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ASSESSING THE SEVERITY OF ACUTE CHOLECYSTITIS AND THEIR OUTCOME ACCORDING TO TOKYO GUIDELINES

Dr. Marwan Naseer Kadhim
M.B.Ch.B., C.A.B.H.S., F.I.C.M.S. \ (General Surgeon), Ministry of Health, Baghdad Al-Russafa Health Directorate, Al-Kindy Teaching Hospital, Baghdad, Iraq

Dr. Omar Mudher Khalaf
M.B.Ch.B., F.I.C.M.S. \ (General Surgeon), Ministry of Health, Diyala Health Directorate, Baqubah Teaching Hospital, Diyala, Iraq

Dr. Anwer Khaleel Ibrahim
M.B.Ch.B., F.I.C.M.S. \ (General Surgeon), Fellowship Arabic Surgical Oncology, Iraqi Ministry of Health, Al-Karkh Health Directorate, Al-Yarmouk Teaching Hospital, Baghdad, Iraq

Abstract:

Background: Acute cholecystitis represents a common cause of acute abdominal pain in patients presenting to the emergency department, representing a significant public health problem encountered by surgeons and physicians. Cholecystectomy has emerged as the definitive treatment of acute cholecystitis, whether immediate, early, or delayed.

The objective of this study is to evaluate the severity of acute cholecystitis and its outcome in patients attending Baghdad Teaching Hospital.

Patients and Methods

A cross-sectional study was conducted in the surgical wards of Baghdad Teaching Hospital between 1 May 2015 and the end of January 2016. A total of 115 patients diagnosed with acute cholecystitis were included in this study. The severity of the attack was assessed, and management plans were devised in accordance with the Tokyo guidelines.

The mean age of patients was 51 years, with the 41-50 age group representing the most frequent age group affected (35.6%).

In this study, 59.1% of cases were classified as grade 1 severity, 37.3% as grade 2, and 3.4% as grade 3.

In regard to grade 1 (mild), no patients underwent immediate surgery. Twenty-seven-point-nine percent had early surgery, and eighty-eight-point-three percent had delayed surgery.

With regard to the type of surgery, 83.8% of patients with grade 1 severity underwent laparoscopic cholecystectomy, while 16% underwent open surgery. In grade 2, 76.7% underwent laparoscopic surgery, and 23.2% underwent open surgery. In contrast, all patients with grade 3 severity underwent an open cholecystectomy.

Conclusions

The majority of cases were classified as mild in severity. Male gender was identified as a significant risk factor for severe acute attacks. The optimal timing for laparoscopic cholecystectomy was determined to be within the first 72 hours of the attack. For mild cases, early laparoscopic cholecystectomy was identified as the preferred procedure. For severe cases, gallbladder drainage was the most common procedure

Keywords: *Severe Gallbladder, Cholecystectomy, Surgery, Mild, Acute Cholecystitis*

Introduction

Introduction

The term acute cholecystitis (AC) is used to describe an acute inflammatory disease of the gallbladder. While gallstones are often the cause, there are a number of other factors that can contribute to this condition, including ischaemia, motility disorders, direct chemical injury, infections by microorganisms, collagen disease, and allergic reactions. (1) Acute cholecystitis is most commonly a complication of gallstone disease, occurring in patients with a history of symptomatic gallstones. A systematic review revealed that the condition was present in 6 to 11 percent of patients with symptomatic gallstones over a median follow-up period of 7 to 11 years. The initial event is the obstruction of the cystic duct by a gallstone, which results in gallbladder distension, inflammation, and edema of the gallbladder wall. The gallbladder wall may become grossly thickened and reddish with subserosal hemorrhage, and pericholecystic fluid is commonly present. In some cases, the inflammatory process results in progressive ischaemia and necrosis of the gallbladder wall. (2) The clinical presentation includes the right upper quadrant or epigastric pain that may radiate to the back, as well as dyspepsia, flatulence, and food intolerance. (3) The diagnosis must be confirmed based on a combination of physical findings, laboratory studies, and imaging tests, as no single clinical or laboratory finding is sufficiently accurate to rule in or rule out the diagnosis. (4) This was employed as an instrument for the diagnosis of acute cholecystitis among the cohort under examination. The Tokyo Guidelines (TG13) present a novel diagnostic and severity assessment framework based on a substantial patient cohort and a reasonable "gold standard." These criteria facilitate early diagnosis and severity assessment of the disease and are regarded as a highly valuable clinical tool in the diagnosis and management of acute cholecystitis. [5–7] The Tokyo Guidelines were published in 2007 and updated in 2013. They comprise a set of clinical and radiological diagnostic criteria for acute cholecystitis, devised to address the controversy surrounding the optimal criteria for clinical diagnosis. (6) Patients exhibiting one of the local signs of inflammation, such as Murphy's sign (specificity 79%-96%, sensitivity 50-60%) (6), or a mass/pain/tenderness in the right upper quadrant, may also be present. Patients with acute cholecystitis may present with a spectrum of disease stages ranging from mild, self-limited illness to

