

Intraperitoneal rupture of liver hydatid cyst, a Post sleeve gastrectomy unusual presentation: a case report

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Received: 16 August 2020

Accepted: 13 September 2020

Published: 24 December 2020

The Egyptian Journal of Surgery 2020, 39:1250–1253

Background

The asymptomatic clinical presentation of hydatid cysts is the usual picture of presentations, and the cysts are incidentally discovered during radiological examination for other reasons. However, some patients develop symptoms and complications depending on cyst size, location, and the relationships between the cysts and the neighboring structures. Most dangerous complications consist of perforation of the cysts into the adjacent structures like a biliary tree, major vessels, hollow viscera, and peritoneal cavity. Herein, we aimed in this case report to describe the laparoscopic assessment and treatment of a case with an unusual presentation of intraperitoneal rupture of hepatic hydatid cyst after weight loss (post-sleeve gastrectomy) accompanied with review article.

Case summary

A female patient aged 44 was presented to our hospital with abdominal pain, diarrhea, and hypotension. The perforated cyst was located in the liver. Cyst rupture developed spontaneously. Enzyme-linked immunosorbent assay IgG result was negative. The patient received urgent resuscitation immediately and albendazole treatment was started 2 days before laparoscopic surgical intervention. No recurrence during postoperative follow-up (4 months).

Conclusion

Intraperitoneal perforation is a rare and severe life-threatening complication of hydatid cysts that can happen after significant weight loss. It is very crucial to treat the patients with appropriate emergent surgical management (including laparoscopy) as rapidly as possible after judicious medical treatment for allergic reactions.

Keywords:

cyst, Hydatid, intraperitoneal perforation, laparoscopy, post-sleeve gastrectomy

Egyptian J Surgery 39:1250–1253

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1110-1121

Introduction

The hydatid disease is a zoonotic disease that is common in pastoral communities, and it is caused by echinococcus [1]. Hydatid diseases can grow in almost all tissues of the body, like the liver (50–77%), lungs (15–47%), and others [2]. Intraperitoneal perforation is a life-threatening complication [3].

We aim to present the laparoscopic management of a case report that experienced (a) intraperitoneal perforation of liver hydatid cyst after a significant weight loss (postbariatric surgery) and (b) unusual late presentation and proper management.

Case presentation

A 44-year-old woman presented to the ED with sudden mild abdominal pain, drowsiness, watery diarrhea, and hypotensive shock, with no history of trauma. She was admitted to the gastroenterology ward as a case of severe gastroenteritis and subsequently shifted to ICU owing to progressive profound hypotension and shock where the patient was given supportive treatment with ICU close monitoring. The patient has had the liver

cysts, which were visualized by abdominal ultrasound (Fig. 1) during the routine preoperative investigation for bariatric surgery (laparoscopic sleeve gastrectomy) in May 2019 and were diagnosed as simple ones. Computed tomography abdomen with contrast was secured after that urgent admission.

The patient has had hypothyroidism and rheumatoid arthritis and was on chronic therapy for both of them. The patient had a history of laparoscopic sleeve gastrectomy since May 2019 for BMI of 44 (weight=98 kg, height=148 cm) with associated severe limbing of right lower limb.

Upon physical examination, the patient looked ill and distressed. The abdominal examination revealed tenderness over epigastric and right hypochondrial areas. She had a BMI of 28 (weight=63 kg,

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Figure 1

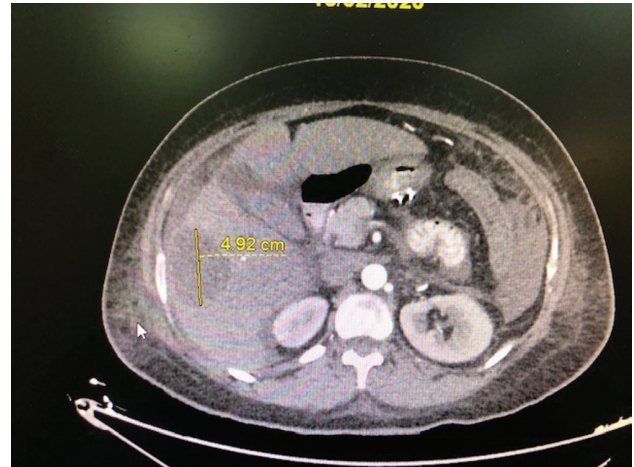


Abdominal US showed three liver cysts (done before bariatric surgery). US, ultrasound.

height=148 cm). Routine laboratory investigations were normal, apart from white blood cells, which were $31 \times 10^3/\text{ml}$ (neutrophils, 86%; and eosinophils: 0.8%). The abdominal computed tomography showed that three multiple cystic lesions in the right lobe of the liver are going with multiple liver hydatid cysts (size of the largest cyst, 5 cm×4.5 cm×3.8 cm) with moderate free peritoneal fluid. The perforated cystic lesion was present in the hepatic segment VI, and the finding was consistent with a perforated hydatid cyst with free peritoneal fluids (Fig. 2).

