Early Presentation and Surgery in Emphysematous Cholecystitis with Pneumobilia improve survival.

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Abstract

We report a 56-year-old man presented to the emergency department at Queen Rania Hospital with a 12-hours history of Rt. upper quadrant abdominal pain, accompanied by nausea, vomiting, low-grade fever, and relatively stable condition. He had a history of type II diabetes mellitus, hypertension, ischemic heart disease and bronchial asthma on regular treatment. Physical examination revealed severe pain in the right upper quadrant and palpable gall bladder. Managed emergently and the intraoperative findings suggested gangrenous cholecystitis and a dense inflammation in the right upper quadrant. The gallbladder wall was perforated and turbid collection involving the right subphrenic region. We performed cholecystectomy and drain the common bile duct using a feeding tube size 9 finch without reaching the lumen of the common bile duct The patient made favorable progress after the operation and was discharged on postoperative day 7.

Keywords:

Emphysematous; cholecystitis; Pneumobilia.

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1. Introduction

Emphysematous cholecystitis is a rare variant of acute cholecystitis caused by infection of the gallbladder with gas-producing bacteria (E. coli, Klebsiella, Clostridium perfringens) (1). In our case, we did not find *Clostridium* perfringens from the gallbladder contents by culture. Emphysematous cholecystitis (EC) is a life-threatening complication of acute cholecystitis, and an early diagnosis is required to prevent delay in patient management. The reported mortality rate is between 15% to 20 %(1, 3). This disorder deteriorates rapidly in many patients. We report a patient with a severe form of EC with peumobilia managed promptly by open cholecystectomy and common bile duct drainage via cystic duct without reaching the lumen of the common bile duct.

2. Case Report

On October 14, 2004, a 56-year-old Jordanian man consulted the Emergency Outpatient Unit of our district hospital at Queen Rania Hospital for abdominal pain and vomiting twice, which had persisted from October 13. Patient admitted and an intravenous drip transiently relieved the symptoms, but then the abdominal pain became exacerbated. On the afternoon (1:30 pm) of the same day of admission, the patient was the radiology department after the primary (ABCs) were achieved due to deterioration of his condition. Abdominal ultrasound could not reveal the gall bladder due to gases in Rt. upper quadrant. For this we did abdominal CT Scan which showed a picture of EC and airobilia. Patient resuscitated and admitted to the operating theatre for exploration.

Physical examination on admission

The patient's height was 165 cm; body weight, 70 kg. His temperature was 37.8C; physical status, moderate; blood pressure, 140/90 mmHg; pulse, 95/min; respiratory rate, 24/min; and oxygen saturation of 95% on room air; not jaundiced and his level of consciousness was decreased.

Haematological data on admission

The leukocyte count was 14100/µl; the levels of Na, K, and Cl were 131 mEq/l,
4.1 mEq/l, and 110 mEq/l, respectively. Blood urea, 20 mg/dl; random blood sugar, 20 mg/dl; ALP, 136 mg/dl; T. Bilirubin, 2.05 mg/dl; SGPT and SGOT. ECG and Chest X-Ray were unremarkable.

Plain abdominal and chest X-ray findings

Cresentic-shape gas distribution and one air-fluid level in the Rt. upper quadrant. Plain chest X-ray revealed retention of minimal pleural effusion on the right side.

Abdominal ultrasonography findings

On admission, the gallbladder was distended, a pericholecystic fluid collection with small tiny stones.
The subsequent ultrasound (5-hours post admission) the gall bladder cannot be seen due to gases in the same region.

Abdominal CT scan

Abdominal computed tomography (CT) revealed emphysema in the gallbladder and demonstrated intramural gas of gall bladder, pericholecystic inflammatory changes and pneumobilia of central distribution (figures 1-2).

Intraoperative findings

Laparotomy was performed via a right subcostal transverse incision. Necrosis of the gallbladder wall and a perforation was found. In the gallbladder, bile with a foul stool-like odor and turbid was observed. Intraoperative cholecystography did not reveal any calculus or abnormality between the intrahepatic and common bile ducts.

