

CASE REPORT**Recurrent liver cyst: case report and literature review**Nebojša Mitrović^{1,2}, ✉ Nemanja Trifunović², Dejan Stevanović^{1,2},
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(grant no. 200110)**Copyright:** © 2024 Medicinska istraživanja**Licence:**This is an open access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.**Competing interests:**

The authors have declared that no competing interests exist

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Summary**Introduction:** Liver cysts are defined as cavities within the liver tissue, surrounded by a layer of epithelium and filled with liquid or semi-liquid contents. They are mostly asymptomatic and usually diagnosed by ultrasonography, CT or MR diagnostics. Symptoms occur as a result of complications such as bleeding, rupture, infection or compression of the biliary tract. All liver cysts can be divided into (1) infectious and (2) non-infectious liver cysts. The most common non-infectious cysts are simple congenital biliary cysts.**Case outline:** We present a 74-year-old female patient. She had upper right abdominal pain and dyspepsia several weeks before the first examination. Abdominal ultrasound and CT verified a large simple cyst of the right lobe of the liver of about 14cm in size. She underwent minimally invasive surgery when a partial cyst resection was performed. Seven months later, abdominal ultrasound, MR and MRCP verified a simple recurrent cyst in the right lobe of about 13cm in size with no communication with the biliary system. She underwent open surgery when pericystectomy cum omentoplastica was performed. The pathohistological result showed a benign biliary cyst. There was no recurrence at regular follow ups 12 months upon the procedure.**Conclusion:** There are many treatment modalities, and each one is accompanied by certain disadvantages. In recent years, conventional open surgical procedures have been replaced by minimally invasive surgical procedures. Laparoscopic surgery is the method of choice in carefully selected patients. Open conventional surgery is reserved for patients with giant cysts, recurrent cysts, deep intraparenchymal cysts, and right lobe subphrenic cysts.**Key words:** recurrent cyst, cystis hepatitis, liver cyst, biliary cyst, benign cyst, pericystectomy

INTRODUCTION

Liver cysts are defined as cavities within the liver tissue, surrounded by a layer of epithelium and filled with liquid or semi-liquid contents. They are mostly asymptomatic and usually diagnosed by ultrasonography, CT or MR diagnostics. Symptoms occur as a result of complications such as bleeding, rupture, infection or compression of the biliary tree (1).

In Europe, the incidence is between 5 and 10%, and in the USA it is between 15 and 18%. In more than 85% of cases, patients are asymptomatic, and cysts are diagnosed unintentionally, with one of the radiological methods. About 15% of patients complain of upper right abdominal discomfort or pain, nausea, vomiting, and rarely icterus and acute abdomen (1, 2, 3).

According to etiology, all liver cysts can be divided into (1) infectious and (2) non-infectious liver cysts. Infectious cysts of the liver include echinococcosis of the liver (hydatid cyst) and pyogenic liver abscesses (4, 5, 6).

Non-infectious liver cysts can be further divided into a) benign, b) premalignant and c) malignant liver cysts. The most common benign lesions are simple liver cysts (biliary cysts), pseudocysts, biliary hamartoma and polycystic liver disease. Premalignant lesions include biliary cystadenomas, intrapapillary ductal biliary neoplasms and Caroli's disease. Malignant liver cysts can be in the form of biliary cystadenocarcinoma, undifferentiated embryonal sarcoma or mesenchymal hamartoma (7, 8, 9).

According to radiological diagnostics, there are simple cysts and complex liver cysts. Ultrasound is the method of choice. CT and MRI have better sensitivity and specificity and more precisely describe cystic lesions of the liver (10, 11).

Treatment decision depends on many factors such as the cyst type, clinical and radiological manifestations and the general condition of the patient.

CASE REPORT

We present a 74-year-old female patient. She had had upper right abdominal pain, nausea and vomiting several weeks before she was examined in a private health institution in June 2021. During diagnostic abdominal ultrasound a large cyst in the liver right lobe was verified. The cyst was 13 cm in diameter, and it was filled with echogenic content with floating particles.