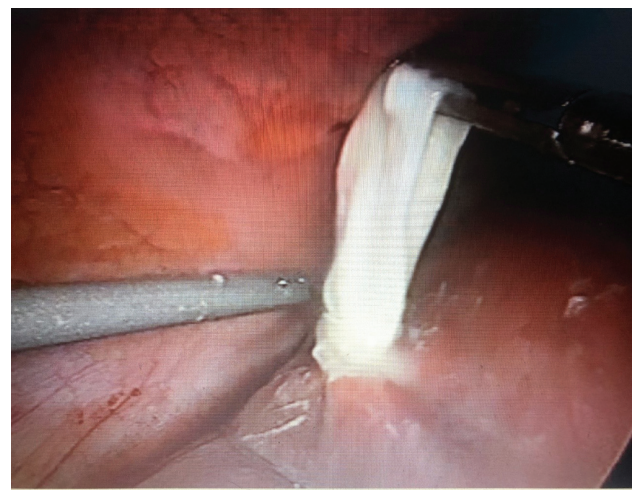
Fluid resuscitation and other supportive measures treatment were promptly administered at the ICU. Laparoscopy was conducted depending on the general status of the patient. Laparoscopic management was performed on February 25, 2020, after 2-week duration from the first presentation because of missed diagnosis. Intraoperatively, a large amount (2500 ml) of free fluid containing contents of the cyst mixed with pus was aspirated from the peritoneal cavity. The peritoneum was irrigated and washed with hypertonic saline solution 3% followed by copious amounts of normal saline. Total cystectomy with proper drainage of abdominal and cystic cavities was performed during the completion of

Figure 2



Abdominal CT with contrast shows hydatid cyst the right lobe of the liver with peritoneal fluids (few hours before urgent exploration). CT, computed tomography.

Figure 3



Intraoperative image obtained during laparoscopic avulsion of the hydatid cyst from its cavity, after evacuation of the cystic contents.

the surgery (Fig. 3). Nothing was done for the uncomplicated liver cysts (planned for delayed elective intervention).

The patient dramatically improved (clinically and laboratory) in the postoperative period and discharged home after 5 days (2 days ICU and 3 days ward). No postoperative complications were recorded either early or late till 6-month follow-up.

Discussion

Various complications can occur for ~5–40% of the patients with hepatic hydatid cysts and other organs. Intraperitoneal perforation may occur spontaneously owing to intracystic pressure elevation or result

from trauma including iatrogenic one during routine surgery [4].

Common risk factors for perforation

- (1) Size of the cyst: during the growth phase of the cyst (>10 cm), perforation can occur when the pressure inside the cyst (intracystic pressure >50 cmH₂O) is more significant than the resistance of the wall of the cyst (pericyst) with the increase of spontaneous or traumatic rupture risk [4].
- (2) The superficial localization: the superficial cysts are not protected sufficiently by hepatic parenchyma, so the superficial localization can be considered as a facilitator for the perforation of cyst [1].
- (3) The age and trauma: complications including rupture are more common in adults than elders as they are more active with frequent exposure in daily life to the trauma of different intensities and traffic accidents [5].
- (4) Weight loss and the hydatid cyst (the issue of interest in this case report).

All the common risk factors for rupture were in this case report. Weight loss can be a nonspecific sign of hydatid cyst owing to loss of appetite, weakness, vomiting, and abdominal pain. After bariatric surgeries, patients can expect significantly decreases in liver volume, regression of hepatic steatosis, and decreases in visceral adiposis at 6 months after bariatric surgery [6]. In our point of view, we consider that significant weight loss of our case report (postbariatric surgery) is an important contributing risk factor for hydatid cyst rupture (very little if any is written about that) owing to changes after bariatric surgery affecting the liver volume and fat density.

The following possible reasons for rupture were suggested:

- (1) Attenuated or absent protective hepatic parenchyma over the cyst with superficial localization.
- (2) Relative reduction of liver support owing to diminished fatty cushion of the visceral adiposis reduced liver volume and subsequent laxity of hepatic ligamentous support.
- (3) Rising stress forces on the cyst wall, which result from reduced liver volume with progressive growth of the cyst and regression of hepatosteatosis.

There are variable presentations and durations with a sudden or gradual onset. Most of these manifestations were present in this case report, in spite of confusing diagnosis for 2 weeks (late diagnosis). Patients may

have one or more of the following clinical presentations:

Gastrointestinal manifestations are mild or severe abdominal pain, vomiting, nausea, and diarrhea owing to peritoneal irritation [5]. Immunologic manifestations may develop ranging from minor allergic reactions (16.7–25% of patients), up to life-threatening severe allergic reactions (1–12.5%) owing to the cyst content (antigenic fluid) [4].

Stabilization of the patient hemodynamic status by aggressive medical treatment is an essential preparatory step to urgent surgery which should be performed as soon as possible [7]. Chemotherapy in conjunction with surgery (open or laparoscopic) is a highly efficient protocol in the management of hydatid disease and in prophylaxis against local recurrence and secondary hydatidosis [8]. Laparoscopic or open surgery can be conducted for hemodynamically stable patients, but unstable ones are reserved for open surgery [9,10]. In this case, we followed all of these guidelines.

Conclusion

- (1) The significant weight loss (postbariatric surgery) can be considered as an important contributing risk factor for hydatid cyst perforation owing to considerable visceral changes after bariatric surgery, affecting various organs, including liver volume and fat density.
- (2) Perforation of the hydatid cyst should be at the back of physicians' mind as a differential diagnosis in patients whose acute abdomen with allergic reactions, as the manifestations can be confused with other causes and the presentation can be late.
- (3) The parameters of hemodynamic instability should be corrected promptly, so that the emergent surgical intervention can save the patient's life.

Acknowledgements

Author's contributions: Selmy Awad the principal author has made substantial contributions to the conception, design of the work, acquisition of data, and analysis. Waleed Althobaiti, Rayan Alharthi, and Azzah Alzahrani contributed in the creation of new software used in the work and have drafted the work. They contributed toward; (a) the conception and design of the study, or acquisition of data, or analysis and interpretation of data; (b) drafting the article or revising it critically for important intellectual content; and (c) final approval of the version to be submitted.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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