International Journal of Medical Science and Research
www.medicaljournals.in
Online ISSN: 2664-8768, Print ISSN: 2664-875X
Received: 15-05-2022, Accepted: 30-05-2022, Published: 16-06-2022
Volume 4, Issue 1, 2022, Page No. 61-64

Management of cholecystitis and cholelithiasis in Single Rural hospital

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Abstract
Background: Acute cholecystitis is a syndrome of symptoms such as upper quadrant pain, fever, and leukocytosis associated with inflammation of the gallbladder. Complications of acute cholecystitis include gallbladder gangrene or perforation, which can be life-threatening
Case: A 34 years old woman, came to the ER with complaints of abdominal pain. On examinations we found positive Murphy sign, leucocytosis, and multiple stones in ultrasonography. We performed laparoscopic cholecystectomy within 72 hours after admission. The patient is hemodynamically stable.
Conclusion: Cholecystectomy is the definitive therapy for stable patients with cholecystitis. Laparoscopic cholecystectomy is safer, thus must be the first approach in stable patients with cholecystitis and should be performed within 72 hours after admission.

Keywords: cholecystitis, cholelithiasis, cholecystectomy, laparoscopic

Introduction

Acute cholecystitis is a syndrome of symptoms such as upper quadrant pain, fever, and leukocytosis associated with inflammation of the gallbladder. Complications of acute cholecystitis include gallbladder gangrene or perforation, which can be life-threatening. Patients with acute cholecystitis usually present with severe and persistent abdominal pain in the right upper quadrant or epigastrium, fever, and leukocytosis. Positive Murphy's sign on physical examination supports the diagnosis. In most cases, the diagnosis can be made by abdominal ultrasound or cholescintigraphy il. Various aspects of the management of acute calculous cholecystitis, including the type and timing of surgery, the role of antibiotics, and nonoperative management, are still collaborative.[1] This case report focuses on recently published studies discussing the timing of cholecystectomy, the use of cholecystostomy tubes, and the role of antibiotics in this condition.

Case

A 34 years old woman, came to the ER with complaints of abdominal pain since one night before admission. She felt stabbing pain in the abdomen, continuously, for about 10-30 minutes. The patient felt nausea after consuming fatty foods and the complaints did not improve with the administration anti nausea. The patient has no fever and no vomitting. No icterus. Symptoms have been felt since 1 month ago. Patients often eat fatty foods, rarely eat vegetables, and rarely exercise. The patient admitted that he did not smoke. She denied history of high blood pressure. History of using birth control using birth control pills is approximately 15 years.
On physical examination, blood pressure was 157/96, pulse 75x/minute, respiratory rate 20x/minute, axillary temperature 37'4, weight 60cm, height 156kg, BMI 24.65 (ideal). On examination of the head and neck, no jaundice was found. On abdominal examination, there was epigastric pain and pain in the right hypochondrium/subcosal region with a positive Murphy sign. Examination of other organ functions did not show any abnormalities.
The results of the laboratory examination showed leukocytosis (18,600/mm^3 with a neutrophil value of 74%), Hb (14.9g/dL), and platelets (289,000/mm^3). The results of liver transaminases examination showed normal limits (total bilirubin 0.4 mg/dL; direct bilirubin 0.2 mg/dL; indirect bilirubin 0.2 mg/dL). Kidney function, blood glucose levels, electrolyte levels, and physiology of hemostasis were within normal limits. Chest radiology and electrocardiogram showed no abnormalities.
The diagnosis with suspected acute cholecystitis was established in this patient as the main problem. In addition, there was a positive Murphy sign and leukocytosis. Then a series of additional diagnostic tests were performed on this patient including ultrasonography (USG). Some of the initial treatment in this patient was given cefoperazone injection intravenously. In addition, intravenous injection of omeprazole was given as an anti-nausea. Intravenous injection of ketorolac is given as an analgesic.
The results of the abdominal ultrasound examination found the liver condition was within normal limits. The gall bladder is of normal size; seen multiple stones with sizes 0.96cm, 0.92cm, 0.84cm, 0.90cm, thickened walls

measuring 0.71; CBD within normal limits. Multiple cholelithiasis and cholecystitis is the diagnosis of teh patient. Based on the results of these investigations, the diagnosis of acute cholecystitis and cholelithiasis has been appropriately established. The patient was planned for pro laparoscopic cholecystectomy. The findings during gall bladder surgery were hydrops and pus fluid (+) +/- 3cc. Pathological examination showed chronic cholecystitis and no signs of malignancy.

