EFFECTIVENESS OF LAPAROSCOPIC PERICISTECTOMY FOR CONGENITAL GIANT HEPATIC CYST TREATMENT (A CASE REPORT AND LITERATURE REVIEW)

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Resume

The prevalence of hepatic cysts is as high as 15-18% in the United States and 5 to 10% worldwide. The majority of simple cysts are congenital and form from biliary ducts that do not connect to the biliary system. Congenital cystic lesions include polycystic liver disease, simple cysts, duct-related and ciliated hepatic foregut cysts. Simple hepatic cysts rarely cause symptoms, however, they become symptomatic due to mass effect, rupture, hemorrhage, and infection. Large cysts can produce atrophy of the adjacent hepatic tissue while huge cysts can cause complete atrophy of a hepatic lobe with compensatory hypertrophy of the other side. We report a case of a giant hepatic cyst that was treated laparoscopically in our hospital.

A 69-year-old female approached the clinic with complaints: a progressively increasing abdominal mass a few months duration, with no prior history of trauma and previous surgery. The diagnosis was a giant congenital hepatic cyst which was confirmed by abdominal CT scan with IV contrast. We performed laparoscopic pericistectomy under general anesthesia, the procedure was completed without any complications and the postoperative period was uneventful. After 6 months, it was no recurrence of the cyst, the control laboratory analysis was normal.

In our case, despite the size and location, simple hepatic cyst laparoscopic pericystectomy was completed adequately, it was a safe and effective procedure, without any intra and post-operative complications. It has the best cosmetic effect, less pain and wound problem, shorter hospital stay, and early return to work. After 6 months period was no recurrence of the cyst, with normal liver function.

Key words: congenital giant hepatic cyst, laparoscopic pericystectomy

INTRODUCTION

The prevalence of hepatic cysts is as high as 15-18% in the United States and 5 to 10% worldwide [1]. The majority of simple cysts are congenital and form from biliary ducts that do not connect to the biliary system. Two mechanisms have been proposed for cyst formation. The first mechanism is thought to be due to retained abnormal bile ductules, which then become detached from the biliary tree and progressively dilate, forming cysts. An alternative mechanism is a defect in biliary cilia, leading to hyperproliferation of cholangiocytes and generation of cysts.

Liver cysts are divided into congenital and acquired. Congenital cystic lesions include polycystic liver disease, simple cysts, duct-related and ciliated hepatic foregut cysts. Acquired cystic lesions are divided into infectious and non-infectious [2]. The infectious cysts are the hydatic cysts, the amoebic abscess, and the pyogenic abscess, whereas the non-infectious cysts are neoplastic cysts and false cysts. While modern medicine provides a lot of minimally invasive therapeutic modalities, there has emerged a pressing need for understanding the various types of liver cysts, the possible minimal therapeutic options along with their indications and complications [2].

Simple hepatic cysts rarely cause symptoms, however, they become symptomatic due to mass effect, rupture, hemorrhage, and infection. Large cysts can produce atrophy of the adjacent hepatic tissue while huge cysts can cause complete atrophy of a hepatic lobe with compensatory hypertrophy of the other side [2]. The optimal management of non-parasitic hepatic cysts is a topic of debate. Management options include percutaneous aspiration, injection of sclerosing agents, laparoscopic or open fenestration, and surgical cystectomy. We report a case of a giant hepatic cyst that was treated laparoscopically in our hospital.

CASE REPORT

A 69-year-old female approached the clinic with complaints: a progressively increasing abdominal mass a few months duration. Pain that was localized over the mass had been recurrent in the last few months. There was no prior history of trauma, no previous surgery, no contact with

Figure 1-2. Simple congenital giant hepatic cyst in the right lobe of the liver

animals, and no associated fever, nausea, or vomiting. There was no history of jaundice of the eyes, breathlessness, vomiting of blood, the passage of blood in stool, and swelling of the lower extremities. According to the patient, these complaints started several months ago.

