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Acute Cholecystitis Diagnosis and Management New Highlights a Systemic Review

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ABSTRACT

Background

Diagnostic and therapeutic strategies for acute biliary cholecystitis various aspects of the management of acute calculous cholecystitis, including type and timing of surgery, role of antibiotics, and nonoperative management, remain controversial. This review focuses on recently published studies addressing the timing of cholecystectomy, use of cholecystostomy tubes, and role of antibiotics in this condition. In most cases, the diagnosis of acute cholecystitis can be initially confirmed with an abdominal ultrasound.

Methods

The aim of this review is to provide evidence-based recommendations on various aspects of the management of acute calculous cholecystitis, including type and timing of surgery, role of antibiotics, and nonoperative management, remain controversial. We used PUBMED and MIDLINE database for the search of the subjects entitles" Acute Cholecystitis "and " Diagnosis and management " we found hundreds of researches and we chose the related ones.

Results

A multidisciplinary team of physicians, including surgeons trained in laparoscopic techniques, interventional gastroenterologists, and interventional radiologists may improve outcomes of patients with biliary infections. This review focuses the clinical presentation, diagnosis, and state of the art management of acute cholecystitis and acute cholangitis.

Keywords: NIL

INTRODUCTION

Acute cholecystitis is essentially a surgical problem. Nearly all cases begin as the result of the mechanical action of gallstones, either by obstruction of the cystic duct or by erosive action on the wall of the gallbladder. Bacterial invasion almost invariably is secondary to the mechanical factor and may occur a matter of days after the onset of symptoms, or not at all. Removal of the gallbladder and its contained stones effects a cure.

It would seem that once the disease has begun and the diagnosis has been established, the therapeutic aim should be prompt cholecystectomy. Yet case analyses show that delay in surgery is the rule rather than the exception. Further, many internists and family physicians and some surgeons record their belief that operations should *not* be performed during an acute phase of the disease, and that symptoms should be permitted to subside completely; elective cholecystectomy is then to be performed during a quiescent interval some weeks or months thereafter. It is our belief that in most instances substantial delay is not justified and may result in needless suffering,

prolonged loss of the patient's time from productive activity and, occasionally, in the development of otherwise avoidable complications.

Often previous roentgen studies will have shown the presence of gallstones, or the gallbladder will have failed to be visualized with the "double-dose" technic. If such a patient should develop mid-epigastric or right upper quadrant pain, tenderness over the region of the gallbladder, and constitutional evidences of an inflammatory process such as fever, tachycardia, or leukocytosis, acute cholecystitis may be presumed without further diagnostic study. However, when these signs and symptoms are present, but there never has been roentgen proof of gallstones or nonfilling of the gallbladder, the problem is different. Here, further diagnostic procedures are in order to avoid a possibly useless operation. The first step is to obtain a plain film of the abdomen; in 10 per cent of patients with gallstones there is sufficient calcium in the stones to cast a characteristic shadow without the use of contrast medium. The evidence of stones will confirm the diagnosis and justify prompt operation.

If the "scout film" does not show stones, diagnostic delay to permit cholecys- tographic studies is fully justified provided that the patient's general condition permits. It is our practice to give such a patient a double dose of oral contrast medium (to avoid the necessity of repeating the test the following day) and, if clinical suspicion runs high, tentatively to schedule the patient for operation immediately after the interpretation of the cholecystogram. If stones are demonstrated or the gallbladder fails to be visualized, operation is performed. If the roentgen findings show the gallbladder to be normal, surgery is canceleid and further observation with additional diagnostic studies is undertaken.

For the patients who are unable to take the oral contrast medium or who will vomit the pills, intravenous cholecystographic studies may be substituted, with suitable allowance of time for the gallbladder to fill. If the intravenous contrast medium cannot be given because of drug sensitivity, the patient's general condition must then be the sole guide to therapy.

It has been argued that cholecystographic contrast media taken orally may actually precipitate an attack of acute cholecystitis, or aggravate an existing one. The evidence supporting this argument is scant, and the counterposition may be taken that even if aggravation of symptoms does occur, this will clarify the diagnosis, and in any event is taking place under careful scrutiny, in the hospital, where it could hardly result in any material harm to the patient.