Fig 1: Gross pathological examination after laparoscopic cholecystectomy

Discussion

The major biliary tract emergencies include acute cholecystitis, ascending cholangitis, and acute pancreatitis. Cholecystitis is inflammation of the gallbladder that occurs most often due to obstruction of the cystic duct by gallstones. Approximately 90% of cases of cholecystitis involve stones in the cystic duct (calculous cholecystitis) and as many as 10% include acalculous cholecystitis [1, 3].

The diagnosis can be made through history, physical examination, and investigations. Suspicion of acute cholecystitis was based on the presence of pain in the upper right area, especially after consuming fatty foods, the presence of fever, tenderness in the right hypochondrium and a positive Murphy's sign on physical examination. Factors that influence the onset of acute cholecystitis are bile fluid stasis, bacterial infection, and ischemia of the gallbladder wall. The main cause of acute cholecystitis is gallbladder stones (90%) located in the cystic duct leading to bile duct stasis, whereas five to ten percent of cases occur without stones (acute acalculous cholecystitis) [1, 4, 5, 6].

Mechanism leading to stasis in the cystic duct can lead to acute cholecystitis is unclear. Many factors influence the onset of this condition, such as the concentration of bile, cholesterol, lysolecithin and prostaglandins which damage the mucosal lining of the gallbladder wall followed by an inflammatory reaction and suppuration [1].

Risk factors for acute cholecystitis are often associated with 4F which consists of fat, female, forty, and fertile. This is in accordance with the condition of this patient, namely where the patient is a woman (female). Based on the consensus on obesity in Asia Pacific, the patient was classified as ideal but the body mass index was in the upper limit (BMI 24.65).

And the patient is classified as fertile, considering the patient haswith two children. Keep in mind several other risk factors that women have a 3-fold risk of developing cholelithiasis than men. This is because the hormone estrogen affects the increase in the excretion of cholesterol by the gallbladder. Patients also lack activity which is associated with an increased risk of developing cholelithiasis [1].

Clinical Manifestations

A rather typical complaint for an acute cholecystitis is right upper quadrant abdominal pain, nausea, vomiting and fever. Sometimes the pain may radiate to the right shoulder or scapula. This can go on for up to 60 minutes without subside. The severity of complaints varies greatly depending on the presence of mild inflammatory disorders to gangrene or gallbladder perforation. Right upper quadrant abdominal tenderness, palpable gallbladder and a positive Murphy's sign on physical examination are characteristic of acute cholecystitis. A positive Murphy's sign has a specificity of 79-96% for acute cholecystitis. The clinical picture for cholecystitis generally shows leukocytosis with left shift. Serum transaminase and alkaline phosphatase may be elevated. If the complaint gets worse with high temperature and chills and severe leukocytosis, the possibility of empyema and gallbladder perforation should be considered [1, 2, 6].

Diagnosis

Ultrasonography is the main diagnostic modality and is highly recommended. Ultrasound should be done routinely and is very useful for showing the size, shape and thickening of the gallbladder wall, stones and extrahepatic bile ducts. The sensitivity and accuracy of ultrasound reach 90-95%. Ultrasound features of cholecystitis may include (1) finding stones in the gallbladder; (2) gallbladder wall thickening with or without pericholecystic fluid; and (3) a positive Murphy's sign sonographic i.e. pain when the ultrasound probe is pressed against the gallbladder area). In this patient, the ultrasound showed signs of acute cholecystitis and the presence of stones. Only in 15% of the stones is radioopaque. CT scan of the abdomen is less sensitive and expensive but can reveal small pericholecystic abscesses that may not be visible on ultrasound examination. The differential diagnosis for acute cholecystitis is peptic ulcer with or without perforation, acute cholangitis, acute pancreatitis, and acute myocardial infarction [1, 3, 6].

Based on *Tokyo Guidelines* (2007), diagnostic criteria for cholecystitis are [10]

- Local symptoms
- Murphy sign
- Upper right quadrant pain
- Upper right quadrant mass
- Systemic symptoms
- Fever
- Leucocytosis
- Elevated C-reactive protein
- Imaging
- Sonography and scintigraphy findings that supports the diagnosis

Diagnosis can be established if there are 1 local symptoms, 1 systemic symptoms, and sonography and scintigraphy findings that support the diagnosis [10].

