



Contents lists available at ScienceDirect

Journal of Acute Disease

journal homepage: www.jadweb.org

Document heading doi: 10.1016/S2221-6189(13)60080-3

Spontaneous rupture of hydatid cyst due to strain–defecation

Koray Daş, Selim Sözen*, Abdurrahman Selçuk Uzun, Ebru Menekşe, Faruk Karateke, İlhan Bali

Adana Numune Training and Research Hospital, General Surgery Department, Adana, Turkey

ARTICLE INFO

Article history:

Received 10 June 2012

Received in revised form 15 August 2012

Accepted 15 September 2012

Available online 20 November 2012

Keywords:

Hydatid

Rupture

Liver

Defecation

ABSTRACT

We report a case of strain-induced spontaneous rupture of hydatid cyst. Hydatid cyst rupture was diagnosed in a 19-year-old girl who presented with swelling and pain in the the right upper quadrant of sudden onset after straining for defecation.

1. Introduction

Hydatid disease or Echinococcosis occurs as a consequence of infection by the larval cestode. *Echinococcus granulosus* (*E. granulosus*) is endemic in Mediterranean regions, South America, and the Middle East[1]. Free intraperitoneal rupture has been reported in approximately 3.2% of all cases of liver hydatid disease. Intraperitoneal cysts may rupture spontaneously due to increased intracystic pressure, or as a consequence of trauma, leading to the spread of hydatid fluid in the intraperitoneal cavity[2]. The defecation act results from a chain of events known as Valsalva maneuver. Valsalva maneuver may occur as a result of natural muscle movements during defecation, coughing, or gagging, or as an induced maneuver. The straining forces applied during defecation may be very significant in the etiology of pathological conditions[3]. We herein report a case of spontaneous rupture of cyst hydatid due to constipation and strain defecation.

2. Case report

A 19-year-old girl was admitted to the emergency department with abdominal pain associated with abdominal distention, nausea, and vomiting. She had chronic

constipation and used laxatives. There was no history of trauma, previous similar complaints, blood dyscrasias or medicine intake. Seven hours before admission, she had had some episodes of epigastric pain with nausea and vomiting after difficult and painful defecation.

On clinical examination, blood pressure was 100/60 mmHg and pulse rate was 110 beats/min. No signs of trauma were visible. The patient was afebrile. Her physical examination was normal except for mild rebound tenderness on the right upper quadrant of her abdomen. Laboratory investigations were normal except mild leukocytosis (WBC: 11 000/mm³). Findings on plain X-ray of the abdomen and chest were inconclusive. The bedside ultrasonography revealed a 10 cm × 12 cm lobular cyst on the right lobe of the liver and free fluid in the hepatorenal and rectovesical fossa. The anterior border of the cyst was incomplete. Floating membrane image was seen. Abdominal CT scan demonstrated a 120 mm × 80 mm cyst in the right lobe of the liver and a detached germinative membrane, in addition to free fluid in the subhepatic area (Figure 1). The abdomen was exposed through a median incision. Approximately 300 mL clear fluid was aspirated from the intraperitoneal space.

There was a hydatid cyst in the right lobe of the liver and a perforation area on the cyst wall (Figure 2). There was no daughter vesicle in the abdominal cavity. The germinative membrane was removed from the cyst pouch and the pouch and peritoneal cavity were irrigated with 3% hypertonic saline. Unroofing, drainage and intracavitary omentopexy were performed during the operation. She was started on 10 mg/kg/d of albendazole for six months and discharged after one week without any complications.

*Corresponding author: Selim Sozen, MD, Adana Numune Training and Research Hospital Department of General Surgery, Adana/Turkey.
E-mail: selimsozen63@yahoo.com

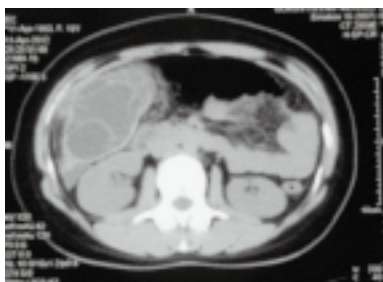


Figure 1. A giant cyst on the right lobe of the liver and irregular appearance due to perforation of cyst wall on the CT examination.



Figure 2. Perforation of the cyst wall and free fluid around the right lobe of the liver.

3. Discussion

Hydatid disease or Echinococcosis occurs as a consequence of infection by the larval cestode and is endemic in Mediterranean regions, South America, and the Middle East[1]. Hydatid disease may be located in any organ of the body. The organ that is involved most frequently is the liver (50% to 70%), with the lung being the second most common site (20% to 30%)[2].

Free intraperitoneal rupture has been reported in approximately 3.2% of all cases of liver hydatid disease. Intraperitoneal cysts may rupture spontaneously, due to increased intracystic pressure, or as a consequence of trauma[2], leading to the spread of hydatid fluid in the intraperitoneal cavity[3]. Significant risk factors for hydatid cyst perforation include younger age, cyst diameter of >10 cm, and superficial cyst location[4].

Defecation is a complex activity that requires coordination and successive activation of a large number of muscles. Although defecation is controlled by the autonomic nervous system, it is under voluntary control as well[5]. The defecation reflexes also have other effects outside of the gastrointestinal tract. It triggers a deep breath and closure of the glottis. While holding the breath, the abdominal wall muscle contract increasing the pressure within the abdominal activity. Simultaneously, the pelvic floor muscles relax and reduces the pressure on the anus thereby allowing the feces to pass through. This is known as the Valsalva maneuver. The Valsalva maneuver occurs during straining to pass a hardened stool. If defecation is suppressed over long periods, problems can occur, such as constipation or stool impaction. The exact mechanism of cyst hydatid rupture is not fully understood. Episodic increase in the intra abdominal pressure by activities such as sneezing, coughing and defecation, compresses the tense organ.

Perforation of the hydatid cyst may cause dissemination of the parasite and increased morbidity and mortality rate[6].

The goal of the surgical treatment is to prevent

complications, to eliminate local disease, and to minimize morbidity, mortality, and recurrence rates. The surgical procedure consists of removing the cyst and possible daughter cysts spilled into the abdominal cavity in combination with peritoneal washing[7]. In complicated cases, profuse peritoneal lavage with hypertonic solution is indicated to limit recurrence[4]. Suture of the cystobiliary communications together with omentoplasty is classically performed. Albendazole is indicated for six months to reduce the risk of distant recurrence[8].

Intraperitoneal rupture of the hydatid cyst can cause abdominal pain, allergy and anaphylaxis[6]. In our case there wasn't abdominal pain and other symptoms associated with hepatic hydatid cyst before perforation.

Ultrasonography and computed tomography have been reported to be main diagnostic methods, with 85% and 100% sensitivity, respectively, in identifying hydatid cyst rupture[4]. Computed tomography is the most sensitive means of diagnosing cyst rupture[9].

Intraperitoneal rupture of a hydatid cyst is considered an urgent clinical event. It may be fatal. Therefore, in endemic regions, clinicians should maintain a high index of suspicion in patients who present with abdominal pain.

Conflict of interest statement

We declare that we have no conflict of interest.

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