Two Cases of Acute Cholecystitis in which Percutaneous Transhepatic Gallbladder Aspiration (PTGBA) was Useful

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Summary: We report 2 patients with acute cholecystitis for which percutaneous transhepatic gallbladder aspiration (PTGBA) was useful. In Case 1, the patient was a 75-year-old woman who experienced a sudden onset of back pain and upper abdominal pain at night. Abdominal ultrasound (US) showed enlargement of the gallbladder with thickening of the wall, a sonolucent layer, and a stone in the neck of the gallbladder, which led to a diagnosis of acute cholecystitis. Magnetic resonance imaging (MRI) demonstrated thickening of the gallbladder wall and 2 areas of low-intensity signal. The pain and fever persisted, for which we performed PTGBA, aspirating about 113 ml of infected bile. Subsequently, the pain and fever subsided, and abdominal US revealed a reduction in the enlargement of the gallbladder with the persistence of thickening of the wall. On the eighth day after PTGBA, open abdominal cholecystectomy was performed. In Case 2, the patient was a 56-year-old woman who had right hypochondriac pain after supper. The pain gradually increased in severity. Abdominal US showed enlargement of the gallbladder with a thickened wall, a sonolucent layer, and a gallstone in the neck of the gallbladder, which led to a diagnosis of acute cholecystitis. Magnetic resonance cholangiopancreatography (MRCP) showed enlargement of the gallbladder with no abnormalities in the common bile duct. After admission to hospital, the pain and fever persisted, for which we performed PTGBA, aspirating about 50 ml of infected bile. Subsequently, the pain and fever vanished. Abdominal US revealed a reduction in the enlargement of the gallbladder with the persistence of thickening of the wall. On the seventh day after PTGBA, laparoscopic cholecystectomy was performed. PTGBA seems useful for early alleviation of the symptoms of acute cholecystitis because of low invasiveness and ease of performance.

Key words acute cholecystitis, percutaneous transhepatic gallbladder aspiration, percutaneous transhepatic gallbladder drainage

INTRODUCTION

As the initial therapy for acute cholecystitis, external cholecystostomy and ultrasound-guided percutaneous transhepatic gallbladder drainage (PTGBD) have been generally performed. PTGBA involves a single ultrasound-guided fine-needle aspiration of gallbladder contents. Here we report 2 cases of acute cholecystitis in which PTGBA was useful.

CASE REPORT

Case 1

The patient was a 75-year-old woman who experienced a sudden onset of back pain and upper abdominal pain at night. Since the pain persisted, the patient consulted a local physician. She was diagnosed with thoracic aortic aneurysm and cholecys-
tolithiasis and was admitted to Kurume University Hospital. The patient was 155 cm tall and weighed 51 kg on admission. The palpebral conjunctivae were not anemic, and the bulbar conjunctivae not icteric. Superficial lymph nodes were not palpable. The abdomen was flat, and no masses were palpable. At admission, laboratory tests showed leukocytosis and increases in hepatobiliary enzymes and CRP.

Abdominal US revealed an enlarged gallbladder with a thickened wall, a sonolucent layer, and a gallstone in the neck of the gallbladder, which led to a diagnosis of acute cholecystitis (Fig. 1a). MRI demonstrated thickening of the gallbladder wall and 2 areas of low-intensity signal (Fig. 2). MRCP showed enlargement of the gallbladder containing 2 gallstones, with no abnormalities in the common bile.

Fig. 1. a: At admission, abdominal US showed enlargement of the gallbladder, thickening of the gallbladder wall, a sonolucent layer, and a gallstone in the neck of the gallbladder. b: After PTGBA, abdominal US showed a reduction in the enlargement of the gallbladder with the persistence of thickening of the wall. The gallstone impacted on the gallbladder neck had been released.

Fig. 2. MRI demonstrated thickening of the gallbladder wall and 2 areas of low-intensity signal.
duct (Fig. 3). Since the pain and fever persisted after admission, we performed PTGBA and aspirated about 113 ml of infected bile, from which no bacteria were detected. Subsequently, the pain and fever subsided rapidly. Abdominal US revealed a reduction in the enlargement of the gallbladder with the persistence of thickening of the wall. The gallstones impacted on the neck of the gallbladder had been released (Fig. 1b). On the eighth day after PTGBA, open abdominal cholecystectomy was performed. The symptoms were alleviated in the absence of postoperative complications, and the patient was discharged.