An abdominal CT verified a large simple cyst, occupying most of the right lobe of the liver, measuring 137x98x137mm (APxLLxCC), with gracile internal septa. The right hepatic vein arcuately surrounded the described lesion, with a slightly narrowed lumen, as a result of the compression effect. Intrahepatic bile ducts for both lobes were incipiently accentuated.

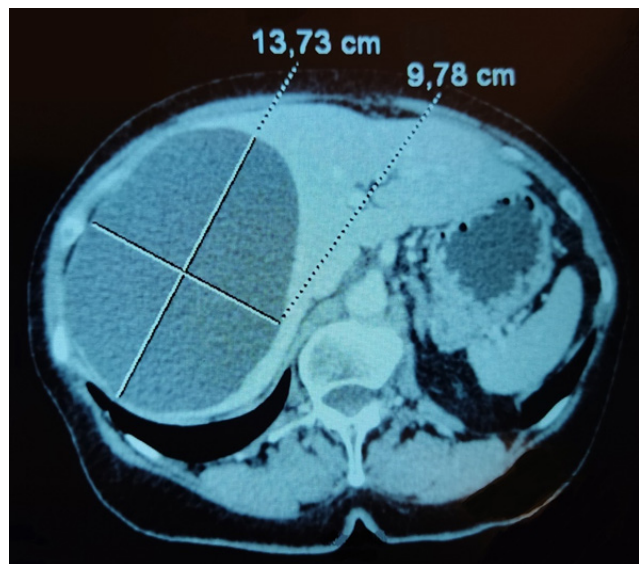


Figure 1. CT verified liver cyst

After complete preoperative preparation, the patient was operated on under general anesthesia in September 2021. The following operation was performed: resectio partialis cystae hepatis laparoscopica. Drainage. Pathohistology result: Solitary hepatic (Nonneoplastic) Cyst. Postoperatively without complications.

During the regular follow up in February 2022, abdominal ultrasound verified a cyst with a diameter of 12x10 cm in the right lobe of the liver, with intracystic hyperechoic fibrous band lesions and dense content. Intra and extrahepatic bile ducts were not dilated.

Abdominal MR was performed after i.v. applications of paramagnetic contrast. The liver was of the appropriate shape and position. The right lobe was largely altered by a well circumscribed, incompletely septated, cystic lesion of diameter 125mm x 93mm x 110mm (APxLLxCC), with partial sparing of the V and VI segments. The cystic lesion had a slightly lobulated contour, well limited by the capsule, filled with content of higher signal intensities corresponding to serohemorrhagic or dense protein content, with the presence of floating detritus. The described cystic lesion only suppressed the intrahepatic bile ducts without signs of communication.

Magnetic resonance cholangiopancreatography was also done. MRCP verified a large cystic lesion of the right lobe of the liver, which initially only suppressed the intrahepatic bile ducts, without certain MR detectable signs of communication with the same.

The patient was then hospitalized at the Department of general surgery of the Clinical-Hospital Centre Zemun for surgical treatment of a recurrent liver cyst in March 2022. Having completed preoperative preparation, she was operated on under general anesthesia, when the following surgery was performed: J lap. Pericystectomy hepatis cum omentoplasty. Drainage spatii subhepatici.

A large cyst of the right lobe of the liver was verified intraoperatively. Pericystectomy was performed. The