"Technical difficulties are increased when surgery is attempted on the so-called 'hot' gallbladder, and, by implication, the chances for a surgical miscue."

With modern operating room facilities the well-trained surgeon is fully able to cope with the increased technical difficulty presented by an acutely inflamed gallbladder. The operation may be characterized as one that is "hard on the surgeon but easy on the patient."

Methods

The aim of this review is to provide evidence-based recommendations on Various aspects of the management of acute calculous cholecystitis, including type and timing of surgery, role of antibiotics, and nonoperative management, remain controversial. We used PUBMED and MIDLINE database for the search of the subjects entitles" Acute Cholecystitis " and " Diagnosis and management " we found hundreds of researches and we chose the related ones.

Results

Clinical presentation

Clinical findings associated with acute cholangitis include abdominal pain, jaundice, fever (Charcot's triad), and rigor. The triad was already reported as an indicator of hepatic fever by Charcot in 1877,3 and has been, historically, used as the generally accepted clinical findings of acute cholangitis. About 50%–70% of patients with acute cholangitis develop all three symptoms (level 2b-4).4–7 Reynolds' pentad (Charcot's triad plus shock and a decreased level of consciousness) was presented in 1959, when Reynolds and Dargan8 defined acute obstructive cholangitis. The pentad is often used to indicate severe (grade III) cholangitis, but shock and a decreased level of consciousness are observed in only 30% or fewer patients with acute cholangitis (level 2b-4).4–7 A history of biliary disease, such as gallstones, previous biliary procedures, or the

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placement of a biliary stent are factors that are very helpful to suggest a diagnosis of acute cholangitis.

Clinical symptoms of acute cholecystitis include abdominal pain (right upper abdominal pain), nausea, vomiting, and fever (level 2b-4).9–11 The most typical symptom is right epigastric pain. Tenderness in the right upper abdomen, a palpable gallbladder, and Murphy's sign are the characteristic findings of acute cholecystitis. A positive Murphy's sign has a specificity of 79%–96% (level 2b–3b)9,11 for acute cholecystitis.

The initial management of patients with suspected acute biliary infection starts with the measurement of vital signs to assess whether or not the situation is urgent. If the case is judged to be urgent, initial medical treatment should be started immediately including respiratory/circulatory management if required, without waiting for a definitive diagnosis. The patient's medical history is then taken; an abdominal examination is performed; blood tests, urinalysis, and diagnostic imaging are carried out; and a diagnosis is made using the diagnostic criteria for cholangitis/cholecystitis. Once the diagnosis has been confirmed, initial medical treatment should be started immediately, severity should be assessed according to the severity grading criteria for acute cholangitis/cholecystitis, and the patient's general status should be evaluated. For mild acute cholangitis, in most cases initial treatment including antibiotics is sufficient, and most patients do not require biliary drainage. However, biliary drainage should be considered if a patient does not respond to initial treatment. For moderate acute cholangitis, early endoscopic or percutaneous transhepatic biliary drainage is indicated. If the underlying etiology requires treatment, this should be provided after the patient's general condition has improved; endoscopic sphincterotomy and subsequent choledocholithotomy may be performed together with biliary drainage. For severe acute cholangitis, appropriate respiratory/circulatory management is required.

Blood tests

The diagnosis of acute cholangitis requires a white blood cell count; measurement of the C-reactive protein level; and liver function tests, including alkaline phosphatase, gamma-glutamyltranspeptidase (GGT), aspartate aminotransferase (AST), alanine aminotransferase (ALT), and bilirubin. Assessment of the severity of the illness requires knowledge of the platelet count, blood urea nitrogen, creatinine, and prothrombin time (PT). Blood cultures are also helpful for severity assessment, as well as for the selection of antimicrobial drugs. Hyperamylasemia is a useful parameter to identify complications such as choledocholithiasis causing biliary pancreatitis (level 1a).12

There is no specific blood test for acute cholecystitis; however, the white blood cell count and the measurement of C-reactive protein is very useful in confirming an inflammatory process. Bilirubin, blood urea nitrogen, creatinine, and PT are very useful in assessing the disease severity status of the patient.

