acute cholecystitis because it has variety inflammatory stages from suppurative to emphysematous change and variety symptoms from abdominal pain to severe sepsis. And there are some patients who should have an emergency surgery when they are admitted into the emergency department but most patients generally receive an elective operation after conservative treatment of antibiotics administration, fasting and hydration during few days. If among these patients there is deterioration or no improvement of symptom after 2-3 days, they would have an emergency operation.

On the other hand, percutaneous cholecystostomy could be performed as an intermediate step in the treatment for the patients who have severe symptom with major co-morbidities. It might alleviate the symptom rapidly and reduce the risk of operation on the general anesthesia because it gives a period that makes the patient into more fitting condition. And in selected cases of older or highest risk patients, the percutaneous drainage of the gall bladder could be an only safe alternative treatment although it is not a definitive treatment [2].

Although such general manner in the management of acute cholecystitis had been applicable in our hospital, treatment strategy usually had decided by surgeon's preference or experiences in each situation without specific

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criteria. Therefore we compared characteristics of the patients and outcomes of each treatment in our hospital with other results from recently studied trials. So, we could make some objective guide lines for the treatment of acute cholecystitis.

Materials and Methods

This retrospective clinical study covering from January, 2010 to December, 2011 was performed at the hepatobiliopancreatic division of the general surgery, Chosun university hospital and included a total of 128 patients who were diagnosed with acute cholecystitis when they were admitted into the emergency department because of their acute abdominal pain. The diagnosis of acute cholecystitis was made on the following diagnostic criteria [3] : acute right upper quadrant pain with Murphy's sign more than 24 hours ; fever \geq 37.4 °C and/or leukocytosis (>10,000/L) ; computed tomographic (CT) or ultrasonographic (US) finding including the presence of gall stone, thickened gallbladder wall, pericholecystic fluid and/or no evidence of a dilated ductal system ; postoperative histopathologic confirmation.

Patients with previous upper abdominal open surgery, body mass index (BMI) \geq 35 Kg/m² and/or additional hepatobiliary disease such as gall stone pancreatitis, cholangitis, or liver abscess were excluded. Laparoscopy was the primary approach to operate acute cholecystitis and patients who had primarily open cholecystectomy were excluded. And the patients who were undertaken an only percutaneous transhepatic gallbladder drainage (PTGBD) without an operation were also excluded. All three surgeons in this study had performed laparoscopic cholecystectomy above 500 cases except the cases including in this study.

Patients were divided into two groups according to the timing between the onset of symptoms and the operation : EARLY group included the patients operated within 7 days of symptom onset and LATE group, operated beyond 7 days [4 - 6]. And then we subdivided the groups by presence of percutaneous cholecystostomy into PTGBD group and non-PTGBD group.

Evaluation criteria as endpoints included open conversion rate, complication rate, hospital mortality, and length of postoperative hospital

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stay. Statistical analysis was performed with SPSS 18.0 software (SPSS, Chicago, IL, USA).

Results

Their mean age was 59.9 year-old. Co-morbidities included 49 of hypertension, 29 of diabetes mellitus, 11 of old cerebrovascular disease, 8 of coronary artery disease, 8 of chronic obstructive pulmonary disease (COPD), 5 of arrhythmia, 2 of congestive heart failure and 2 of hypothyroidism.

There were 59 patients with no co-morbidity, 26 with 1 co-morbidity, 32 with 2 co-mobidities and 11 with 3 more co-mobidities. Complications consisted of 2 wound problem, 5 bile leakages, 5 intraabdominal abscess, 2 early postoperative ileus and 1 intraoperative bile duct injury.

Open conversion was mostly caused by an uncertain anatomical appearance of Calot's triangle with sever inflammation. One open conversion was occurred by bile duct injury recognized during the surgery and hepaticojejunostomy was simultaneously performed. There was no mortality during the hospital days. Characteristics and outcomes of total consecutive patients are shown in Table 1.

