

CAS CLINIQUE/CASE REPORT

LIFE-THREATENING LIVER LACERATION WITH ARTERIAL HEMORRHAGE COMPLICATING PERCUTANEOUS TREATMENT OF HEPATIC HYDATID CYST

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Loutfi SI, Arabi MS, Safadi BY, Haddad MC. Life-threatening liver laceration with arterial hemorrhage complicating percutaneous treatment of hepatic hydatid cyst. J Med Liban 2008 ; 56 (3) : 185-188.

ABSTRACT : We present a 76-year-old woman known to have a large right hepatic lobe hydatid cyst which recurred twice after surgical excision. CT-guided percutaneous alcohol ablation was conducted to sclerose the cyst, but the procedure was complicated by parenchymal liver laceration and active arterial hemorrhage from a branch of the right hepatic artery. Bleeding was controlled by both endovascular and surgical interventions. Liver laceration with arterial hemorrhage is a rare not previously reported serious complication of percutaneous treatment of hepatic hydatid cyst that may be potentially life-threatening.

INTRODUCTION

Hydatid disease (*echinococcus granulosus*) is a zoonosis endemic in the rural areas of the Middle East, Asia, Africa and Latin America. It is a parasitic infection that is transmitted to humans due to contact with infected livestock. The liver is the most commonly involved organ followed by the lungs.

Surgery has been the mainstay treatment for decades. However, percutaneous ablation has gained acceptance as a safe and effective alternative to surgery [1-5]. Complications of percutaneous treatment such as infection, peritonitis, recurrence and anaphylaxis are well-recognized in the literature ; however active arterial hemorrhage was never reported since the introduction of percutaneous approach in 1985 [6]. This major complication can lead to rapid hemodynamic instability and eventually death if not immediately identified and controlled by either endovascular embolization or surgery.

CASE REPORT

A 76-year-old woman presented to our department for management of a symptomatic hepatic echinococcal cyst (HEC). She was treated surgically twice with recurrence of the hydatid cyst after each operation as demonstrated by an ultrasound examination. She was referred by a surgeon for percutaneous ablation. Clinically, the patient was healthy and the only complaint was persistent right upper quadrant pain. Physical examination revealed a

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RÉSUMÉ : Une femme de 76 ans se présente avec une récurrence d'un gros kyste hydatidique du foie opéré à deux reprises. Un traitement percutané avec injection intrakystique d'alcool pur sous guidage tomographique a été entrepris. L'intervention a été compliquée par une lacération hépatique avec hémorragie sévère, contrôlées par embolisation artérielle et chirurgie.

large mass extending below the right costal margin. Blood serology was positive for hydatid disease and her coagulation profile was unremarkable.

The procedure was explained to the patient with its potential complications. She received oral albendazole at a dose of 10 mg/kg body weight one week prior to the procedure to reduce the risk of dissemination. The procedure was performed as outpatient under CT guidance assisted by an anesthesiologist for sedation and monitoring of the patient. A nonenhanced CT scan performed at time of procedure showed a large 14 x 10 cm hydatid cyst with a thick calcified wall replacing the right lobe of the liver (Fig. 1a). CT-guided puncture and aspiration of

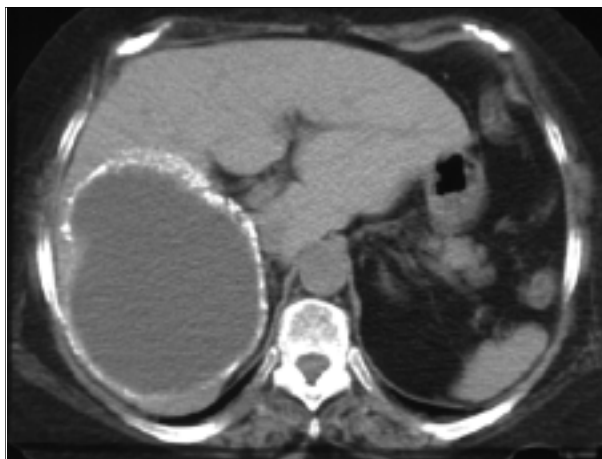


FIGURE 1

1a. Non-enhanced CT scan of the liver showing a large unilocular hydatid cyst in the right lobe of the liver with a thick calcified wall.

