

Ultrasound-guided puncture of the gallbladder for acute cholecystitis

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Abstract

We performed a US-guided aspiration of the gallbladder in 27 patients with an acute cholecystitis and severe concurrent disease, not responding to IV antibiotics and supportive therapy. Twenty six of the 27 patients improved after the procedure. One patient died 7 days after the procedure due to multi organ failure; in the others immediate surgery could be avoided. Three patients experienced local pain after the procedure; no other puncture related complications were encountered. Long-term results (mean follow up 18 months; range 2-36 months) were excellent in 20/26 survivors with no biliary complications or need for elective cholecystectomy. Six of the 26 patients needed subsequent cholecystectomy for relapse or incomplete cure. (*Acta gastroenterol. belg.*, 1998, 61, 151-152).

Keywords : ultrasound, puncture, gallbladder, acute cholecystitis.

Introduction

Early cholecystectomy within 24 to 48 hours is still the treatment of choice in patients, fit for surgery, presenting with an acute cholecystitis. However, management of acute cholecystitis in critically ill patients with severe concurrent disease is difficult: 30% deteriorate without operation, emergency cholecystectomy has a high morbidity and mortality, and surgical cholecystostomy has a significant mortality (1). Ultrasound-guided percutaneous cholecystostomy (2,3) is a safe and effective procedure but the catheters left in place may cause complications and require additional care and monitoring (4). We previously reported the immediate results of ultrasound-guided simple gallbladder puncture in critical ill patients with severe acute cholecystitis (5). We now present the immediate and long term results of this procedure in a larger series of patients.

Patients and methods

Ultrasound-guided percutaneous transhepatic gallbladder puncture was done in 27 patients (mean age 78 +/- 14 years). All patients were critically ill (7 were in septic shock) and presented with severe inflammatory symptoms while receiving antibiotics. All patients suffered from severe concurrent diseases, presenting relative contra-indications for surgery: severe cardiopulmonary disease (23), malignancy (5), diabetes mellitus (3), severe chronic renal failure (3), liver cirrhosis (2), amyloidosis (1), Crohn's disease (1), myelofibrosis (1), syringomyelia (1). All patients presented with a positive sonogram for acute cholecystitis: wall thickening (27),

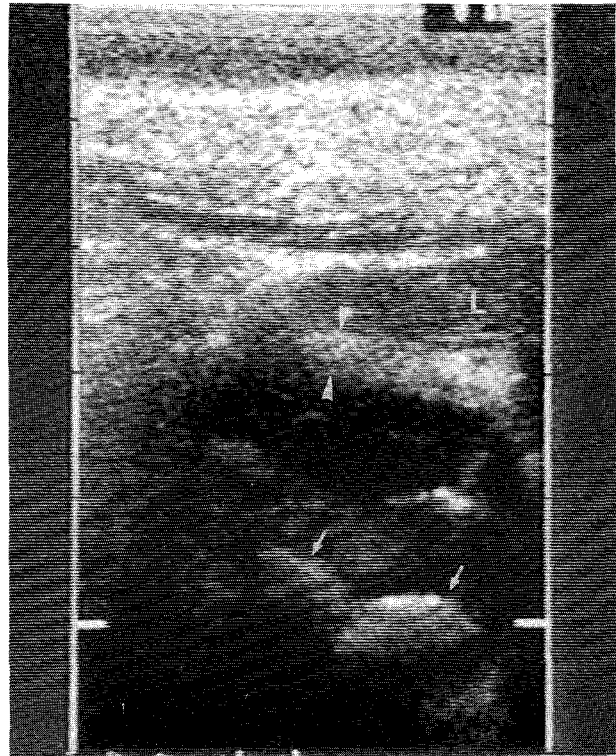


Fig. 1. — Ultrasound-guided gallbladder puncture. In this case, the gallbladder was better visualized using a 5 MHz than a 3,5 MHz transducer. Note the bright needle tip within the gallbladder lumen. The gallbladder wall is thickened (arrowheads) and gallbladder stones (arrows) are present. Note the transhepatic approach (L = liver) of the puncture procedure.

