DOI: 10.7860/JCDR/2015/10972.6463

Case Report

Surgery Section

A Rare Case of Emphysematous Cholecystitis

SUPREET KHARE[1], ASWINI K PUJAHARI[2]

ABSTRACT

Emphysematous cholecystitis is an acute infection of the gallbladder wall caused by gas-forming organisms. It is infrequent with insidious onset and diagnosed by the use of radiographs detecting presence of air within the gallbladder wall or lumen. The report describes the case of a 42-year-old alcoholic male who presented with sudden onset of pain in the right upper quadrant of abdomen, fever and bilious vomiting of two days duration. The patient did not have symptoms of jaundice. Emergency partial cholecystectomy was done and the culture directed antibiotics were given. The patient was followed up for 4 years and he remained asymptomatic.

Keywords: Cholecystectomy, Gas production, Radiographs

CASE REPORT

We describe a case of a 42-year-old alcoholic male who had presented to the Department of Surgery, Armed Forces Medical College, with pain in the right upper quadrant of the abdomen, fever and with vomiting of two days duration. The symptoms were sudden in onset. The fever was continuous in nature and was around 101°F-103°F. The pain was present in the upper right part of the abdomen and was non-radiating. The patient also gave history of bilious vomiting.

His pulse was recorded to be 130 per minute, his blood pressure was 120/70 mmHg and the respiratory rate was 40 per minute. The patient did not have symptoms of jaundice. There was guarding in the upper region of abdomen. The findings on USG were dubious due to excessive gas and hence an imminent CT Scan was mandatorily done which unveiled distended gall bladder with gas and stones [Table/Fig-1].

Injection Sodium Penicillin 20 lac units Q6 hourly, Metrogyl 500 mg 8 hourly and injection Cefaperazone Salbactum were prescribed. Emergency laparoscopy was done, gall bladder was covered with omentum. The adhesions were released; the gall bladder was aspirated with the needle. It was gas and foul smelling pus of approx 50 ml. The gall bladder was irrigated with saline, all stones were removed and partial cholecystectomy was done. A suction was placed at the GB fossa at the end of the procedure. The admission to surgery time was 8 hours. Post operatively the antibiotics were continued till the pus culture report was received. Patient responded well to the directed antibiotics treatment and improved quickly. The temperature subsided soon within six hours of surgery.

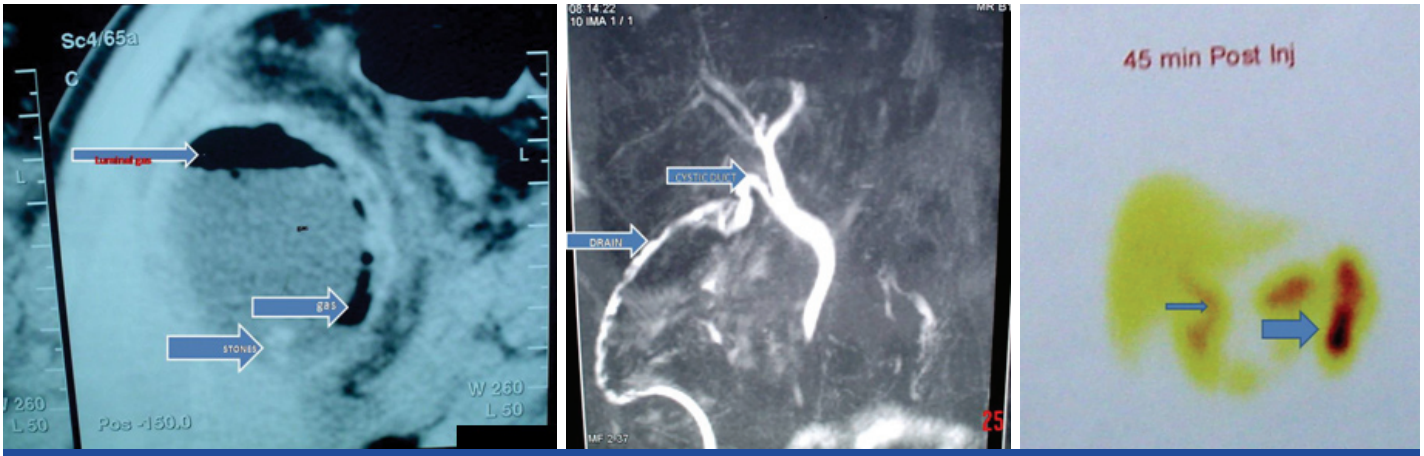
The aerobic culture report was *E. coli* sensitive to Amikacin and Imipenem, which were instituted and the anerobic culture was negative. There was scanty serosanginous discharge for two days. The MRCP [Table/Fig-2] showed CBD with no collection and the drain was removed on the 6th post operative day. The left over part of GB was not seen as it remains in a sagged state, as GB can only be seen in presence of fluid (bile, mucous, pus). The patient was discharged on the 10th post-operative day after a week of parenteral antibiotics. During the four years follow up, he remained asymptomatic thereafter and his biliary isotope scan was normal [Table/Fig-3].