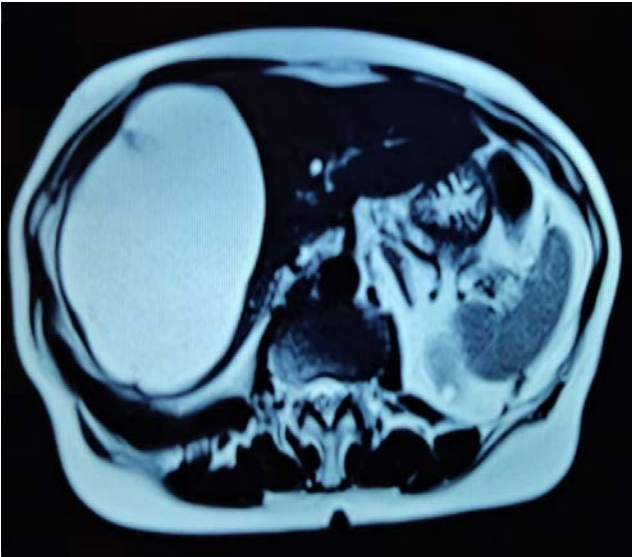


Figure 2. MR verified liver cyst

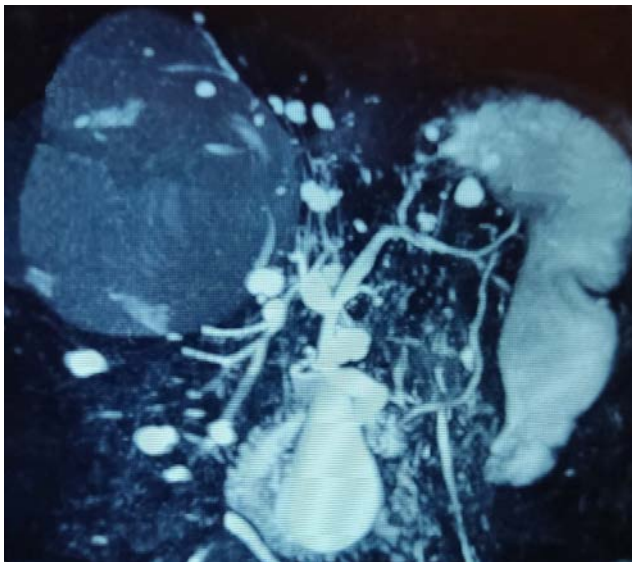


Figure 3. MRCP verified liver cyst

back wall of the cyst in contact with the liver parenchyma was not excised. Macroscopically, the existence of contact between the lumen of the cyst and the intrahepatic bile ducts was not verified. The wall of the cyst as well as the lymph gland from the hepatopancreatic angle were sent for ex tempore diagnostics - the results showed a benign cyst. In the next step, omentoplasty of the cyst was performed. One drain was placed in the right subphrenia. Samples were sent for definitive PH diagnosis.

The result of pathohistological diagnostics were as follows: the analyzed sample material constituted the wall of a cystic lesion without an epithelial layer. The wall consisted of hyalinized, hypocellular connective tissue under which small biliary ducts and blood vessels could be observed in places in the stroma. This result may correspond to a solitary non-neoplastic liver cyst. Immunohistochemical analysis: CK PAN, CD 31, CD 68, S100.

Postoperatively without complications. At regular clinical and echosonographic check ups 12 months after surgery there was no recurrence.

DISCUSSION

The exact incidence of liver cysts is unknown due to the absence of symptoms in most patients. The development and greater use of more sophisticated diagnostic methods has increased the incidence of accidentally discovered liver cysts, and now it is slightly more than 5%. Simple liver cysts are significantly more common in women, depending on different authors, the ratio ranges from 1.5:1 to 9:1 (12, 13, 14). Large liver cysts are almost exclusively found in women over 50 years of age (15,16). Simple liver cysts are most often congenital and arise from various mutations on chromosome 16, which lead to aberrant development of the bile ducts. In some studies, there is evidence that the presence of an increased concentration of estrogen in women between 40 and 60 years of age can be the cause of the occurrence of simple non-parasitic liver cysts (17, 18). We presented a female patient aged 74 years, which is in accordance with other studies according to which she belongs to the group of patients with the highest incidence of large non-parasitic liver cysts. Our patient was asymptomatic for a long time, and only a few weeks before the diagnosis, she developed non-specific symptoms in the form of discomfort and occasional abdominal pain upper right, as well as dyspeptic complaints.

The diagnosis of a liver cyst is made by abdominal ultrasound, and a more precise description of the cyst, its characterization and communication with the bile ducts is obtained using CT or MR diagnostics.

