

Post-traumatic rupture of splenic hydatid cyst: A case report

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ABSTRACT

The worldwide incidence of splenic hydatid cysts is 0.5-4% with Iran holding the distinction of having the most incidence among cattle-rearing areas. About 30% of hydatid cysts of the spleen are asymptomatic and remain undiagnosed unless they rupture spontaneously. In general, rupture of a hydatid cyst secondary to trauma is a very rare condition. Here, we are presenting the case of a 19-year-old male with a diagnosis of splenic hydatid cyst rupture secondary to multiple trauma due to falling from a height of 10 meters. In the current case, we discuss the diagnosis and surgical management of a rare presentation of ruptured hydatid cyst. Diagnosis of splenic hydatid cyst was not made before he underwent laparotomy. At operation, we found a ruptured hydatid cyst and performed splenectomy with complete excision of the cyst and its germinal layer.

Keywords: *Hydatid cyst rupture, Post-traumatic cyst rupture, Spleen cyst, Spleen hydatid cyst, Splenic hydatidosis.*

Hydatid cysts are caused by *Echinococcus granulosus*. The most common sites of Echinococcal infections are liver, lung, and spleen with the incidence of 75%, 15.4%, and 5.1%, respectively [1]. In 1790, Berlot reported the first case of hydatid cyst of the spleen while doing a postmortem examination of a cadaver [2]. Based on the review of the literature, extrahepatic hydatid cysts are found rarely. Primary splenic hydatidosis accounts for only 2-3.5% of abdominal hydatid cysts [1]. The worldwide incidence of splenic hydatid cysts is 0.5-4% with Iran holding the distinction of having the highest incidence among cattle-rearing areas [2].

Most of the cases of splenic hydatidosis are asymptomatic; they are found incidentally or presented with non-specific symptoms. Since 50-80% of splenic cysts in endemic regions are caused by echinococcal infection, it is important to consider them among differential diagnosis of abdominal cysts [2]. About 30% of hydatid cysts of the spleen are asymptomatic and remain undiagnosed unless they rupture spontaneously. Rupture of a hydatid cyst secondary to trauma has been rarely reported in articles. Here, we are presenting a young case of splenic hydatid cyst rupture secondary to falling from a height of 10 meters.

CASE REPORT

A 19-year-old male patient arrived in our emergency department after falling from a height of 10 meters. On arrival, he was aware and alert, with the Glasgow Coma Scale (GCS) of 15 and stable vital signs. On physical examination, he was hemodynamically stable without any complaint of abdominal pain.

The first laboratory findings in the emergency room showed leukocytosis (White Blood Cell Count 23.7 million) and high serum lactate dehydrogenase level (1398 U/ml). Other laboratory findings including hemoglobin (14.7 gm/dl), kidney function tests (Urea: 16 mg/dl, Creatinine: 0.7 mg/dl), Atrial Blood Gas (pH: 7.35, pCO₂: 33, HCO₃: 21, Base deficit: 2) and serum electrolytes level (Na: 137 mEq/L, K: 3.9 mEq/L, Ca: 8.4 mg/dl) were within normal ranges.

Radiologic findings revealed multiple fractures in the right ankle, right 1st, 2nd, and 3rd metatarsus and the distal of the right radius. An ultrasonographic (USG) examination of his abdomen, revealed free fluid in abdomen and radiologist reported splenic rupture. He was under close observation in the emergency room. At serial examinations, he was hemodynamically stable and had no signs of peritoneal irritation. Therefore, spiral computed tomography (CT) scan was performed immediately and demonstrated 39mm×64mm intraparenchymal hematoma with no capsular tear (Fig. 1).

The patient was carried to the operating room for open reduction of distal radius fracture. During operation, his heart rate increased from 80 to 120 bpm. With doubt in the existence of unidentified

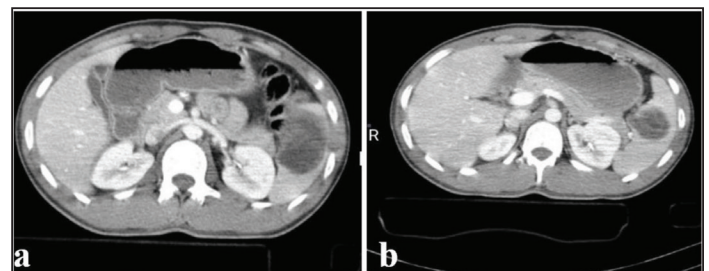


Figure 1: Abdominal pelvic CT scan revealing splenic cyst at admission.