a fulminant, potentially life-threatening illness. In accordance with the Tokyo guidelines, the severity of the condition was classified into three categories. The severity of the condition is classified as mild (grade 1), moderate (grade 2) or severe (grade 3). A category for the most severe grade of acute cholecystitis is required, as this grade necessitates intensive care and urgent treatment (including surgical intervention and/or drainage) to ensure the patient's survival. Nevertheless, the majority of patients are present with less severe forms of disease. In these patients, the primary practical question regarding management is whether it is advisable to perform cholecystectomy at the time of presentation in the acute phase or whether alternative strategies of management should be employed during the acute phase, followed by interval cholecystectomy. In order to assist clinicians in making management decisions, the severity of the condition was classified into three categories: mild, moderate, and severe. (7) this study aims to Assessing the severity of acute cholecystitis and their outcome in patients attending Baghdad Teaching Hospital according to Tokyo guidelines.

Patients and methods

This cross-sectional study was conducted at the surgical wards of Baghdad Teaching Hospital between 1 May 2015 and the end of January 2016.

Data were collected from patients who met the criteria for acute cholecystitis according to the Tokyo guidelines. Demographic data were obtained regarding history, including age, gender, and the presence of right upper quadrant or epigastric pain. Additionally, general and abdominal examinations were conducted, and patients were subjected to hematological and biochemical investigations.

An ultrasound examination was conducted to evaluate the presence of acute cholecystitis, including the assessment of gallbladder wall thickness (greater than 3mm), the identification of stones, the observation of sonographic Murphy's sign, and the measurement of pericholecystic fluid.

Following an assessment of the severity, all patients were initially treated with fluids, antibiotics, and analgesics. They were then monitored for surgical treatment, which was conducted either immediately (within the first 24 hours of admission), early (within 72 hours), or delayed (after four to six weeks). Statistical management and analysis of the data were conducted using a statistical software package for Windows. The results and findings were presented as mean, standard deviation, numbers, and percentages. A p-value of 0.05 or less was considered to be statistically significant where The exclusion criteria were as follows: one. Jaundice 2. Acalcoulus cholecystitis

The TG13 severity assessment criteria for acute cholecystitis categorise the conditions as follows:

Grade 1: Acute cholecystitis in a healthy patient with no organ dysfunction and only mild inflammatory changes in the gallbladder, making cholecystectomy a safe and low-risk operative procedure.

A moderate grade of severity is indicated when acute cholecystitis is accompanied by any one of the following conditions:

1. An elevated white blood cell (WBC) count exceeding 18,000 per microlitre of blood.

2. The presence of a palpable tender mass in the right upper quadrant.

3. A duration of symptoms exceeding 72 hours.

4. Marked local inflammation (gangrenous cholecystitis, pericholecystic abscess, hepatic abscess, biliary peritonitis, emphysematous cholecystitis)

"Severe (Grade 3)": Acute cholecystitis is accompanied by dysfunction in any one of the following organs/systems:

1. Cardiovascular dysfunction: hypotension necessitating treatment with dopamine or dobutamine.

2. Neurological dysfunction: decreased level of consciousness.

3. Respiratory dysfunction: A PaO2/Fio2 ratio of less than three hundred indicates the presence of respiratory dysfunction.

The following criteria indicate the presence of renal dysfunction: oliguria and a creatinine level exceeding 2.0 mg/dL.