DISCUSSION

The first case of emphysematous cholecystitis was described by Stoltz A. in 1901 [1]. He reported of gas being found, on autopsy, in the gallbladder of three patients. Mentzer RM et al., have published comprehensive reports of its clinical feature [2]. EC differs from gallstone-related acute cholecystitis in its pathophysiology and epidemiology [3]. It is an emergency condition and a form of acute cholecystitis that is more common in older patients with diabetes mellitus as compared to the general population [4].

Elderly males, especially those with diabetes mellitus, are particularly susceptible to clostridial-cholecystitis [5]. Our case encountered the presence of a gram negative aerobe *E. coli* in a relatively young male. In our case we came across a man who was young and non-diabetic which made the diagnosis a little difficult and arduous.

The following case report is a rare case of EC which explains the clinical features and management of Emphysematous Cholecystitis.



[Table/Fig-1]: CT scan - Distended GB with gas and stones shown with arrow **[Table/Fig-2]:** MRCP - Showing long cystic duct and drain tube **[Table/Fig-3]:** Isotope Biliary Scan - Showing normal CBD (thin arrow) and isotope in bowel (Thick arrow)

The presenting symptoms of EC are often difficult to distinguish from those of uncomplicated acute cholecystitis, acute right upper abdominal pathology and amoebic liver abscess and thereby often making the diagnosis difficult. EC can present in different forms from slight pain to sepsis leading to shock. The signs and symptoms depend on the progression of the disease. EC is more common in males than females the ratio being 7:3, and 40% of affected patients suffer from diabetes mellitus [6].

EC is an emergency. The clinical presentation is often non-specific therefore diagnosis is based on image findings not by ultrasound due to the presence of gas but computed tomography [6]. The main etiopathogenesis for vascular compromise of the gallbladder are Cholelithiasis, impaired immune protection and infection with gas-forming organisms.

If EC is not treated, it progresses to soft-tissue gas gangrene. This occurs due to haematogenous spread of the microorganisms to the muscles leading to septic shock and death [7].

The diagnosis of EC depends upon the demonstration of varying amounts of gas in the gallbladder lumen and wall and in the bile ducts. Depiction of intraluminal gas is made as one or several round bubbles or a pear-shaped lucency in the right upper quadrant on a supine film or on an erect or a decubitus radiograph as air-fluid level within the gallbladder. CT is the most sensitive investigation for the detection of the intraluminal or intramural gas in gallbladder, also helping in the demonstration of local complications like abscess formation and pericholecystic inflammatory changes.

Magnetic Resonance Imaging (MRI) can provide detailed information on intramural necrosis and intraluminal gas. The appearance of gas in the gallbladder lumen and wall is that of floating single void are as in the upper portions of the gallbladder [8].