Figure 2: Macroscopic view of splenic hydatid cyst after surgical resection.

abdominal source for bleeding, we decided to urgently perform laparotomy through a midline incision. There were about 150ml of free bloody fluid in the abdomen, without any visible source of active bleeding. There was no retroperitoneal hematoma. The abdominal cavity was completely explored. Unexpectedly, we found ruptured splenic hydatid cyst. The patient underwent total splenectomy which is a more favorable treatment option, especially in hemodynamically unstable cases.

During operation, the cyst and its germinal layer were completely excised. The intra-abdominal spaces were washed with 1 liter of diluted 20% saline solution for 15 minutes. The spleen and laminated membrane of the cyst were sent for further pathologic evaluations and the result was also in favor of Hydatid cyst (Fig. 2 and 3). Then, he was treated with 400 mg Albendazole daily for 6 months to prevent hydatidosis. The operation was uneventful and no complication was reported during the postoperative hospital stay. At three month follow up, we performed a CT scan for possible dissemination to other organs or recurrence. There was no evidence of hydatid cyst recurrence.

DISCUSSION

The spleen is the second most common site of intra-abdominal hydatid cyst. Most cases remain asymptomatic until the occurrence of complications such as fistulization or spontaneous perforation. Splenic hydatid cysts become more vulnerable to trauma as they grow. Cyst rupture into peritoneal cavity results in many non-specific symptoms including acute abdominal signs, peritoneal irritation, nausea and vomiting and allergic signs such as urticarial and flushing. Also, patients may experience a potentially life-threatening reaction called anaphylaxis [3].

Most of the cases of splenic hydatid cyst are asymptomatic. The most common incidentally findings in asymptomatic cases are splenomegaly. Also, the cyst might be palpated in the hypochondrium and less frequently in the epigastrium. Symptomatic patients are presented with dull dragging abdominal pain, dyspepsia, dyspnea or constipation. In complicated cases, these cysts can get infected or fistulized into adjacent hollow visceral organs. A splenic cyst can gradually enlarge and become



Figure 3: Germinal layer of splenic hydatid cyst.

prone to spontaneous rupture into the peritoneal or pleural cavity. This may cause peritoneal irritation, gastrointestinal bleeding, signs of anaphylactic shock including severe urticaria [1,2,4,5].

When a patient arrives at an emergency department with splenic cyst rupture, needs immediate considerations for management of serious clinical presentations such as the anaphylactic reaction or symptoms of pleural effusion. In the same way, when the perforated cyst's content is infected, peritoneal irritation signs can threaten the patients' lives and immediate surgical intervention is needed. However, surgeons must prioritize the life-saving actions over diagnostic procedures so that the diagnosis may be delayed or misdiagnosed [6].

Most sensitive and specific imaging modalities for diagnosing focal abdominal lesions are USG and CT scan. Although the presence of a marginal/crumpled egg-shell-like calcification in the splenic area in plain radiographs is highly suggestive of hydatidosis, they are still not helpful enough in diagnosis since apparent characteristics are usually influenced by the cyst's location, age, and associated complications [2].

Based on our review of literature, only a few cases of splenic hydatid cyst rupture due to trauma are reported in articles. In 1992, Harefuah et al described a 20-year-old guy who was arrived in the emergency department with signs of anaphylactic shock induced by blunt trauma to the abdomen. Further evaluations revealed the rupture of a missed splenic hydatid cyst. At operation they found that splenic cyst was torn, filled with blood and its contents was spread throughout the splenic tissue. They concluded that massive hemoperitoneum after hydatid cyst rupture is an indication for urgent splenectomy [7].

In 2004, Beyrouti et al evaluated 970 cases of liver and spleen hydatid cyst that underwent surgical treatment during 11 years. Among all 17 cases arrived after spontaneous cyst rupture (6 cases due to trauma and one after intense physical activity), 14 cases of them presented with signs of acute peritonitis and only one with anaphylactic shock [8]. In 2009, Dirican et al retrospectively studied 10 cases of ruptured abdominal hydatid cysts (7 cases in the liver, 2 in the pelvis, and only one in the spleen). They reported that 30% of cyst ruptures occurred secondary to trauma. Like our case, nine persons had leukocytosis most possibly due

to a rise in acute phase reactant caused by trauma. USG revealed free abdominal fluid in only 9 cases. They performed a CT scan for localization and assessing the perforations of the hydatid cyst in all patients [6].

In 2015, Ozlem N reported a 37-year-old female with post-traumatic rupture of splenic hydatid cyst. She was arrived at the emergency room in a hemodynamically unstable state due to massive intra-abdominal bleeding as well as other peritoneal irritation signs. USG revealed spleen rupture and free fluid in the abdominal cavity. The patient underwent laparotomy and found a ruptured 9×11×5 cm hydatid cyst in her spleen and decided to perform splenectomy [3].