Diagnostic imaging

Abdominal ultrasound (US) and abdominal computerized tomography (CT) with intravenous contrast are very helpful studies in evaluating patients with acute biliary tract disease. Abdominal US should be performed in all patients suspected of having acute biliary inflammation/infection. Ultrasound examination has satisfactory diagnostic capability when it is performed not only by specialists but also by emergency physicians (level 1b).13,14

The role of diagnostic imaging in acute cholangitis is to determine the presence/absence of biliary obstruction, the level of the obstruction, and the cause of the obstruction, such as gallstones and/or biliary strictures. Assessment should include both US and CT. These studies complement each other and CT may better demonstrate dilatation of the bile duct and pneumobilia.

Some of the characteristic finding of acute cholecystitis include an enlarged gallbladder, thickened gallbladder wall, gallbladder stones and/or debris in the gallbladder, sonographic Murphy's sign, pericholecystic fluid, and pericholecystic abscess. Sonographic Murphy's sign is a very reliable finding of acute cholecystitis, with a specificity exceeding 90% (level 3b,4).15,16 CT scan or even plain X-ray may demonstrate free air, pneumobilia, and ileus.

Differential diagnosis

Diseases which should be differentiated from acute cholangitis are acute cholecystitis, gastric and duodenal ulcer, acute pancreatitis, acute hepatitis, and

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septicemia of other origins. Diseases which should be differentiated from acute cholecystitis are gastric and duodenal ulcer, hepatitis, pancreatitis, gallbladder cancer, hepatic abscess, Fitz-Hugh-Curtis syndrome, right lower lobar pneumonia, angina pectoris, myocardial infarction, and urinary infection.

A flowchart for the management of acute cholangitis is shown in Fig. Fig.2.2. The treatment of acute cholangitis should be guided by the grade of severity of the disease. Biliary drainage and antibiotics are the two most important elements of treatment. When a diagnosis of acute cholangitis is suspected, medical treatment, including nil per os (NPO) and the use of intravenous fluids, antibiotics, and analgesia, together with close monitoring of blood pressure, pulse, and urinary output should be initiated. Simultaneously, a severity assessment of the cholangitis should be documented, even if it is mild. Frequent reassessment is important, and patients may need to be reclassified as having mild (grade I), moderate (grade II), or severe (grade III) disease, based on the response to medical treatment. Appropriate treatment should be performed in accordance with the severity grade. Patients with concomitant diseases such as acute pancreatitis or malignant tumor, and elderly patients are likely to progress to a severe level; therefore, such patients should be monitored frequently.

Discussion

Mild (grade I) acute cholangitis

Medical treatment may be sufficient. Biliary drainage is not required in most cases. However, for nonresponders to medical treatment, the necessity of biliary drainage should be considered. Treatment options such as endoscopic, percutaneous, or operative intervention may be required, depending on the etiology. Some patients, such as those who develop postoperative cholangitis, may only require antibiotics and generally do not require intervention.

Moderate (grade II) acute cholangitis

Patients with acute cholangitis who do not respond to medical treatment have moderate (grade II) acute cholangitis. In these patients, early endoscopic or percutaneous drainage or even emergent operative drainage with a T-tube should be performed. A definitive procedure should be performed to remove the cause of the obstruction once the patient is in a stable condition.

Severe (grade III) acute cholangitis

Patients with acute cholangitis and organ failure are classified as having severe (grade III) acute cholangitis. These patients require organ support, such as ventilatory/circulatory management (e.g., endotracheal intubation, artificial respiration management, and the use of vasopressin), and treatment for disseminated intravascular coagulation (DIC) in addition to the general medical management. Urgent biliary drainage must be anticipated. When the patient is stabilized, urgent (ASAP) endoscopic or percutaneous transhepatic biliary drainage or an emergent operation with decompression of the bile duct with a T-tube should be performed. Definitive treatment of the cause of the obstruction, including endoscopic, percutaneous, or operative intervention, should be considered once the acute illness has resolved.