Table	1 Ana	lysis	of	all	pat	ients
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Clinical features	
number of patients	128
sex M/F	66 (51.6%) / 62 (48.4%)
age, mean ± SD (years)	59.9 ± 1.4
underlying disease† : yes / no	74 (57.8) / 54 (42.2%)
Procedure related features	
Open conversion rate	16.4% (21)
number of EARLY / LATE group	54 (42.2%) / 74 (57.8%)
number of PTGBD / non-PTGBD group	12 (9.4%) / 116 (90.6%)
Hospital days, mean ± SD (days)	
total hospital days	12.6 ± 7.1
preoperative days	8.3 ± 4.1
postoperative hospital days	6.5 ± 5.5
Complications rate	12.5%(16)

† co-morbidity requiring preoperative medication or management preoperative days : time period between symptom onset and operation

All patients were divided into EARLY and LATE group by the operation timing. Patients in LATE group were older than EARLY group (p=.001) and there were more patients who have underlying diseases in LATE group (p=.009). The mean operation timing (between symptom onset and operation) in EARLY and LATE group was 4.8 and 10.8days, the postoperative hospital days were 5.4 days in EARLY group and 7.3 days in LATE group (p=.029). There was significant value on Pearson's correlation analysis between preoperative period and postoperative hospital days (p=.004). In procedure related feature, more open conversion rate was shown in LATE group (5.6% vs 24.3%, p=.005). Overall complication rate was not different between two groups (Table 2).

Table 2 Analysis according to the surgery timing : EARLY group and LATE group

	EARLY group	LATE group	p-value				
Clinical features							
number of patients	54 (42.2%)	74 (57.8%)					
sex M:F	1:1	1.1 : 1	.858				
age, mean ± SD (years)	54.5 ± 16.9	63.9 ± 14.2	.001				
underlying disease	24 (44.4%)	50 (67.6%)	.009				
after 72 hours	7.4% (4/54)	50% (37/74)	<.001				
Procedure related features							
open conversion rate	5.6% (3/54)	24.3% (18/74)	.005				
Preoperative PTGBD	1 (1.9%)	11 (14.9%)	.013				
Hospital days, mean ± SD (days)							
total hospital days	8.98 ± 2.70	15.32 ± 8.14	<.001				
preoperative days	4.77 ± 1.08	10.79 ± 3.54	<.001				
postoperative hospital days	5.38 ± 2.28.	7.29 ± 6.92	.029				
Complications rate							
overall	4 (7.4%)	12 (16.2%)	.179				
bile leakage	1 (1.9%)	5 (6.7%)	.400				
wound problem	none	2 (2.7%)					
intraabdominal abscess	1 (1.9%)	4 (5.4%)	.396				
after 72 hours : patients admitted after 72 hours from symptom onset							

preoperative days : time period between symptom onset and operation

In EARLY group, preoperative PTGBD was performed in only one person because PTGBD was usually considered into the patients who have multiple risks for an operation and are anticipated to receive longer preoperative management. So, outcomes between PTGBD and non-PTGBD group were compared only in LATE group. Patients in PTGBD group were older and there were no significant differences in any hospital days (Table 3).

Table (3 Compar	ison	between	PTGBD	and	non-PTGBD	group	in	LATE	group
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	DTODD	NI DECED	
	PIGBD group	Non-PIGBD	p-value
Clinical features			
number of patients	11(14.9%)	63(85.1%)	
sex M:F	1.75 : 1	1:1	.523
age, mean ± SD (years)	72.5 ± 10.2	62.4 ± 14.4	.030
underlying disease	8 (72.7%)	42 (66.7%)	.692
Procedure related features			
open conversion rate	6 (54.5%)	12 (19.0%)	.011
Hospital days, mean ± SD (days)			
total hospital days	19.63 ± 9.86	14.57 ± 7.64	.056
preoperative days	9.36 ± 3.07	7.79 ± 3.32	.148
postoperative hospital days	10.27 ± 7.39	6.77 ± 6.76	.123
Complications rate			
overall	4 (36.4%)	8 (12.7%)	.071
bile leakage	1 (9.0%)	4 (6.3%)	.564
wound problem	none	2 (3.2%)	
intraabdominal abscess	2 (18.1%)	2 (3.1%)	.103

Discussion

Laparoscopic cholecystectomy has since long been the 'gold standard' for the treatment of symptomatic gallstones presenting as chronic cholecystitis. However, the laparoscopic approach had been initially considered to be relatively contraindicated or unsafe in acute cholecystitis. It had been believed that inflammatory tissue reactions make increasing the hazard of the dissection difficult. thus serious complications as well as the conversion rate [7]. In 1990s, the safety and benefits of early laparoscopic surgery in acute cholecystitis were proved by several studies and it have become the treatment of choice for acute cholecystitis. The acute cholecystitis patients undergoing laparoscopic cholecystectomy have a significantly lower rate of complications, shorter and more comfortable postoperative period than hospital stay those undergoing open cholecystectomy [1].