Cystic duct obstruction is regarded as a must to have EC [9]. In our case it was blocked, therefore there was no bile leakage. We performed laparoscopic cholecystectomy (minimum invasion). Usually EC is caused by anaerobes like *Clostridium* but in our case it was caused by an aerobic gram negative microorganism, *E.coli*. The patient was hence given antibiotics according to the culture sensitivity tests.

Abdominal X-ray is not used for the detection of air within the gall bladder. Now a days, Ultrasound (USG) is recommended for diagnostic evaluation of patients suffering from acute cholecystitis. An USG finding depends upon the amount and location of the air pockets. Echogenic foci with reverberation artifacts are seen on sonography in cases where the amount of air present is minimal [10].

On imaging EC is diagnosed radiographically by demonstration of air in the gall bladder wall taking tissues adjacent to it in consideration and the biliary ducts in the absence of an abnormal communication with the gastrointestinal tract [11]. The treatment involves the procedure of Laparoscopy surgery.

CONCLUSION

Emphysematous Cholecystitis is a surgical emergency. EC is said to occur in elderly diabetic individuals with *Clostridium* as the causative organism. It can rarely also be caused by gas forming *E. coli* and in younger non-diabetic patients and as present in this case report. Emergency laparoscopic partial cholecystectomy is an alternate to open surgery in this high risk pathology.

REFERENCES

[1] Lallemand B, Kueleener R and Maassarani. Emphysematous cholecystitis. *Acta Chir Belg*. 2003;103:230-32.
[2] Mentzer RM, Golden GT, Chandler JG, Horsey JS. A comparative appraisal of emphysematous cholecystitis. *Am J Surg*. 1975;129:10-15.
[3] Bouras G, Lunca S, Vix M, Marescaux J. A case of emphysematous cholecystitis managed by laparoscopic surgery. *JSLS*. 2005;9(4):478-80.
[4] Moanna A, Bajaj R, Del Rio C. Emphysematous cholecystitis due to *Salmonella derby*. *Lancet Infect Dis*. 2006;6(2):118-20.
[5] Emphysematous cholecystitis [Internet] 1994 [updated 2013 Sep 12; cited 2015 May 11]. Available from: http://emedicine.medscape.com/article/173885-overview#showall.
[6] Miyahara H, Shida D, Matsunaga H, Takahama Y, Miyamoto S. Emphysematouscholecystitis with massive gas in the abdominal cavity. *World J Gastroenterol*. 2013;19(4):604-06.
[7] Safioleas M, Stamatakos M, Kanakis M, Sargedi C, Safioleas C, Smirnis A, et al. Soft tissue gas gangrene: a severe complication of emphysematous cholecystitis. *Tohoku J Exp Med*. 2007;213(4):323-28.
[8] Watanabe Y, Nagayama M, Okumura A, Amoh Y, Katsube T, Suga T, et al. MR imaging of acute biliary disorders. *Radiographics*. 2007;27:477-95.
[9] O'connor OJ, Maher MM. Imaging of cholecystitis. *Am J Roentgenol*. 2011;196:367-74.
[10] Smith EA, Dillman JR, Elsayes KM, Menias CO, Bude RO. Cross-sectional imaging of acute and chronic gall bladder inflammatory disease. *Am J Roentgenol*. 2009;192:188-96.
[11] Sunnapwar A, Raut AA, Nagar AM, Katre R. Emphysematous cholecystitis: Imaging findings in nine patients. *Indian J Radiol Imaging*. 2011;21(2):142-46.

PARTICULARS OF CONTRIBUTORS:
1. Intern, Armed Forces Medical College, Pune, Maharashtra, India.
2. Professor and Head of Department, Department of Surgery, Armed Forces Medical College, Pune, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Supreet Khare,
1/270, Virat Khand, Gomtinagar, Lucknow-226010, Uttar Pradesh, India.
E-mail: drsupreet.khare@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Oct 16, 2014**
Date of Peer Review: **Nov 08, 2014**
Date of Acceptance: **May 27, 2015**
Date of Publishing: **Sep 01, 2015**