intra-luminal echos (24), enlarged gallbladder volume (16), effusion around the gallbladder (12), and gallbladder stones (27). The gallbladder puncture procedure was performed bedside in 7 patients under local anesthesia (mean duration of the procedure: 20 to 30 minutes). We used a 14 Gauge puncture needle and a transhepatic approach through the bare area of the gallbladder (fig. 1). No permanent catheters were left in the gallbladder. Repeated punctures (2 or 3) had to be performed in the gallbladder in 4 patients, and in a peri-cholecystic abscess in 3 patients. The cloudy

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Date on which the paper was presented: April 19th 1997, symposium of the VENEb on 'Interventional Ultrasound in Antwerp'.

aspirate was subsequently cultured and a leucocyte count was performed. After aspiration of the gallbladder content, thorough rinsing with saline (15-40 times 20 ml) was performed until clear fluid was aspirated. All patients received IV antibiotics and in 10 patients antibiotics were instilled in the gallbladder at the end of the procedure. Cure was defined as the disappearance of clinical and biochemical inflammatory parameters.

Results

Bile cultures were positive in 25 out of 27 patients : E. Coli (16), Clostridium perfringens (3), Enterococcus faecalis (4), Morganella morganii (2), Bacteroides spp. (5), Klebsiella Pneumoniae (1), Candida (1). The leucocyte count was elevated in 26 of 27 patients. The clinical and biochemical inflammatory parameters improved dramatically in 26 of 27 patients after aspiration. A single aspiration was felt to be clinically sufficient in 20/27 cases. Seven patients underwent a second (n=4) or third (n=3) procedure within two weeks after the first. In 3 of these 7 patients, a pericholecystitis abscess was punctured and aspirated. The late (2-36 months) outcome after gallbladder puncture in 27 patients was as follows : 1 initial failure who died 7 days after the procedure from multi-organ failure ; 6 patients presented incomplete cure or relapsed (6 needed subsequent cholecystectomy) ; 20 patients were cured without elective cholecystectomy. Of the 20 cured patients, 10 died in the follow-up period (3-31 months) due to their concurrent illnesses. The 10 other cured patients are still alive. Of the 20 initially "cured" patients, only 4 received antibiotics in the gallbladder. Major complications of the puncture procedure (like bile peritonitis, severe bleeding, shock, etc.) were not seen. Local pain (during 1 to 6 hours) requiring IV analgesics was observed in 3 patients.

Discussion

Percutaneous cholecystostomy with a catheter left in the gallbladder is an effective treatment for acute cholecystitis in patients considered unfit for surgery. However, the catheter can cause bile leakage, peritonitis, catheter dislodgement and hypotension (4). In 1988 Kiss *et al.* (6) reported that aspiration of the gallbladder without leaving a catheter is a safe and successful

treatment for acute cholecystitis in 21 patients. 17 of these patients had an elective cholecystectomy 1 to 3 weeks later.

In our patient group no elective surgery was planned. Only 6/27 (22%) needed elective cholecystectomy for incomplete cure or relapse in this surgical high risk group. Aspiration and thorough rinsing until clear fluid is obtained seems to be of paramount importance. Local instillation of antibiotics does not seem to improve the long term prognosis as in only 4/10 (40%) patients with locally instilled antibiotics cholecystectomy was avoided, compared with the group that subsequently needed cholecystectomy where 6/6 (100%) patients received antibiotics in the gallbladder at the end of the initial aspiration procedure. A single aspiration was felt to be clinically sufficient in 20/23 cases.

Major procedure related complications like bile peritonitis, bleeding or shock were not seen in our patients. Local pain was observed for 1 to 6 hours in 3 patients.

In conclusion, we suggest that in high surgical risk patients with a severe acute cholecystitis not responding to IV antibiotics, an US guided puncture and thorough rinsing of the gallbladder with saline should be performed. There seems to be no need for local instillation of antibiotics or remaining catheter. This procedure is safe and efficient with no need for immediate surgery in the majority of patients. Only in cases with incomplete cure or subsequent relapse, elective surgery should be scheduled.

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