Pathogenesis

Factors that influence the onset of acute cholecystitis are bile fluid stasis, bacterial infection, and ischemia of the gallbladder wall. The main cause of acute cholecystitis is gallbladder stones (90%) located in the cystic duct which causes bile duct stasis, whereas a minority of cases of cholecystitis (10%) occur without gallstones. Acute calculous cholecystitis is caused by obstruction of the cystic duct by gallstones leading to distention of the gallbladder. As a result, blood flow and lymphatic drainage decrease and cause mucosal ischemia and necrosis. It is estimated that many influencing factors such as bile concentration, cholesterol, lysolecithin, and prostaglandins damage the mucosal lining of the gallbladder wall contribute to inflammatory reaction and suppuration [7, 8].

Predisposing factors for gallstone formation are changes in bile composition, bile stasis, and gallbladder infection. Changes in the composition of bile may be the most important factor in gallstone formation. A number of studies have shown that the liver of people with cholesterol stones secretes bile which is contains high level of cholesterol. This excess cholesterol settles in the gallbladder in ways that are not fully understood. Bile stasis can result in progressive supersaturation, changes in the chemical composition and deposition of these elements. Impaired gallbladder contraction or spasm of the sphincter of Oddi or both can cause stasis. Hormonal factors, especially in pregnancy, may be associated with slower gallbladder emptying. Bacterial infection in the bile ducts may play a part in stone formation, through increased cell desquamation and mucus formation. However, infection may more often be the result of gallstones than the cause of gallstones [5].

Management

Management of acute cholecystitis is generally consisted of antibiotics and pain management. Antibiotics should be given for all cases, according to the severity of the disease. In renal insufficiency, the dose of antibiotics should be adjusted. Second, Non-steroidal anti-inflammatory drugs can be given to treat pain. Other common management includes complete bed rest, parenteral nutrition, light low fat diet. Giving antibiotics in the early phase is very important to prevent complications of peritonitis, cholangitis, and septicemia. Patients may be given a third or fourth generation cephalosporin antibiotic or a fluoroquinolone, plus metronidazole. Aampicillin,

cephalosporins and metronidazole groups are sufficient to kill bacteria commonly found in acute cholecystitis such as E. coli, S. faecalis and Klebsiella [1-6].

The definitive treatment for acute cholecystitis is cholecystectomy, in addition to antibiotics and analgesics. In critically ill patients with acute cholecystitis, cholecystectomy should be postponed until patient is stabilized. The timing of when to perform cholecystectomy is still controversial. Usually it should be done within 72 hours or 6-8 weeks after conservative therapy given the patient is in stable conditions [1-10].

Currently, laparoscopic cholecystectomy techniques have been developed which are safer than open cholecystectomy. In the digestive surgery department, laparoscopic cholecystectomy was performed in less than 72 hours after the initial diagnosis was made. This is intended for cases of mild and moderate acute cholecystitis, while for severe cases, emergency laparoscopic cholecystectomy is performed. For cases of patients with critical and unstable conditions, of course, surgical intervention cannot be carried out. In patients with this condition, radiologically guided gallbladder drainage is performed through percutaneous cholecystostomy [12]. In this patient we performed laparoscopic cholecystectomy before 72 hours and the patient was stable after surgery with no observed complication.

There are few steps of performic laparoscopic cholecystectomy. The first step is to dissect the hepatocystic triangle and followed by establishing the critical view of safety. This means that the hepatocystic triangle is cleared of all fat dan fibrous tissue. The third step is clipping and dividing cystic artery. The next step is to do division of the cystic duct and operative cholangiography. This step is followed by separation of gallbladder from the liver bed and removal of port and specimen [12].

Conclusion

The major biliary tract emergencies include acute cholecystitis, ascending cholangitis, and acute pancreatitis. Cholecystitis is inflammation of the gallbladder that occurs most often due to obstruction of the cystic duct by gallstones. Approximately 90% of cases of cholecystitis involve stones in the cystic duct (calculous cholecystitis) and as many as 10% include acalculous cholecystitis. Based on the cause, cholecystitis is divided into calculous cholecystitis and acalculus cholecystitis. Based on the onset, it is divided into acute and chronic cholecystitis. The diagnostic criteria for cholecystitis can be established according to the Tokyo guidelines. Cholecystitis therapy includes gastrointestinal rest, low-fat diet, administration of analgesics, prophylactic antibiotics, and cholecystectomy. In this patient, we performed a laparoscopic cholecystectomy, which was performed in less than 72 hours and when the patient was stable after surgery.

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