The following criteria indicate the presence of hepatic dysfunction: a PT-INR level exceeding 1.5 and a platelet count of less than 100,000/mm³.

Results

Table 3.1: Age and gender distribution of patients with acutecholecystitis

Age	Total number	%	Male	%	female	%
<20	2	1.7	0	0	2	1.7
21-30	11	9.5	2	1.7	9	7.8
31-40	21	18.2	5	4.3	16	13.9
41-50	41	35.6	14	12.1	27	23.4
51-60	36	31.3	9	7.8	27	23.4
>60	4	3.4	1	0.86	3	2.6

Table 3.2: clinical signs of patients with acute cholecystitis

Clinical finding	Number	%
RUQ pain	106	92.1
Epigastric pain	9	7.8
RUQ tenderness	91	79.1
RUQ mass	17	14.7
Fever	101	87.8
Murphy's sign	68	59.1
Duration >72 hrs.	5	4.3%

3.3 Laboratory findings

Laboratory tests of leukocyte count revealed leukocytosis in 64 patients (55.6%). From them, 16 patients had a leukocyte count > 18000 (13.9%), and the remaining 51 patients (44.3%) had a leukocyte count < 11000, as in Table 3.3.

Table 3.3: white blood cell count.

WBC count	Number of patients	Percentage
< 11000	51	44.3 %
11000-18000	48	41.7%
>18000	16	13.9 %

Table 3.4. Ultrasound findings of patients with acute cholecystitis

Imaging finding	Number	%
Gallbladder wall thickness > 3mm	89	77.3

Pericholecystic fluid	22	19.1
Murphy's sign	45	39.1
Multiple stones	72	62.6
Single stone	43	37.3

Table 3.5 Classification of severity according to Tokyo guidelines andgender distribution

Grade	Number	%	male	%	female	%
Mild	68	59.1	22	19.1	46	40
Moderate	43	37.3	6	5.2	37	32.1
Severe	4	3.4	3	2.6	1	0.86

Grade	immediate Open (%)lap (%)		Early Open (%)lap. (%)		Delayed Open (%)lap (%)	
Mild	0 (0)	0 (0)	2 (1.7)	16 (13.9)	9 (7.8) 41 (35.6)	
Moderate	5 (4.3)	0 (0)	3 (2.6)	5 (4.3)	2 (1.7) 28 (24.3)	
Severe	4 (3.4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Immediate surgical intervention was performed on nine patients (7.8% of the total number of cases), with five undergoing open cholecystectomies due to empyema and gangrenous gallbladder and four having gallbladder drainage under local anaesthesia (grade 3 severity). Twenty-six patients (22.6%) underwent surgery within the same admission period (72 hours), while eighty patients (69.5%) had delayed surgery scheduled for four to six weeks after the acute attack.

Regarding early surgery, of the twenty-six patients who underwent laparoscopic cholecystectomy, Of the 107 patients, 21 (18.2%) underwent cholecystectomy successfully, while 5 (4.3%) underwent conversion to the open method.

In the delayed surgical group, sixty-nine patients (60%) underwent cholecystectomy successfully, while eleven patients (9.5%) underwent conversion to the open method. This is illustrated in Table 3.7.

Table 3.7 time and type of surgery

time	NO.	%	open	%	Lap.	%	male	%	female	%
Imm.	9	7.8	9	7.8	0	0	7	6.08	2	1.7
Early	26	22.6	5	4.3	21	18.2	7	6.08	19	16.5
delayed	80	69.5	11	9.5	69	60	17	14.7	63	54.7

Discussion

The accurate diagnosis of both typical and atypical cases of acute cholecystitis (AC) necessitates the utilisation of specific diagnostic criteria. In this document, we propose specific diagnostic criteria for acute cholecystitis (AC) based on the best available evidence and the consensus of experts achieved at the International Consensus Meeting for the Management of Acute Cholecystitis in Tokyo. (9)

In the current study, the mean age of the patients was 51.2 years, with the dominant age group being 41-50 years, which represented 41% of the total. This indicates that AC is more frequent in older patients than younger ones, which is consistent with the findings of Cho et al. (10), who reported a mean age of 47.9 years.

