Emergency Surgery for Hydatid Cysts of the Liver

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19.1 General Notions

- Hydatid disease remains frequent in many regions in the world such as Mediterranean countries, Asia, and Central America.
- Increasing travel has led to increased incidence in non-endemic areas.
- Emergency surgery is reserved for complicated hydatid cysts of the liver, representing one out of five patients.
- Rupture into the biliary tract with a large (>5 mm) bilio-cystic fistula (21–37 %), thoracic involvement (~2 %), rupture into the peritoneum (<2 %), vessels, and other organs (~1 %) represent the main complications. All these complications can be life threatening and call for immediate management.

Chapter aims to provide the appropriate management for each complication of liver hydatid cysts based on evidence-based surgery (level of evidence and grade of recommendation indicated whenever appropriate).

19.2 Goal of Management

To control the infection process, evacuate the contents of the cyst, and prevent recurrence

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19.3 Medical Treatment

- Appropriate antibiotics are mandatory to stop progression of infection.
- Adapted resuscitative measures.
- Control of metabolic disorders (e.g. diabetes mellitus).
- Postoperative antihelminthic drug treatment is mandatory for most authors: albendazole (10 mg per kg and per day) for 3 months, and especially after treatment of large biliocystic fistula (level IV; grade C).

19.4 Surgical Management

19.4.1 Surgical Approaches

- Laparotomy is the standard approach: right subcostal incision prolonged if necessary to the left.
- Laparoscopy may be considered in selected cases.

19.4.2 Common Surgical Techniques

- Removal of the cyst is usually described as "pericystectomy."
  - "Closed total pericystectomy" removes the cyst without opening it.
  - "Open total pericystectomy" sterilizes the contents with antiscolicidal agents, evacuates the contents of the cyst, then removes the pericystic tissue.
- Partial cystectomy, called also unroofing, involves sterilization of cyst contents, which are removed after opening.
- The unroofing procedure is preferable for endemic areas where the operations are performed by general surgeons.

19.5 Complications and Danger Points

- *Postoperative* deep abdominal complication (DAC) (prevalence 12–26 %)
  - Reasons: presence of a residual cavity or biliocystic fistula after unroofing
  - Blood or bile collections, potential sources of deep suppuration, and persisting bile leaks
  - Prevention:
    Drainage
    Closure of the edges (capsulorrhaphy) of the residual cavity without drainage
    Capitonnage
    Furrowing the margins of the cavity by "introflexion"
    Omentoplasty on the residual cavity (1 RCT, 1 meta-analysis) (level II evidence, grade A recommendation)

19.6 Specific Procedures According to Complications

Hydatid cyst ruptured into biliary tract

Methods

i. Common bile duct clearance via choledochotomy + intraoperative cholangiography and choledoscopy.
   1. After evacuation of all daughter vesicles, insertion of T-tube is recommended (level of evidence III, grade of recommendation A).

ii. Complete removal of cystic and pericystic tissue with simultaneous treatment of the fistulous tract is not easy to perform in the context of emergency with acute cholangitis and is reserved for cysts that are located peripherally.

iii. Management of large (≥5 mm) biliocystic fistula.
   1. *Suture*
      (a) With absorbable material
      (b) Indicated when edges of the fistula are soft
      (c) Contraindicated when edges are fibrotic or calcified
   2. Controlled fistula
      (a) External: insertion of a tube into the fistula through the liver parenchyma (according to Praderi and Perdromo)
      (b) Internal: remnant cavity/through fistula left opened/common bile duct and Oddi's sphincter associated closure of the remnant cavity edges

(capsulorrhaphy) by absorbable sutures

Indications

i. Common bile duct exploration (with intraoperative cholangiography and choledochoscopy) is always possible.
ii. Choice in management of large biliocystic fistula: suture, controlled external or internal fistulization depends on site (controlled internal fistulization best for posterosuperior segments II, VII, and VIII), size of the cyst (omentoplasty should be added to the other procedures except for controlled internal fistulization), proximity of vessels (do not remove the pericyst close to vessels), involvement of upper biliary confluence (controlled internal fistulization best), and pericystic fistula wall (soft: suture; fibrotic: suture; calcified: resection) (level IV; grade C)
    1. Postoperatively: endoscopic retrograde cholangiopancreatography (ERCP)
        (a) Combined with preoperative endoscopic sphincterotomy (ES) may decrease the incidence of the development of postoperative external fistula from 11.1 to 7.6 % (level IV; grade C)
        (b) Combined with postoperative ES may be indicated to manage postoperative external biliary fistulae (level IV; grade C).

Hydatid cyst involving the thorax

Methods

i. Thoracic approach
    - A posterolateral right thoracotomy in the bed of the fifth rib provides good access to the cyst through the diaphragm, when the surgeon is sure that the common bile duct is free from daughter vesicles preoperatively by US or CT scan.
ii. Abdominal approach
    - A right subcostal or bisubcostal approach offers adequate access to the liver, biliary tract, and common bile duct, and via the diaphragm, access to the communication with the thorax with safety.

Indications

- Depending on US or CT scan findings
    - Thoracotomy is indicated when an intrathoracic collection is present, adhesiolysis and treatment of the pleural lesions, pulmonary lesions (lobectomies, wedge resections, or decortications), are necessary and is sufficient when the biliary tract is disease free or already secured.
    - The abdominal approach is mandatory when common bile duct drainage is required or to treat a rupture into bronchi (level of evidence IV; grade C)

Hydatid cysts ruptured into peritoneal cavity

Methods:

i. Laparotomy to aspirate the intraperitoneal liquid, to perform peritoneal cleansing with hyper saline solution, and to treat the cysts: pericystectomy or partial pericystectomy (level IV; grade B)
ii. Medical treatment should be associated; albendazole is often preferred with 10–15 mg/kg/day during 3 months (level IV; grade B).

Indications

i. Ruptured hydatid cyst into the peritoneal cavity is an indication for immediate laparotomy (level IV; grade B).
ii. Abbreviated treatment is indicated when patient health status is very poor.

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