In all consecutive patients, overall complication rate was 12.5% (16/128) and open conversion rate was 16.4% (21/128). In recent study that reviewed hospital discharge records in the United States from 2000 to 2005 including 859,747 patients who have laparoscopic cholecystectomy for acute cholecystitis, morbidity rate was 16% and open conversion rate was 9.5% [8]. Our study group consisted of the patients with acute abdominal pain who visited emergency department and 32% (41/128) of the patients were admitted after 72 hours from their symptom onset without any other treatment. And in postoperative pathologic finding, more patients with severe form of acute cholecystitis such as pyogenic, gangraneous or perforated gall bladder (43.8%, 56/128) were included. Giuseppe et al in their meta-analysis published that open conversion rate in severe versus non-severe acute cholecystitis was 3.22 [9]. For these reason, there may be higher open conversion rate in our patient group.

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There had been considerable controversy over the timing of laparoscopic cholecystectomy in acute cholecystitis. But current evidence support early laparoscopic cholecystectomy as the preferred treatment strategy for acute cholecystitis. Christos et al [10] reviewed 10 studies that provided the best evidence for the operative timing. They concluded that there is strong evidence that early laparoscopic cholecystectomy for acute cholecystitis offers an advantage in the length of hospital stay without increasing the morbidity or mortality although there is various criteria for the early operative timing from 72 hours to 7 days. In British group, systemic review was performed with meta-analysis of randomized controlled trials of early laparoscopic cholecystectomy (performed within 7days of onset of symptoms) for acute cholecystitis and included five trials with 451 patients. They concluded that early laparoscopic cholecystectomy during acute cholecystitis appears safe and shortens the hospital stay [11].

In our study, we divided the patients into EARLY and LATE group by the operating timing (before or after 7 days from the onset of symptoms). As same as previously mentioned studies, there was lower open conversion rate (5.6 vs 24.3 %, p=.005) and shorter postoperative hospital days (5.4 vs 7.3 days, p=.029) in EARLY group and there was no difference with complication rate in both groups. But there was significant difference in the characteristics between the both groups such as their age, patient number having underlying disease and patient number of admission after 72 hours from the onset of symptom. Because these could be contributing factor that differentiate outcome between EARLY and LATE group [12] multivariable analysis for open conversion rate and postoperative hospital days was performed. Independent predictive factors of open conversion were found on multivariable analysis to be following : hospital admission after 72 hours from the onset of symptom (OR 3.39, Cl 1.19-9.61, p=.011), age (OR 1.06, Cl 1.01-1.11, p=.006). And factor for longer postoperative hospital stay was

only age of patients (p=.001). Higher open conversion rate and prolonged postoperative hospital stay in LATE group were not caused by the delayed operation in this study it seems to be caused by that the patients included in LATE group have more risk factors such as older age, longer prehospital days, and more co-mobidities which could impact on endpoint values.

Percutaneous cholecystostomy is thought to be an alternative treatment in acute cholecystitis in high-risk or elderly patients although its advantage over emergency cholecystectomy has not yet been established [2, 13]. In our study, PTGBD group included 11 patients. The median value of pre-PTGBD period between the day of symptom onset and the day of PTGBD performed was 4 days. There was no significant correlation of pre-PTGBD period with postoperative hospital days (by Kendall tau rank correlation, p=.145) and no significant statistics of pre-PTGBD period with complication rate and open conversion rate (by Wilcoxon rank-sum test, p=.412 and .931, respectively). But there was a significant difference in open conversion rate between PTGBD and non-PTGBD group, it seems that more severe forms of acute cholecystitis were included in PTGBD group (26.7%) than non-PTGBD group (6.9%, p=.042).

Disadvantage of this study was almost caused by its retrospective fashion. Because the groups were divided without control of other factors that can affect the surgical outcomes it was statistically failed to compare the outcomes of early laparoscopic cholecystecomy with those of delayed cholecystectomy. And there was no consideration about the severity of acute cholecystitis that could be evaluated by vital sign, laboratory results, or findings of image test when they were admitted into the emergency department.

Conclusion

Actually, it is thought that the patients of LATE group were received delayed laparoscopic cholecystectomy because of their age and underlying disease. The problem is that the operation could not be performed in early fashion until they were evaluated and managed perfectly in fitting with general anesthesia. So, there need to be rapid systemic evaluation for the patients with acute cholecystitis because early surgical approach is beneficial in shorter hospital days and there is no complication rate between early and late surgical approach.

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