Case 2

The patient was a 56-year-old woman who had right hypochondriac pain after supper. Subsequently, the pain gradually increased in severity, and she was admitted to Kurume University Hospital. Her past medical history showed that she had undergone surgery for subarachnoid hemorrhage 2 years previously. The patient was 147 cm tall and weighed 44 kg on admission. There was no anemia in the palpebral conjunctivae or icterus in the bulbar conjunctivae. Superficial lymph nodes were not palpable. The abdomen was flat, and no masses were palpable. At admission, laboratory tests showed leukocytosis and increases in CRP. Abdominal US revealed an enlarged gallbladder with a thickened wall, a sonolucent layer, and a stone in the neck of the gallbladder, which led to a diagnosis of acute cholecystitis (Fig. 4a). MRI demonstrated enlargement of the gallbladder and thickening of its wall. MRCP showed enlargement of the gallbladder with no abnormalities in the common bile duct (Fig. 5). Since the pain and

![Fig. 3. MRCP showed enlargement of the gallbladder containing 2 gallstones, with no abnormalities in the common bile duct.](image)

![Fig. 4. a: Abdominal US at admission revealed an enlarged gallbladder with a thickened wall, a sonolucent layer, and a stone in the neck of the gallbladder. b: Post-PTGBA abdominal US revealed a reduction in the enlargement of the gallbladder with the persistence of thickening of the wall.](image)
Fig. 5. MRCP showed enlargement of the gallbladder with no abnormalities in the common bile duct.

fever persisted after admission, we performed PTGBA and aspirated about 50 ml of infected bile, from which Enterococcus faecium was detected. Subsequently, the pain and fever vanished. Abdominal US revealed a reduction in the enlargement of the gallbladder with the persistence of thickening of the wall (Fig. 4b). On the seventh day after PTGBA, laparoscopic cholecystectomy was performed. The symptoms were alleviated in the absence of postoperative complications, and the patient was discharged on the fourth day after surgery.

DISCUSSION

Acute cholecystitis frequently remits following conservative treatment consisting chiefly of fasting, fluid therapy, and antibiotic therapy. However, in some patients who are resistant to antibiotic therapy, or if the cystic duct is obstructed by an impacted gallstone, remission of symptoms cannot be expected from conservative treatment alone; thus, surgical therapy and drainage are needed. Surgical therapy is broadly classified into emergency, early, or elective surgery according to the timing of the operation, but opinions vary as to the optimal timing of surgical intervention. A few centers have recently performed a laparoscopic operation for acute cholecystitis; however, the operative procedure is difficult to perform and poses problems with safety and the time required for operation [1-3]. We consider that, prior to laparoscopic operation for severe acute cholecystitis, the operator should control the acute inflammation by keeping track of the patient’s overall medical condition and performing an appropriate preoperative procedure (PTGBD or PTGBA) at an appropriate time. In the past, cholecystostomy with tube drainage of the gallbladder was performed, which involved the insertion of a drainage tube under local anesthesia. However, ultrasound-guided PTGBD has recently been generally performed. Although these procedures are effective for drainage, they limit the scope of the patient’s activities within the hospital because of a drainage tube placed on the exterior of the body, thereby imposing a heavy burden on the patient. On the other hand, PTGBA involves puncture and aspiration, requiring no drainage tube. Acute cholecystitis varies from mild to severe and has recently become progressively more common in elderly people with the aging of society; thus, the optimal timing of surgical intervention should depend on the severity of cholecystitis and the overall medical condition of the patient. In elderly individuals or patients with heart disease or other severe underlying diseases, it is safe to perform the operation after promptly improving acute inflammation by drainage to improve the patient’s overall condition. One of the patients reported here was an aged woman with thoracic aortic aneurysm, and the other had undergone an operation for subarachnoid hemorrhage. Since the two patients had persistent pain and fever, we performed PTGBA, which improved the symptoms rapidly. PTGBA is an easy procedure to perform at a center where PTGBD is performed, gives the patient pain only during the performance, and imposes no post-procedural restrictions on the activities of the patient. Since acute cholecystitis, in most cases, is due to gallstone impaction in the gallbladder neck or the cystic duct, cystic decompression by PTGBA reverses the impaction and improves the symptoms. Takada et al. [4] recommend that PTGBA be aggressively performed on patients with cholecystitis, in which the gallbladder wall is weakened, to prevent perforation by needle-aspirating the cystic contents and thereby reducing raised intracystic pressure. Watanabe et al. [5] stated that PTGBA is indicated in patients with severe clinical symptoms and obvious enlargement of the gallbladder, and PTGBD should be adopted for severely ill patients with pericystic abscess or emphysematous cholecystitis. Compared with conservative therapy, PTGBA can shorten the time to
disappearance of symptoms, and is as effective as PTGBD. Although PTGBD may cause pain by an indwelling tube and complications due to its dislodgement, PTGBA employs a fine needle (21- to 23-gauge), causing little pain at the time of performance and producing few or no complications; thus it seems to be a harmless procedure. However, it is true that aspiration is limited by the use of a fine needle, and hence by the contents of the gallbladder [6-8]. We consider that PTGBD, which ensures drainage, is effective for severe acute cholecystitis, while PTGBA is the treatment of choice for mild to moderate acute cholecystitis. In selecting PTGBD or PTGBA, the physician should carefully consider the improvement of symptoms and other factors in the individual patient.

REFERENCES