Examination showed She was neither pale nor icteric. Her vital signs were normal. The abdomen was asymmetrical and a little painful under the right epigastric region. The mass had limited horizontal mobility and was intra-abdominal in location. Palpation of the liver and balloting of the right kidney was limited by the mass. The left kidney and spleen were palpably normal. Percussion notes were very dull over the mass and bowel sounds were normoactive. A digital rectal examination was unremarkable.

Figure 3-4. Simple congenital giant hepatic cyst in the right lobe of the liver

To confirm the diagnosis, the patient underwent computed tomography of the abdomen with IV contrast (fig. 1, 2).

CT conclusion: There is no fluid in the abdomen and pelvis and no enlarged lymph nodes. The spleen, pancreas, adrenal glands, kidneys, and bile system are normal. The pelvis and ureters are not dilated. The genitals are not noticeable. The bladder is normal. The gastrointestinal tract is not noticeable. The liver is enlarged, the oblique craniocaudal size of the right lobe is 21.4 cm, the edges are straight, in the right lobe mostly 7th and 8th segments it is irregularly shaped, 16.3 cm - 10.2 cm. A cyst of the homogeneous structure of transverse dimensions. Partitions in the cyst and calcification areas are not revealed. The craniocaudal size of the cyst is 10.4 cm. The cyst is largely subcapsular localized, closely bordering the diaphragm. The cyst is protectively occupied by the 4th segment as well, although it may not extend into this segment. The liver is also affected by a single, small-calcified area.

The patient underwent a serological examination to rule out hepatic echinococcus. The answer was negative (fig. 3, 4).

Preoperational lab results: hemoglobin - 147g/l (N - 120-150), white blood cells (WBC) 7.63x109 l (N - 4.00-10.00) (neutrophils 63%, eosinophils 0.9%, lymphocytes 31.5%), platelets - 190x109/l (N - 150-400). Urea and electrolytes, liver function tests (Total bilirubin - 18.9umol/l (N<21 mmol/l), DBI-5.38umol/l (<4.3 mmol/l), AST - 15u/l (<31 U/L), ALT - 16u/l (<42 U/L), ALP - 64u/l (35-104 U/L)) were normal. Hepatitis B virus (HBV) and hepatitis C virus (HCV) - are negative. Creatinine - 83 (44-80 mmol/l); PT-12.7 (12-15); PI-90 (80-105%); INR-1.11 (0.95-1.2); APTT-28.0 (23.0-34.0); Fib-202 (200-400mg/dl), TT-20.4 (20.4).

Instrumental examination: Radiology showed a normal chest X-ray, and abdominal ultrasonography, which reported an extensive hypodense cystic mass of the liver in the right lobe.

The patient was diagnosed with a giant simple cyst of the liver. Due to the constitutional type of the patient, the size, and location of the cyst, as well as to better management of the postoperative period, it was decided to perform a laparoscopic pericystectomy.

Operation:

The patient was in a split-leg position and the surgeon - was between the legs (French position). A 10 mm port for a 30-degree laparoscope was inserted 2-3 cm above the umbilicus, one 10 mm port under the xiphoid, and two 5-mm ports in the right epigastrium area. Hand ports were placed to aid in the mobilization of the liver, especially if the lesion was located in segments VII and VIII, which is in the process of strong adhesions with the diaphragm. After complete mobilization of the cyst, the blue dome of the cyst is fenestrated and the cyst contents are aspirated without contamination.

Next, wide deroofing was performed using an ultrasonic harmonic scalpel (Ethicon Inc., Somerville, NJ, USA) or using monopolar diathermy - L-Hook (we used both of them); removing the entire cystic wall is not necessary. The wall at the cyst is excised circularly to within 3 mm of the liver parenchyma and the resected cystic wall specimens were routinely sent for pathologic evaluation to exclude malignancies. The back wall of the cysts was carefully examined for evidence of bile leak or bleeding, and if identified, a hemostatic clip or a tie is applied when needed. Careful hemostasis of the cyst edge is performed with electrocoagulation. A Jackon-Pratt drain was inserted within the cyst cavity.

