

Blunt abdominal trauma with unexpected anaphylactic shock due to rupture of hepatic hydatid cysts

Z. Doganay[†], H. Guven[‡], D. Aygun[§], L. Altintop[¶], M. Yerliyurt^{||} and T. Deniz^{||}

Departments of [†]Anesthesiology and Reanimation, [‡]General Surgery, [§]Neurology, [¶]Internal Medicine and ^{||}Emergency Medicine, Faculty of Medicine, University of Ondokuzmayis, Samsun, Turkey

Corresponding address: Dr Zahide Doganay, Assistant Professor, Emergency Department, Ondokuzmayis University, 55139 Samsun, Turkey
E-mail: zahidedoganay@yahoo.com

Date accepted for publication 22 January 2002

Abstract

Hydatid disease, caused by the cestode *Echinococcus*, is common in Mediterranean regions. Depending on its size, an intact cyst may be 'silent' or may compress adjacent organs, causing symptoms. The cystic stage of *Echinococcus granulosus* is commonly located in the liver, which frequently results in a long symptom-free period^[1]. Rupture of a hydatid cyst commonly gives rise to allergic phenomena, including anaphylactic shock^[2]. Anaphylactic reactions due to hydatid cyst perforation usually occur during needle aspiration or open cyst surgery, as previously reported^[3]. However, spillage of cyst fluid with intra-peritoneal rupture due to trauma may trigger anaphylaxis, although case reports of this are very rare^[4].

We report the case of a 12-year-old female who was admitted to our Emergency Department with abdominal trauma and survived anaphylactic shock due to traumatic spillage of hepatic hydatid cyst fluid. The initial indication of the cysts was confirmed with a focused abdominal sonogram for trauma (FAST). Essential life support measures were taken in the Emergency Department using oxygen, hydration, adrenalin and steroids. The paediatric surgeons who operated on her removed the cysts and washed out the peritoneal cavity, and her clinical condition stabilized within 24 h. The patient was treated with Albendazole (Methyl-5'propylthio-2-benzimidazole carbamate) for 4 weeks, and she was still healthy 1 year after the accident.

Keywords

Abdominal trauma; hydatid cyst; anaphylaxis.

Case report

A 12-year-old girl from a rural part of Turkey was admitted to our Emergency Department after she had been kicked in the abdomen. She was in anaphylactic shock and her main symptoms were of upper abdominal pain, pallor, dyspnoea, skin urticaria and unrecordable blood pressure. Examination revealed generalized abdominal tenderness, guarding and rigidity. There was no evidence of any other injury and the secondary survey was otherwise normal.

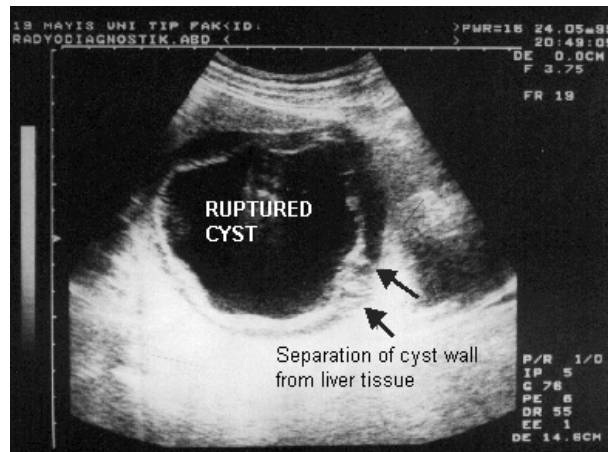


Fig. 1. Ultrasonogram of the ruptured hydatid cyst in the left hepatic lobe.

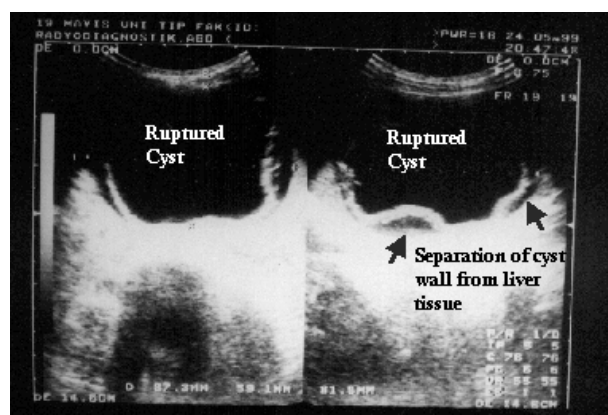


Fig. 2. Ultrasonogram of the ruptured hydatid cyst in the right hepatic lobe.

The patient was tipped head down because of her low blood pressure. High-flow oxygen was given via a face mask together with an 0.5 mg intravenous bolus of adrenaline, followed by an infusion at the rate of 10 µg/kg/h. She received 1000 ml Ringer's lactate and 1500 ml 0.9% normal saline. Prednisolone (250 mg i.v.) and diphenhydramine (50 mg i.v.) were given to treat the laryngeal oedema and to prevent further histamine release. This regime maintained her arterial blood pressure at about 110/80 mmHg.

The abdomen was examined using the focused abdominal sonogram for trauma (FAST) ultrasound technique to determine the cause of the abdominal pain. There was no free fluid, which usually excludes bowel rupture or intra-peritoneal bleeding. There were two ruptured cysts measuring 74 × 42 mm and 55 × 40 mm, one in each lobe of the liver (Figs 1 and 2).

Once her condition had stabilized, she was taken to the paediatric intensive care unit. After 24 h, she was taken to theatre for hydatid cystectomy and capitonage of the cysts. Surgery revealed multiple ruptured echinococcal cysts in the liver. The patient was treated with Albendazole for 4 weeks and at 1 year's follow-up she remained well.