Here, we presented a rare case of asymptomatic splenic hydatid cyst that was ruptured secondary to falling from a height. We performed a USG and Spiral CT scan. In general, hydatid cyst apparent characteristics include calcified cyst wall, daughter cysts, and membrane detachment [4]. Interestingly, none of these findings were observed in our case. Thus it was misdiagnosed with hematomas. We sent the sample of a resected germinal layer of a cyst and the whole spleen for further post-operative histopathologic evaluations. They confirmed the diagnosis of a solitary splenic cyst.

When discussing the management of splenic hydatid cyst in endemic areas, some surgeons choose the conservative methods for non-perforated cysts. For perforated cysts, the treatment of choice is emergent surgical intervention for partial or radical splenectomy based on the severity of cavity complications [6]. Since our patient became hemodynamically unstable during orthopedic surgery, we performed radical splenectomy

Similar articles recommended anthelmintic premedication for elective removal of hydatid cyst and irrigation of the abdominal cavity with sufficient scolicidal agents after hydatid cyst resection to avoid further spreading and recurrence for emergent surgeries. Scolicidal agents include cetrimide-chlorhexidine, povidone-iodine (10%), silver nitrate (0.5%), hypertonic saline solution (3-30%), chlorhexidine (0.4%), and praziquantel [5].

Nevertheless, Gunay et al evaluated cases of traumatic hydatid cyst rupture for 12 years; they demonstrated peritoneal spillage is not necessarily associated with a higher risk of relapse. They proved that rinsing the abdominal cavity with a povidone-iodine solution is not necessarily helpful and might have side effects since; absorption of the whole macromolecules (with a molecular weight of about 60,000) cannot be completely eliminated by the kidneys or metabolically after surgery. Thus, we decided to

irrigate the abdominal cavity only with 1 liter of diluted 20% saline solution [9]. Literature suggests medical prophylaxis as soon as possible after the surgery [5]. We prescribed Albendazole 400mg tablet per day for 6 months after the operation. He was also followed for 6 months after surgery.

CONCLUSION

Splenic hydatidosis is the third most common type of hydatidosis after liver and lung. Most cases remain asymptomatic until spontaneous rupture to the pleural or peritoneal cavity. These patients might arrive with signs of anaphylactic shock or acute abdomen. We conclude that hydatid cyst rupture must be considered in the differential diagnosis of post-traumatic abdominal pain and peritoneal irritation, especially in endemic regions. Splenectomy is the treatment of choice with low morbidity and mortality rates which is lifesaving in hemodynamically unstable patients.

REFERENCES

1. Malik AA, ul Bari S, Younis M, Wani KA, Rather AA. Primary splenic hydatidosis. *Indian J Gastroenterol.* 2011;30:175-7.
2. Rasheed K, Zargar SA, Telwani AA. Hydatid Cyst of Spleen: A Diagnostic Challenge. *N Am J Med Sci.* 2013;5:10-20.
3. Ozlem N. Traumatic rupture of a splenic cyst hydatid. *Int J Surg Case Rep.* 2015;7:112-4
4. Lakis M, Hanna E, Noujaim MG, Saad GA. Traumatic rupture of a solitary splenic hydatid cyst: A case report. *Trauma Case Rep.* 2015;1:1-3
5. Belli S, Akbulut S, Erbay G, Koçer NE. Spontaneous giant splenic hydatid cyst rupture causing fatal anaphylactic shock: A case report and brief literature review. *Turk J Gastroenterol.* 2014;25:88-91.
6. Dirican A, Yilmaz M, Unal B, Tatli F, Piskin T, Kayaalp C. Ruptured Hydatid Cysts into the Peritoneum: A Case Series. *Eur J Trauma Emerg Surg.* 2010;36:375-9.
7. Bitton M, Kleiner-Baumgarten A, Peiser J, Barki Y, Sukenik S. Anaphylactic shock after traumatic rupture of a splenic echinococcal cyst. *Harefuah.* 1992;122:226-8.
8. Beyrouti MI, Beyrouti R, Abbas I, Kharrat M, Amar MB, Frikha F, *et al.* Acute rupture of peritoneal hydatid cysts: 17 cases. *Presse Med.* 2004;33:378-84
9. Gunay K, Taviloglu K, Berber E, Ertekin C. Traumatic rupture of hydatid cysts: a 12-year experience from an endemic region. *J Trauma* 1999;46:164-7.

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