The duration of the operation was 45 min, and intraoperative blood loss was 30-40 ml. The procedure was completed without any complications and the postoperative period was uneventful. The patient had little postoperative pain (per time use painkiller), the second day after the procedure patient start eating and activating, on the third postoperative day the drainage was removed, control laboratory tests were normal and the patient was discharged tolerating feeding.

Pathology was consistent with that of a true simple congenital hepatic cyst, containing simple columnar epithelium and clear serous fluid.

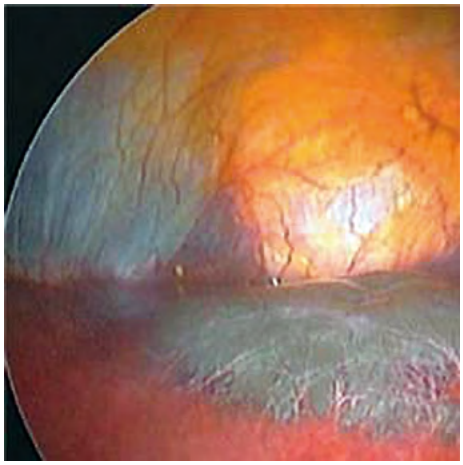

Figure 5. A giant hepatic cyst wall

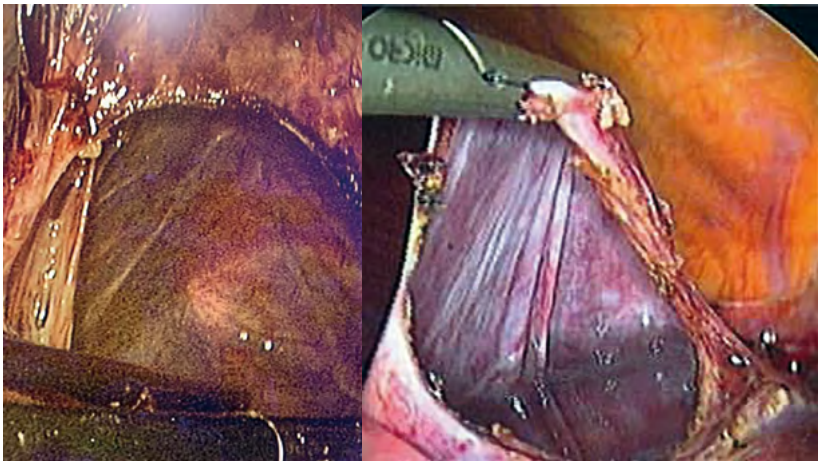

Figure 6-7. Laparoscopic Perycistectomy

RESULTS

Postoperative visits in the outpatient on the 2nd, 4th, and 12th weeks. After 6 months revealed no recurrence of cyst or ascites clinically, ultrasonography or by abdominal CT, control Lab. Analysis made after 6 months, results were normal: hemoglobin - 140g/l, white blood cells (WBC) - 7.23x109 l (neutrophils 61%, eosinophils 0.8%, lymphocytes 28.5%), and platelets 185x109/l. Urea and electrolytes, liver function tests (Total bilirubin - 15.9umol/l, DBI - 4.1umol/l, AST - 12u/l, ALT - 18u/l, ALP - 68u/l) were normal. Creatinine -78; PT-12.6; PI-92; INR-1.13; APTT-27.0; Fib-210; TT-20.4. (fig. 8, 9)

DISCUSSION

Giant cystic lesions of the liver represent a wide spectrum of diseases ranging from simple benign cysts to potentially malignant biliary cysts. Preoperative differential diagnosis between congenital, parasitic, and neoplastic giant hepatic cysts by imaging techniques such as ultrasonography, CT, and MRI is crucial since management options may vary from observation to surgical treatment. In particular, cases complicated by hemorrhage or superinfection can be difficult to differentiate by radiological examination. An accurate diagnosis is essential for adequate treatment.

It is generally accepted that small asymptomatic cysts do not require surgical intervention. Clear guidelines for optimal management of the different varieties of giant hepatic cysts have not been defined. Symptomatic giant hepatic cysts certainly require definitive therapy but there is no consensus regarding the best surgical technics [5].