With regard to gender, the current study demonstrated a female-to-male ratio of 2.7:1, which was comparable to that observed by Selvie et al. (11), who reported that the female gender was predominant among the studied group with a female-to-male ratio of 2.2:1.

The present study found that 92.1% of the patients presented with right upper quadrant (RUQ) abdominal pain, 79.1% showed RUQ tenderness and 14.7% had RUQ mass. These findings were comparable to those reported in previous studies by Barbara et al. (3) and Singer et al. (12,13,15), in which patients with AC typically complain of Abdominal pain is most commonly observed in the right upper quadrant (RUQ) or epigastrium. Other studies (Miura et al., 13; Halasz et al., 14) have demonstrated that 85% of patients with AC present with RUQ tenderness, while 40% exhibit tenderness in other regions. Additionally, 23% of patients with AC have a palpable gallbladder.

A fever was observed in 87.7% of the patients, which was comparable to the findings of the Gruber et al. (15) study, in which 79% of the patients exhibited a fever. Conversely, another study conducted by Parkel et al. (16) revealed that fever was present in 41% of cases.

Murphy's sign was positive in 59.1% of patients in the study cohort. It has been previously documented that Murphy's sign is a distinctive indicator of AC. The presence of this sign resulted in an 80% diagnostic accuracy for AC, whereas a negative result yielded a 34% accuracy.

Leukocytosis was observed in 55.6% of patients, a figure that is lower than that reported in previous studies. Gruber et al. (15) reported leukocytosis in 68% of patients, while Singer et al. (12) reported a figure of 64.7%.

In the present study, ultrasound examination revealed that 77.3% of patients exhibited a gallbladder wall thickness exceeding 3 mm, 19.1% displayed pericholecystic fluid, and 39.1% demonstrated positive sonographic Murphy's sign (although this was not specified in the ultrasounds).

Ultrasonography is the optimal imaging modality for the diagnosis of AC and is the initial method employed when the clinical presentation is suggestive of biliary pathology. The literature indicates that the primary findings of acute calculous cholecystitis on ultrasound include the presence of stones, in addition to the following: distension of the gallbladder lumen, gallbladder wall thickening, a positive sonographic Murphy's sign, and pericholecystic fluid. (16) As documented in the literature, certain ultrasound findings are more strongly associated with AC than others. The sensitivity of a positive Murphy's sign has been reported to reach as high as 88%. (17,18)

The utilisation of a cholecystostomy prior to surgical intervention in cases of acute gallbladder inflammation is thought to provide patients with a degree of respite from the acute episode before the procedure while also conferring the advantage of simplifying the subsequent cholecystectomy. An open cholecystostomy, performed under local anaesthesia, is an established surgical technique that provides an alternative to cholecystectomy for patients with a severe acute gallbladder infection. (22)

Of the patients presenting with a gallbladder attack, twenty-two males (19.1%) had a mild attack, six patients (5.2%) had a moderate attack, and three males (2.6%) had a severe attack. In contrast, forty-six females (40%) had a mild attack, thirty-seven females (32.1%) had a moderate attack, and one female (0.86%) had a severe attack. These findings suggest that women are affected by most mild attacks, while men are affected by most severe attacks. In terms of management, the timing of surgery was immediate, early, or delayed. Nine patients (7.8%) underwent immediate surgery, including four with severe attacks and five with moderate severity.

Of the patients, 26 (22.6%) underwent early surgery (within 72 hours of admission), while 80 (69.5%) had intermediate or late surgery. In this context, TG13 et al. (6) found that early surgery was associated with reduced blood loss, a shorter operating time, a lower rate of complications, and a shorter duration of hospital stay. Consequently, laparoscopic cholecystectomy was proposed as a potential early surgical intervention during the same admission.

Conclusion

The majority of cases of acute cholecystitis were of mild severity. The optimal time limit for laparoscopic cholecystectomy is the initial 72 hours of the acute episode.

In cases of mild acute cholecystitis, laparoscopic cholecystectomy is the recommended procedure. For moderate severity, either laparoscopic or open cholecystectomy is appropriate, depending on the presence of empyema or gangrenous gallbladder. In severe acute attacks, gallbladder drainage is the most common procedure. Male gender is a risk factor for severe acute attacks.

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