A flowchart for the management of acute cholecystitis is shown in Fig. Fig.3.4. Early cholecystectomy is recommended for most patients, with laparoscopic cholecystectomy as the preferred method. Among high-risk patients, percutaneous gallbladder drainage is an alternative therapy for those patients who cannot safely undergo urgent/early cholecystectomy (level 4).17,18

When a diagnosis of acute cholecystitis is suspected, medical treatment, including NPO, intravenous fluids, antibiotics, and analgesia, together with close monitoring of blood pressure, pulse, and urinary output should be initiated. Simultaneously, the grade of severity needs to be established. Appropriate treatment should be performed in accordance with the severity grade. The assessment of operative risk should also be evaluated based on the severity grade.

After the acute inflammation has been resolved by medical treatment and gallbladder drainage, it is desirable to perform a cholecystectomy to prevent recurrence. In surgically high-risk patients with cholecystolithasis, medical support after percutaneous cholecystolithotomy should be considered (level 4).19–21 For patients with acalculous cholecystitis, cholecystectomy is not required, because recurrence of acute acalculous cholecystitis after gallbladder drainage is rare (level 4).17,22

Mild (grade I) acute cholecystitis .

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Early laparoscopic cholecystectomy is the preferred treatment. Elective cholecystectomy may be selected (if early cholecystectomy is not performed) in order to improve other medical problems.

Moderate (grade II) acute cholecystitis

Early laparoscopic or open cholecystectomy is preferred. If a patient has serious local inflammation making early cholecystectomy difficult, then percutaneous or operative drainage of the gallbladder is recommended. Elective cholecystectomy can be performed after improvement of the acute inflammatory process.

Severe (grade III) acute cholecystitis.

Severe (grade III) acute cholecystitis is accompanied by organ dysfunction and/or severe local inflammation. Appropriate organ support in addition to medical treatment is necessary for patients with organ dysfunction. Management of severe local inflammation by percutaneous gallbladder drainage and/or cholecystectomy is needed. Biliary peritonitis due to perforation of the gallbladder is an indication for urgent cholecystectomy and drainage. Elective cholecystectomy may be performed after improvement of the acute illness by gallbladder drainage.

Results of the Tokyo International Consensus Meeting

At the International Consensus Meeting, flowcharts for the management of mild (grade I) and severe (grade III) acute cholecystitis were agreed upon by almost all of the participants; however, the flowchart for moderate (grade II) acute cholecystitis was agreed upon by fewer than 90% of the participants (Fig. (Fig.55).

References

1. Lai EC, Mok FP, Tan ES, Lo CM, Fan ST, You KT, et al. Endoscopic biliary drainage for severe acute cholangitis. N Engl J Med. 1992;326:1582–6. [PubMed] [Google Scholar]
2. Lo CM, Liu CL, Fan ST, Lai EC, Wong J. Prospective randomized study of early versus delayed laparoscopic cholecystectomy for acute cholecystitis. Ann Surg. 1998;227:461–7. doi: 10.1097/00000658-199804000-00001. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
3. Charcot M. De la fievre hepatique symptomatique Comparison avec la fievre uroseptique. Paris: Bourneville et Sevestre; 1877. [Google Scholar]
4. Boey JH, Way LW. Acute cholangitis. Ann Surg. 1980;191:264–70. doi: 10.1097/00000658-198003000-00002. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
5. Csendes A, Diaz JC, Burdiles P, Maluenda F, Morales E. Risk factors and classification of acute suppurative cholangitis. Br J Surg. 1992;79:655–8. doi: 10.1002/bjs.1800790720. [PubMed] [CrossRef] [Google Scholar]
6. Welch JP, Donaldson GA. The urgency of diagnosis and surgical treatment of acute suppurative cholangitis. Am J Surg. 1976;131:527–32. doi: 10.1016/0002-9610(76)90003-9. [PubMed] [CrossRef] [Google Scholar]
7. O'Connor MJ, Schwartz ML, McQuarrie DG, Sumer HW. Acute bacterial cholangitis: an analysis of clinical manifestation. Arch Surg. 1982;117:437–41. [PubMed] [Google Scholar]
8. Reynolds BM, Dargan EL. Acute obstructive cholangitis; a distinct clinical syndrome. Ann Surg. 1959;150:299–303. doi: 10.1097/00000658-195908000-00013. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
9. Eskelinen M, Ikonen J, Lipponen P. Diagnostic approaches in acute cholecystitis; a prospective study of 1333 patients with acute abdominal pain. Theor Surg. 1993;8:15–20. [Google Scholar]
10. Staniland JR, Ditchburn J, De Dombal FT. Clinical presentation of acute abdomen: study of 600 patients. BMJ. 1972;3:393–8. doi: 10.1136/bmj.3.5823.393. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
11. Trowbridge RL, Rutkowski NK, Shojania KG. Does this patient have acute cholecystitis? JAMA. 2003;289:80–6. doi: 10.1001/jama.289.1.80. [PubMed] [CrossRef] [Google Scholar]