Postoperative course

Respiratory control was required for 1 day. On the third postoperative day, the patient started sips of water; then oral fluids and ambulation accomplished on the fifth postoperative day. On the sixth postoperative day, she started a soft gastric diet.
Therefore, on the seventh postoperative day, the patient discharged on oral antibiotics and analgesia. After 2 weeks, the patient's general condition had improved completely. Cholecystography via the common bile duct drain underwent which revealed patent ducts and normal study (figure 3). Therefore the common bile duct drain was removed. Histopathology report revealed acute gangrenous cholecystitis and culture of the bile yielded no growth. Four weeks later the patient was totally ambulated and in good health.

Figure (1)

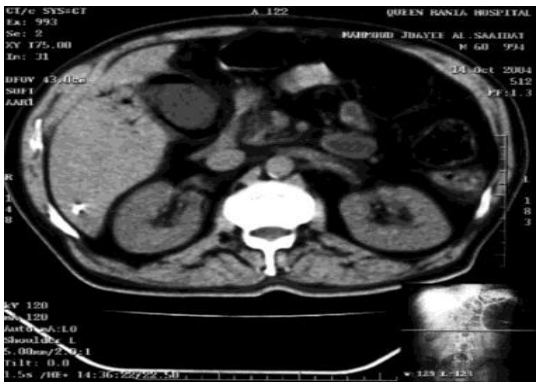

Figure (2)

Figures (1, 2). Preoperative CT Scan showing features of EC and Pneumobilia as arrows illustrate

Figure 3. cholecystogaphy study via the common bile duct drain shows patent ducts and normal study

3. Discousion

Other names such as acute pneumocholecystitis, cholecystitis emphysematosa, pyopneumocholecystitis, and acute gaseous cholecystitis have been given to this clinical entity. Typically, the diagnosis is made by observing air within the gallbladder wall on plain radiographs, ultrasound or CT scan. The male-to-female ratio is 4:1, unlike typical cholecystitis, which is more frequent in females (2).
Emphysematous cholecystitis frequently affects elderly men, and it is usually associated with diabetes mellitus and approximately 35% of cases occur in diabetic patients (3). The risk of gangrene and perforation of the gallbladder is relatively high for patients with emphysematous cholecystitis but it is considered to be due to ischemia of the gallbladder from primary vascular compromise, with a secondary proliferation of gas-producing bacteria (5). Gallbladder ischemia is thought to play an important role in the development of acute emphysematous cholecystitis, such factors as the presence of diabetes mellitus, vascular disease, being elderly, and male sex are risk factors for the disease as all these factors were found in our patient (1,5,6). The diagnosis of emphysematous cholecystitis based on the demonstration of varying amounts of gas in the gallbladder lumen and wall, and occasionally in the bile ducts (7) or pericholecystic area, can be made from plain abdominal radiography, ultrasonography, or more accurately by computed tomography scan. Plain film of emphysematous cholecystitis usually shows the gas collection in the right hypochondrium, either in the gallbladder wall or in the lumen. Intramural the gas is seen as a crescentic lucency around the Gallbladder (5). Computed tomography is the most sensitive modality for the detection of the intraluminal or intramural gallbladder gas (4, 8), and it can also demonstrate local complications, such as pericholecystic inflammatory changes, abscess formation, or perforation (9). Prompt diagnosis is essential, as early intervention can minimize the serious morbidity and mortality rates associated with emphysematous cholecystitis. The presenting symptoms of EC are usually very vague and initially indistinguishable from those of uncomplicated acute cholecystitis, frequently causing a diagnostic dilemma. In addition, EC frequently occurs without severe symptoms in diabetic patients. Thus, in a clinical setting, the diagnosis should be prompt and correct, especially in diabetic patients. Emphysematous cholecystitis frequently causes necrosis and perforation, and many patients require emergency surgery. Gordon-Taylor and Whitby (1930, 1932) found Clostridium welchii to be present in 18% of surgically removed gall-bladders and in 13 % removed at necropsy which is going with our negative culture of the pile after surgery. In the presence of obstruction either by calculus or edema of the cystic duct, bacterial invasion of the wall by gas-forming organisms may supervene. The clinical features in the early stages are identical with acute cholecystitis from non-gas-producing organisms (10). Those cases due to Clostridium welchii, if not recognized, may under conservative treatment proceed to perforation, localized abscess formation, or generalized peritonitis with
its attendant dangers of Clostridium welchii toxemia and death. The radiological features of acute pneumocholecystitis are (a) air within the gall-bladder and perhaps a fluid level (b) and air within the wall of the gall-bladder (10). Pneumobilia is an unusual occurrence in this disorder. In only, some previously