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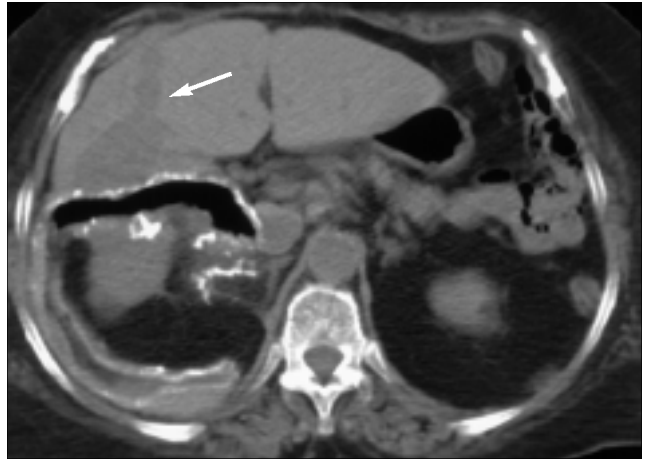
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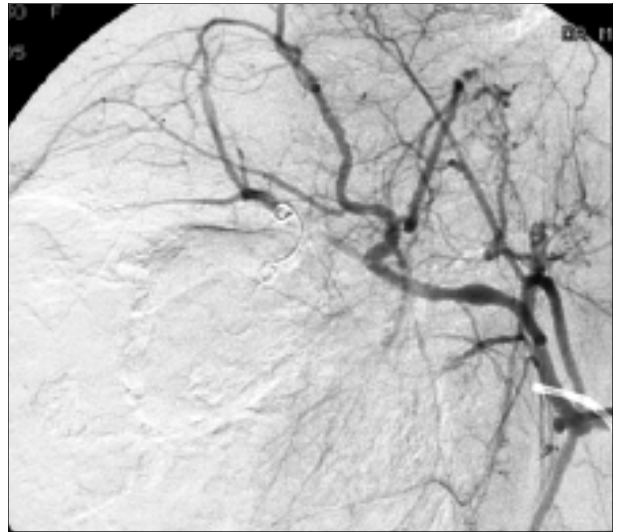
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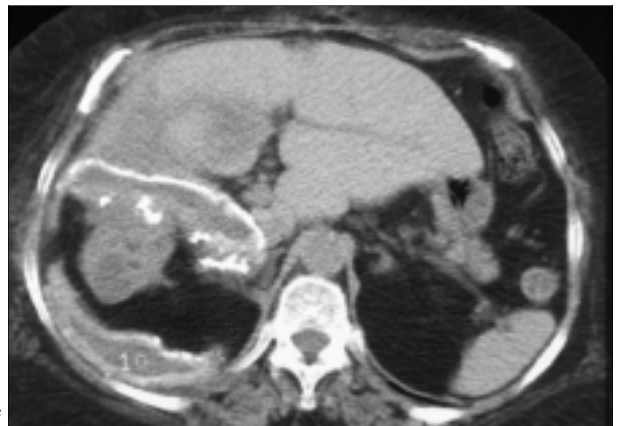
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1b. CT scan section showing collapse of the hydatid cyst containing air with evidence of coiling of the catheter tip into the normal liver parenchyma adjacent to the cyst wall.

1c. CT scan section revealed a low density liver laceration (arrow) along the catheter tract.

1d. Selective hepatic angiogram showing extravasation of contrast medium from a right hepatic artery branch.

1e. Hepatic angiogram obtained following superselective embolization with two small 3 mm coils of the bleeder, showing cessation of active extravasation.

1f. Follow-up CT scan showing collapse of the hydatid cyst and partial healing of the liver laceration.

cyst content was initially done through thick normal liver parenchyma to reduce the risk of spillage, using an 18G 20 cm long needle. 500 cc of turbid fluid were aspirated and specimen were sent for microscopic analysis. Then 100 cc of absolute alcohol were administered intracystic and left for 15 minutes to ablate the parasite. The alcohol was then aspirated and a 0.035" Amplatz

superstiff wire was introduced into the cyst cavity and its correct position was checked by a CT scan section. The tract was successfully dilated reaching 14F dilators. However, upon introduction of a 12F pigtail catheter with large side holes significant resistance was felt while advancing the catheter across the hard thick and calcified cyst wall. A CT scan section obtained to check position of the catheter revealed coiling of the catheter tip outside the cyst wall into the adjacent liver parenchyma (Fig. 1b). Since the cyst was completely collapsed, it was decided to remove the catheter. After removal of the catheter, active arterial bleeding was noted from the access site which was immediately controlled by tamponade of the tract using a 14F dilator and placement of gelfoam material. The bleeding stopped, CT scan section revealed a hepatic laceration (Fig. 1c). At this point the referring surgeon was informed about this complication and the patient was sent to the recovery room for monitoring.