Conclusion

Hydatid disease (*Echinococcus granulosus*) is endemic in the Middle East as well as other parts of the world, including India, Africa, South America, New Zealand, Australia, Turkey and Southern Europe^[5, 6].

Infestation with hydatid disease in humans most commonly occurs in the liver (55–70%) followed by the lung (18–35%); the two organs are affected simultaneously in about 5–13% of cases^[5].

Spilling of cyst fluid as a result of trauma or surgery may trigger anaphylaxis as well as disseminated infection^[7]. However, there are few case reports with severe anaphylactic reactions due to the rupture of a hydatid cyst caused by abdominal trauma^[1, 4, 8].

Anaphylaxis refers to a severe allergic reaction in which there are prominent dermal and systemic symptoms. The full-blown syndrome includes urticaria (hives) and/or angioedema with hypotension

and bronchospasm. The classical form, described in 1902, involves prior sensitization with later re-exposure, producing symptoms via an immunological mechanism^[9].

Rupture or episodic leakage from a hydatid cyst may produce fever, pruritis, urticaria, eosinophilia, or fatal anaphylaxis^[5].

When the patient was admitted to the department she was pale and dyspnoeic and had an unrecordable blood pressure. There was angioedema especially in her face and lips and there was also erythema all over her body. These findings led to immediate diagnosis and treatment of anaphylaxis.

The treatment follows the well-described course of attention to the airway, breathing and circulation. High-flow oxygen via face mask and immediate administration of adrenalin are indicated, given as an i.v. bolus of 0.5 mg of a 1:10 000 solution if there are signs of shock. Cardiac monitoring should be used. Hypotensive patients should be placed in a head-down position or have their legs elevated unless their respiratory status prevents this. Intravenous fluid therapy with Ringer's lactate or normal saline should be established. Large volumes of crystalloid (2 to 4 l) may be required in the hypotensive patient. Because of the increase in vascular permeability, pulmonary oedema may develop. The administration of antihistamines may be beneficial. Diphenhydramine, 50 mg i.v., is the most commonly used and may be repeated every 6–8 h. Refractory hypotension may require dopamine, isoproterenol (Levoterenol), or adrenaline infusions^[10], which was the routine management performed in this case.

Growing numbers of emergency physicians and surgeons have used the FAST technique because it has proven to be an accurate, rapid and repeatable bedside test for evaluating abdominal trauma victims^[11, 12].

Usually we perform sonography in the trauma room within minutes of the arrival of each trauma patient. Haemodynamic instability in conjunction with positive sonographic findings leads to emergency laparotomy. Otherwise, positive sonographic findings require additional diagnostic tests. The presence of free fluid or obvious organ damage constitutes a positive result^[13]. FAST in this case identified the cause of the anaphylaxis by showing ruptured hydatid cysts in the liver.

Lesson

We emphasize that *Echinococcus* liver cysts should be suspected in cases of anaphylaxis of uncertain aetiology. In particular, physicians in endemic regions should be aware of hydatid disease as a possible aetiology for seemingly idiopathic anaphylactic shock in abdominal trauma and should know that FAST could be a useful diagnostic aid.

References

1. Kok AN, Yurtman T, Aydin NE. Sudden death due to ruptured hydatid cyst of the liver. *J Forensic Sci* 1993; 38: 978–80.
2. Khoury G, Jabbour-Khoury S, Soueidi A. Anaphylactic shock complicating laparoscopic treatment of hydatid cysts of the liver. *Surg Endosc* 1998; 12: 452–4.
3. Stoianov G, Grigorov N, Damianov N, Donov M. Percutaneous puncture in hepatic echinococcosis. *Khirurgiia* 1996; 49: 26–8.
4. Yahya AI, Przybylski J, Foud A. Anaphylactic shock in a patient with ruptured hydatid liver cyst owing to trivial abdominal trauma. *J Royal Coll Surg Edinb* 1997; 42: 423–4.
5. Abu-Eshy SA. Some rare presentations of hydatid cyst (*Echinococcus granulosus*). *J Royal Coll Surg Edinb* 1998; 43: 347–52.
6. Altintas N. Cystic and alveolar echinococcosis in Turkey. *Ann Trop Med Parasitol* 1998; 92: 637–42.
7. Taratuto AL, Venturiello SM. Echinococcosis. *Brain Pathol* 1997; 7: 673–9.
8. Bitton M, Kleiner-Baumgarten A, Peiser J. Anaphylactic shock after traumatic rupture of a splenic echinococcal cyst. *Harefuah* 1992; 122: 226–8.
9. Krause R. Anaphylaxis. *Emedicine, allergy and immunology*, <http://www.emedicine.com>.
10. Salomone JA. Anaphylaxis and acute allergic reactions in emergency medicine. In: *A Comprehensive Study Guide of Emergency Medicine*, 4th ed. Tintinalli JE, Ruitz E, Krome RL, eds. New York: McGraw Hill, 1996: 209–11.
11. Glasser K, Tshmelitsch J, Klinger A, Wetscher G. The role of ultrasound in the management of blunt abdominal trauma. In: *Update in Intensive Care and Emergency Medicine*, Vincent JL, ed. 1995: 128–32.

12. Salen PN, Melanson SW, Heller MB. The focused abdominal sonography for trauma (FAST) examination: considerations and recommendations for training physicians in the use of a new clinical tool. *Acad Emerg Med* 2000; 7: 162-8.
13. Bode PJ, Edwards MJ, Kruit MC, Yugt AB. Sonography in a clinical algorithm for early evaluation of 1671 patients with blunt abdominal trauma. *Am J Roentgenol* 1999; 172: 905-11.