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12. Abboud PA, Malet PF, Berlin JA, Staroscik R, Cabana MD, Clarke JR, et al. Predictors of common bile duct stones prior to cholecystectomy: a meta-analysis. Gastrointest Endosc. 1996;44:450–5. doi: 10.1016/S0016-5107(96)70098-6. [PubMed] [CrossRef] [Google Scholar]
13. Rosen CL, Brown DF, Chang Y, Moore C, Averill NJ, Arkoff LJ, et al. Ultrasonography by emergency physicians in patients with suspected cholecystitis. Am J Emerg Med. 2001;19:32–6. doi: 10.1053/ajem.2001.20028. [PubMed] [CrossRef] [Google Scholar]
14. Kendall JL, Shimp RJ. Performance and interpretation of focused right upper quadrant ultrasound by emergency physicians. J Emerg Med. 2001;21:7–13. doi: 10.1016/S0736-4679(01)00329-8. [PubMed] [CrossRef] [Google Scholar]
15. Ralls PW, Halls J, Lapin SA, Quinn MF, Morris UL, Boswell W. Prospective evaluation of the sonographic Murphy sign in suspected acute cholecystitis. J Clin Ultrasound. 1982;10:113–5. doi: 10.1002/jcu.1870100305. [PubMed] [CrossRef] [Google Scholar]
16. Soyer P, Brouland JP, Boudiaf M, Kardache M, Pelage JP, Panis Y, et al. Color velocity imaging and power Doppler sonography of the gallbladder wall: a new look at sonographic diagnosis of acute cholecystitis. Am J Roentgenol AJR. 1998;171:183–8. [PubMed] [Google Scholar]
17. Sugiyama M, Tokuhara M, Atomi Y. Is percutaneous cholecystostomy the optimal treatment for acute cholecystitis in the very elderly? World J Surg. 1998;22:459–63. doi: 10.1007/s002689900416. [PubMed] [CrossRef] [Google Scholar]
18. Chopra S, Dodd GD, 3rd, Mumbower AL, Chintapalli KN, Schwesinger WH, Sirinek KR, et al. Treatment of acute cholecystitis in non-critically ill patients at high surgical risk: comparison of clinical outcomes after gallbladder aspiration and after percutaneous cholecystostomy. Am J Roentgenol AJR. 2001;176:1025–31. [PubMed] [Google Scholar]
19. Inui K, Nakazawa S, Naito Y, Kimoto E, Yamao K. Nonsurgical treatment of cholecystolithiasis with percutaneous transhepatic cholecystoscopy. Am J Gastroenterol. 1988;83:1124–7. [PubMed] [Google Scholar]
20. Boland GW, Lee MJ, Mueller PR, Dawson SL, Gaa J, Lu DS, et al. Gallstones in critically ill patients with acute calculous cholecystitis treated by percutaneous cholecystostomy: nonsurgical therapeutic options. Am J Roentgenol AJR. 1994;162:1101–3. [PubMed] [Google Scholar]
21. Majeed AW, Reed MW, Ross B, Peacock J, Johnson AG. Gallstone removal with a modified cholecystoscope: an alternative to cholecystectomy in the high-risk patient. J Am Coll Surg. 1997;184:273–80. [PubMed] [Google Scholar]
22. Shirai Y, Tsukada K, Kawaguchi H, Ohtani T, Muto T, Hatakeyama K. Percutaneous transhepatic cholecystostomy for acute acalculous cholecystitis. Br J Surg. 1993;80:1440–2. doi: 10.1002/bjs.1800801129. [PubMed] [CrossRef] [Google Scholar].

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