reported cases have gas in the bile ducts been associated with emphysematous cholecystitis(11). The pathophysiology of pneumobilia in association with emphysematous cholecystitis remains unclear.
Obstruction of the cystic duct has been thought to be the precipitating cause of acute cholecystitis, with or without associated gas formation. The occurrence of pneumobilia in some cases of emphysematous cholecystitis suggests that the cystic duct is patent, allowing gas to escape from the gallbladder into the biliary ducts as in our case. Drainage of common bile ducts rarely used in literature, we recommend this form of treatment as a simple and effective way to lessen the postoperative edema of bile ducts.

4. Conclusion

Early presentation, prompt diagnosis, and management are considered the backbone in the management of severe forms of emphysematous cholecystitis and airobilia. Drainage of common bile duct via a simple feeding tube via the stump of cystic duct not reaching the lumen of the common bile duct was not been reported before in the literature. We report this a very simple and effective way of management.

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Conflict of interest

The author confirms that this article content has no conflict of interest**.**

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References

Garcia-Sancho Tellez L, Rodriguez-Montes JA, Fernandez de Lis S, Garcia-Sancho Martin L. Acute emphysematous cholecystitis. Report of twenty cases. Hepatogastroenterology 1999;46:2144–8.
2.Philipp Kirchhoff et al. Fatal emphysematous cholecystitis caused by clostridium perfringens, Images in Surgery 2007;141:411-2.
3.Joshi N, Caputo GM, Weitekamp MR, et al. Infections in patients with diabetes mellitus. N Engl J Med. 1999;341: 1906-1912.
4.K. Konno, H. Ishida, H. Naganuma, M. Sato,1 T. Komatsuda, A. Sato,1 J. Ishida, T. Sakai,
S. Watanabe. Emphysematous cholecystitis: sonographic findings
Abdominal Imaging 2002; 27:191–195.
5. Hsin-Hui Chiu, Chan-Ming Chen, Lein-Ray Mo. The American Journal of Surgery 188 (2004) 325–326
6. N. Ise et al.: Acute Emphysematous Cholecystitis Preceded by Symptoms of Ileus. Surgery Today 2002; 32:183–185
7. Harley WD, Kirkpatrick RH, Furrucci JT. Gas in the bile ducts (pneumobilia)
in emphysematous cholecystitis. Am J Roentgenol 1978;131: 661–3.
8. McMillin K. Computed tomography of emphysematous cholecystitis.
J Comput Assist Tomogr 1985; 9:330–2.
9. Terrier F, Becker CD, Stoller C, Triller JK. Computed tomography in
complicated cholecystitis. J Comput Assist Tomopr 1984;8:58–62.
10. S. E. Trickey, R. C. Baillie. Acute Pneumocholecystitis. British Medical Journal 1963;24:488
11. William D. Harley, Robert H. Kirk Patrick, Joseph T. Ferrucci, JR. Gas in the Bile Ducts (Pneumobilia) in Emphysematous Cholecystitis. Am J Roentgnol 1978; 131 :661 -663