The goal of surgical treatment of giant hepatic cysts is to remove as much of the exposed wall as possible and to avoid recurrence. There is still some controversy about the preferable procedure, but most studies seem to agree on laparoscopic deroofing as the initial approach for the majority of giant liver cysts.

Enucleation could be performed atraumatically if a plane of cleavage exists between the hepatic cyst and the liver, but is particularly difficult if the cyst is extremely large, and may lead to transection of large biliary radicals and blood vessels running along the cyst wall.

Total cyst excision or major hepatic resection yields recurrence rates of zero. However, these kinds of treatments are often associated with significant morbidity by the huge surgical trauma of the organ and this is frequently not acceptable to patients with benign disease, old age, severe underlying medical conditions, or when the postoperative reserve function of the liver is suspicious. To ensure maximal deroofing, the cyst wall was excised together with a small rim of surrounding hepatic parenchyma, until the bottom of the cyst expanded and subsequently protruded almost to the level of the liver surface [6].

The recurrence of giant hepatic cysts has been the main obstacle to the more widespread use of the laparoscopic deroofing procedure. If the cyst has rigid walls, the spontaneous collapse of the cavity is problematic. Factors predicting recurrence included an incomplete deroofing technique, previous surgical treatment, and deep-seated cysts, located in segments VII and VIII.

CONCLUSION

In our case despite size and location, simple hepatic cyst laparoscopic pericystectomy was completely adequate, it was a safe and effective procedure, without any intra and post-operative complications. It has the best cosmetic effect, less pain and wound problem, shorter hospital stay, and early return to work. After 6 months period was no recurrence of the cyst, with normal liver function.

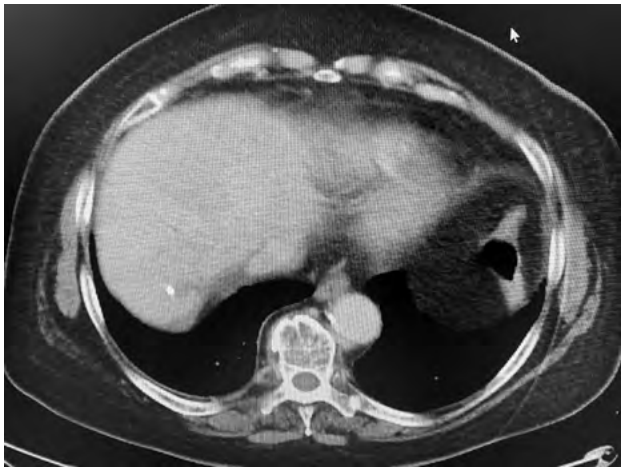

Figure 8-9. Abdominal CT after 6 months. there is no relapse after 6 months.

ლიტერატურა:
References:

1. *Marrero JA, Ahn J, Rajender Reddy K., Americal College of Gastroenterology. ACG clinical guideline: the diagnosis and management of focal liver lesions. Am J Gastroenterol. 2014 Sep;109(9):1328-47; quiz 1348. [PubMed]*
2. *Pitchaimuthu M, Duxbury M. Cystic lesions of the liver – a review. Curr Probl Surg. 2017;54:514–542.. [PubMed] [Google Scholar]*
3. *Lantinga MA, Gevers TJ, Drenth JP. Evaluation of hepatic cystic lesions. World J Gastroenterol. 2013;19:3543–3554. [PMC free article] [PubMed] [Google Scholar]*
4. *Sanfelippo PM, Beahrs OH, Weiland LH. Cystic disease of the liver. Ann Surg. 1974;179:922–925. [PMC free article] [PubMed] [Google Scholar]*
5. *Long J, Vaughan-Williams H, Moorhouse J, Sethi H, Kumar N. Acute Budd-Chiari syndrome due to a simple liver cyst. Ann R Coll Surg Engl. 2014;96:109E–111E. doi: 10.1308/003588414X13824511649698. [PMC free article] [PubMed] [Google Scholar]*
6. *Karam AR, Connolly C, Fulwadhva U, Hussain S. Alcohol sclerosis of a giant liver cyst following failed deroofings. J Radiol Case Rep. 2011;5:19–22. doi: 10.3941/jrcr.v5i2.634. [PMC free article] [PubMed] [Google Scholar]*