Her clinical condition deteriorated with a drop in her blood pressure from 130/80 mmHg to 80/40 mmHg and her hematocrit level to 20 indicative of continuous intraabdominal bleeding and a hemodynamically unstable state. She was immediately transferred to the angiography suite. Selective hepatic arteriogram revealed active extravasation of contrast medium from a branch of the right hepatic artery (Fig. 1d). Bleeding was controlled by superselective coil embolization of the bleeder (Fig. 1e). Following embolization the patient's clinical status was unstable requiring blood transfusions, it was necessary to perform an exploratory laparotomy which revealed a focal liver laceration with intrahepatic bleeding which was successfully treated by suturing of the liver laceration and packing.

The patient was admitted to the intensive care unit. She remarkably improved over the next days and was eventually discharged from hospital on albendazole treatment for one month. At follow-up the patient was well and symptom free. CT scan obtained at one month showed collapse of the cyst (Fig. 1f), and there was evidence of healing of the liver laceration on subsequent follow-up ultrasound examinations.

DISCUSSION

The desired goal in the treatment of hepatic hydatid disease is to eliminate the parasite and to prevent recurrence with minimum morbidity and mortality [1]. With regard to indications at our institution, patients with hepatic hydatid cysts less than 5 cm in size are treated by the percutaneous approach using the PAIR (Puncture, Aspiration of cyst content, Injection of scolicedal agent, Reaspiration of cyst fluid) technique combined with oral antihelminthic medical treatment, whilst for patients with superficial accessible cysts larger than 5 cm videolaparoscopic surgery is the preferred method of choice. The percutaneous catheter drainage and ablation is usually reserved for patients not candidates for surgery, and for treatment of recurrent cysts after surgery like in our patient.

Our technique for percutaneous treatment of hydatid cyst was previously described in the literature [7]. Percutaneous hydatid cyst drainage can be associated with major and minor complications [1, 8]. Major complications include cyst infection, liver or intraabdominal abscess, sepsis, biliary fistula, caustic sclerosing cholangitis, and anaphylaxis observed in 7.9% of patients. Minor complications were seen in 13.1% of patients following percutaneous treatment, most commonly fever (5.5%), allergic reactions (4.8%), and recurrence (3.6%). We performed an analysis of published experiences on percutaneous treatment of hepatic hydatid cysts and found out that hemorrhagic complications were considered as minor infrequent complications such as subcapsular hematoma (2.9%) and intracystic hemorrhage (1.2%). In addition, our review of the literature for the past twenty years revealed no reported cases of active arterial hemorrhage following percutaneous treatment of HEC. In our patient focal liver laceration and active arterial bleeding were considered as iatrogenic injury to the normal liver parenchyma surrounding the cyst i.e. induced by catheter manipulation during the attempt to pass the heavily calcified and thick hydatid cyst wall.

The complication herein described could occur in any percutaneous procedure involving the liver, and not exclusive to hydatid cysts. Other learning points can be deducted from this case; it would have been preferable to perform the procedure as inpatient and under fluoroscopic guidance which allows continuous monitoring and better control of the procedural steps than with the intermittent monitoring offered by CT scanning. Second, the catheter-induced liver injury can lead to a major hemorrhagic complication, arterial embolization alone may not be sufficient to control bleeding and surgery may be needed to achieve hemostasis possibly venous bleeding by liver suturing, emphasizing the major role of the surgical back-up or cover for interventional procedures. Finally, this serious and rare complication can lead to rapid and dramatic hemodynamic instability, therefore early recognition and treatment by either endovascular or surgical approaches are essential to prevent hemodynamic collapse and patient's death.

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تمزق الكبد الخطر ونزف شرياني بسبب حقن عبر الجلد لمعالجة كيسة مائية كبدية

موجز : امرأة عمرها ٧٦ عاما راجعت لكيسة مائية ضخمة بالكبد وقد تعالجت جراحيا مرتين. اجرينا معالجتها عبر الجلد بزرق (حقن) الكحول الصرف داخل الكيسة وكان الدليل لعذا العمل التداخلي. حدث اشتراك بتمزق الكبد مع نزف شديد سيطر عليه جراحيا وبتجليب (جلطات) شرياني.