There are many treatment modalities for simple liver cysts, and each one is accompanied by certain disadvantages. Non-surgical methods such as simple percutaneous aspiration are not adequate due to possible infection and early recurrences. The results are slightly better with the aspiration and the application of phenol alcohol, but relapses are also common, and there is a possibility of developing sclerosing cholangitis if there is unverified communication with the biliary tree (19, 20). In recent years, conventional open surgical procedures have been replaced by minimally invasive surgical procedures. Laparoscopic surgery is the method of choice for cysts up to 20 cm. Frequent postoperative recurrences of giant cysts represent a major obstacle in selecting patients for a laparoscopic or conventional open surgery (21). Factors that increase the incidence of recurrence are incomplete removal of the cyst wall, previous surgical treatment, deep intraparenchymal liver cysts, cysts located in segments VII and VIII, diffuse form of polycystic liver disease as well as biliary cystadenomas. Large cysts in the right posterior lobe have a high recurrence rate due to the intimate contact between the liver and the diaphragm blocking adequate drainage of the cyst into the peritoneal cavity and causing reaccumulation of its contents (22, 23, 24).

Open surgery is indicated in selected patients with giant cysts whose size increases intra-abdominal pressure and exerts compression on nearby organs. Open surgery

is the method of choice in patients with large recurrent cysts due to the more frequent recurrence. Nevertheless, the percentage of recurrence does not differ significantly between laparoscopic and open surgery and is about 10%. However, the postoperative morbidity associated with open surgery and the length of postoperative hospital stay are the main limitations of open surgery. (25)

CONCLUSION

Liver cysts are relatively common, mostly asymptomatic and mostly benign. The diagnosis is made using ultrasound and CT diagnostics. MR diagnostics allows a more detailed characterization of the cyst, usually

preoperatively. The modality of treatment depends on many factors such as the characteristics of the cyst, the clinical manifestations, radiological manifestations and the general condition of the patient. The treatment is basically surgical due to frequent recurrences after non-surgical procedures. Laparoscopic surgery is the method of choice in carefully selected patients, because it is an effective method and causes minimal surgical trauma. Open conventional surgery is reserved for patients with giant cysts, recurrent cysts, deep intraparenchymal cysts, and right lobe subphrenic cysts. According to the current data, in carefully selected patients, the percentage of recurrence does not differ significantly between laparoscopic and open surgery.

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RECIDIVANTNE CISTE JETRE: PRIKAZ SLUČAJA I PREGLED LITERATURE

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Sažetak

Uvod: Ciste jetre definišu se kao šupljine unutar tkiva jetre, ovičene slojem epitela i ispunjene tečnim ili polutečnim sadržajem. Uglavnom su asimptomatske i dijagnostikuju se najčešće uzgredno ultrasonografskom, CT i MR dijagnostikom. Simptomi se javljaju kao posledica komplikacija poput krvarenja, rupture, infekcije ili kompresije bilijarnog stabla.

Prikaz slučaja: Prikazali smo pacijentkinju starosne dobi 74 godine sa recidivantnim cistama jetre. Imala je tegobe u vidu bola u gornjem desnom kvadrantu trbuha i dispeptične tegobe nekoliko nedelja pre prvog pregleda. Ultrazvuk i CT abdomena verifikovali su veliku prostu cistu desnog režnja jetre veličine oko 14cm. Podvrgnuta je laparoskopskoj operaciji kada je učinjena parcijalna resekcija ciste jetre. Na redovnoj kontroli 7 meseci nakon operacije ultrazvukom abdomena, a potom i MR abdomena i MRCP verifikovana je recidivantna prosta cista

desnog režnja jetre veličine oko 13cm bez komunikacije sa bilijarnim stablom. Odlučuje se za konvencionalnu operaciju kada je učinjena pericistektomija sa omentoplastikom. Patohistološki verifikovana benigna bilijarna cista jetre. Urednog postoperativnog toka. Na redovnim kontrolama bez recidiva, 12 meseci nakon operacije.

Zaključak: Modaliteti lečenja prostih cisti jetre su brojni, a svaki je praćen određenim nedostacima. Poslednjih godina konvencionalne otvorene hirurške procedure zamenjene su minimalno invazivnim hirurškim procedurama. Laparoskopska operacija je metod izbora kod pažljivo odabranih pacijenata, jer je efikasna metoda, a prouzrokuje minimalnu hiruršku traumu. Otvorena konvencionalna hirurgija rezervisana je za pacijenate sa dži-novskim cistama, recidivantnim cistama, cistama lokalizovanim duboko intraparenhimski i cistama u desnom režnju subfrenično.

Ključne reči: recidivantna cista, cista jetre, bilijarna cista, benigna cista, pericistektomija

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