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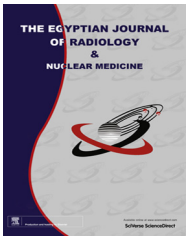

ORIGINAL ARTICLE

Percutaneous treatment of large pyogenic liver abscess

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Abstract Surgical drainage has been the traditional mode of treatment of pyogenic liver abscess but this was replaced by IV broad-spectrum antibiotics and imaging-guided percutaneous drainage either via needle aspiration or percutaneous catheter drainage (CD). There is a debate about which is better intermittent needle aspiration or CD.

Our objective is to compare the outcome of CD versus intermittent needle aspiration of pyogenic liver abscess and to compare the single step Trocar technique versus the modified Seldinger technique.

Patients and methods: 88 patients, 65 men and 23 women, mean age 44.6 (18–73) years had pyogenic liver abscess. Patients were divided in two groups randomly; aspiration group with maximum of three attempts and the CD group. Ultrasound or CT was used.

Results: Aspiration was successful in 60% of cases (26/43). CD was successful in 98% (44/45). Three patients were treated by surgical drainage (two patients of the aspiration group and one of the CD group) with favorable outcome. Both Seldinger and single step Trocar techniques were comparable as regards outcome and procedure-related pain but the procedure time of Trocar was significantly shorter. No major complications were encountered.

Conclusion: CD is more efficient than needle aspiration. Aspiration can be used for simple small abscesses. Trocar technique is less time-consuming than the Seldinger technique.

1. Introduction

Pyogenic liver abscess is a rare, life-threatening disease that has an increasing incidence rate in the United States and Europe. The high morbidity and mortality rates associated with the treatment of pyogenic liver abscess were improved significantly with the introduction of ultrasound (US) and computed tomography (CT) guided percutaneous drainage (1–6).

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Surgical drainage of pyogenic liver abscess was the traditional mode of treatment (7); however, it was associated with remarkably high (10–47%) morbidity and mortality rates (8,9). Modern treatment has shifted toward IV broad-spectrum antibiotics and image-guided percutaneous needle aspiration or percutaneous catheter drainage (CD). Currently, indications for surgical drainage include inaccessibility or multiplicity of abscesses that cannot be drained percutaneously (10,2,11) or failed percutaneous drainage. There is debate about the first line of management of large pyogenic liver abscesses.

Percutaneous needle aspiration is considered as effective as catheter drainage especially for simple abscesses that are 50 mm or less in diameter (12). Many authors believe that CD is more effective than percutaneous needle aspiration in the management of liver abscess (13–15). Some studies have shown therapeutic needle aspiration to be a simpler, less costly, and equally effective mode of treatment (16,17).

Our study aimed to compare the clinical outcome of percutaneous image-guided catheter drainage with intermittent needle aspiration of pyogenic liver abscesses and to compare safety and clinical outcome of the single step Trocar technique versus the modified Seldinger technique.

2. Patients and methods

All patients with pyogenic liver abscesses who were admitted to our hospital between July 2003 and June 20013 were considered candidates for the study. Eligibility criteria were the presence of >2 cm symptomatic pyogenic liver abscess(s) which was confirmed at ultrasound or CT examination in adult patients or cooperative young patients who could tolerated the procedure with local anesthesia. Young children were excluded because children were not cooperative enough and required general anesthesia. Patients with coexisting coagulopathy, liver neoplasm or amoebic abscess or perforated abscess complicated by peritonitis were excluded too.

Pre-procedure written informed consent was obtained from all patients. Patient consent for the study was waived as this is a retrospective study. The institutional ethics committee approved the study.

Coagulation profile was evaluated before the scheduled procedure and promptly corrected. Local infiltration anesthesia was provided by 6–8 ml of Lidocaine hydrochloride 2%. Access of the liver abscess was obtained guided by ultrasound whenever feasible using free hand technique. Ultrasound exam was carried out by convex 3–5 MHz transducer of either Logic C5 premium (General Electric Medical Systems, Milwaukee, WI) or Sonoline 51–450 (Siemens Medical Systems, Issaquah, WA). CT was performed using light speed General Electric Medical Systems. The choice of aspiration or continuous catheter drainage was random. In patients assigned to the needle aspiration, an 18-gauge Trocar needle was advanced into the abscess cavity and the contents were aspirated in an attempt to completely evacuate the cavity followed by irrigation of the abscess cavity with normal saline; the volume of infused saline was less than 1/2 of the drained pus. In the catheter drainage group, ultrasound guided single step Trocar technique or modified Seldinger technique was applied (Fig. 1a). The details of both techniques were explained elsewhere. Plastic-based

Fig. 1a 65 year old male patient presented with right upper abdominal pain and fever of 38.7 °C. Leukocytic count was 18,000, with absolute neutrophilia, ultrasound examination has shown a single large cystic lesion about $8 \times 7 \times 6$ cm at the right lobe of the liver, diagnostic aspiration revealed frank pus, that was sent for gram stain and culture and sensitivity, ultrasound-guided catheter drainage was achieved using 10 Fr and pig tail catheter was inserted by single step Trocar technique within the abscess cavity.

catheter Multipurpose Flexiema catheter (Boston scientific USA) or polyurethane-based catheter Genoflex (Genesis Medical England) was used. Complete evacuation of the abscess cavity was attempted followed by irrigation with normal saline. The volume of infused saline was less than 1/2 the drained pus. Lavage and aspiration were repeated till the contents came back clear. The catheters were connected to a completely closed collecting system and routine catheter care was instituted. A daily estimate of the amount, color, and consistency of the drainage fluid was recorded. Irrigation of the catheter with about 5–10 ml of normal saline was done once daily to avoid catheter blockage. Aspirated pus was examined and microbiologic tests were performed to determine the causative organism. Blood culture before antibiotic administration was performed. Broad spectrum antibiotics, including Cefazoline 1 g/12 h and Augmentin 1.2 g/8 h IV and with Metronidazole (500 mg IV or 500 mg orally three times a day) were initiated. Once the laboratory results were available, antibiotics were changed on the basis of sensitivity tests. Broad-spectrum antibiotics were continued in patients in whom pus culture had returned negative. The antibiotics were continued for 10 days (14 days for