ლაპაროსკოპული პერიცისტექტომიის ეფექტურობა ღვიძლის თანდაყოლილი გიგანტური კისტის მკურნალობისას (კლინიკური შემთხვევის აღწერა და ლიტერატურის მიმოხილვა)

შალვა გიუაშვილი, თამაზ ჩხიკვაძე, ბექა შუბითიძე, უჩა ჯავახიშვილი,
მაია დემურიშვილი, ტატიანა მერმანიშვილი

ალექსანდრე ალადაშვილის კლინიკა, ივანე ჯავახიშვილის სახელობის თბილისის სახელმწიფო უნივერსიტეტი, აღმოსავლეთ-დასავლეთის სასწავლო უნივერსიტეტი

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რეზიუმე

მთელს მსოფლიოში ღვიძლის ცისტოზური დაავადების გავრცელება 5-დან 10%-ს შეადგენს, ხოლო შეერთებულ შტატებში 15-დან 18%-ს აღემატება. მარტივი ცისტების უმეტესობა თანდაყოლილია და წარმოიქმნება სანაღვლე გზებიდან. ღვიძლის თანდაყოლილი ცისტოზური დაზიანებები მოიცავს ღვიძლის პოლიცისტოზურ დაავადებას, მარტივ ცისტებს, სადინართან დაკავშირებულ და წამწამოვანი ეპითელიუმისგან წარმოქმნილ ცისტებს. ღვიძლის მარტივი ცისტების სიმპტომური გამოვლინება ხდება ცისტის ზომებში მატების, გასკდომის, სისხლდენის და ინფიცირების შემთხვევაში. დიდი ზომის ცისტას კომპრესიის შედეგად შეუძლია გამოიწვიონ ღვიძლის მიმდებარე ქსოვილის ატროფია, ღვიძლის წილის სრული ატროფია და მეორე წილის კომპენსატორული ჰიპერტროფია.

ალექსანდრე ალადაშვილის სახელობის კლინიკაში 69 წლის პაციენტს შესაბამისი კლინიკური, ლაბორატორიული და ინსტრუმენტული კვლევების საფუძველზე დაესვა ღვიძლის გიგანტური ზომის თანდაყოლი ცისტის დიაგნოზი, რომელსაც ლაპაროსკოპიულად ჩაუტარდა ცისტის შიგთავსის ასპირაცია კონტამინაციის გარეშე და ლაპაროსკოპიული პერიცისტექტომია, ინტრა და პოსტოპერაციული პერიოდი გამოვლინდა გართულებების გარეშე, 6 თვის შემდგომ ჩატარებული კლინიკური, ლაბორატორიული და ინსტრუმენტული მონაცემები რაიმე საყურადრებო ცვლილებების გარეშე, რეციდივი არ აღინიშნა.

ჩვენს ქეისში მიუხედავად ცისტის ზომის და მდებარეობის, ლაპაროსკოპიული პერიცისტექტომია იყო უსაფრთხო და ადექვატური პროცედურა, ყოველგვარი ინტრა და პოსტოპერაციული გართულებების გარეშე. პაციენტს აღენიშნა საუკეთესო კოსმეტიკური ეფექტი და ჰოსპიტალიზაციის მცირე პერიოდი. 6 თვის შემდგომ ჩატარებული კლინიკური, ლაბორატორიული და ინსტრუმენტული კვლევებით ცისტის რეციდივი არ გამოვლინდა და ღვიძლის ნორმალური ფუნქციური მდგომარეობით.

საკვანძო სიტყვები: ღვიძლის თანდაყოლილი გიგანტური კისტა, ლაპაროსკოპიული პერიცისტექტომია