

Case 9892

Giant hepatic echinococcus cyst: a case report

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Section: Abdominal Imaging

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Patient: 24 year(s), female

Authors' Institution

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Clinical History

A 24-years-old female patient from Albania with hepatomegaly, vulvar and lower limbs venous varixes, already subjected to saphenectomy, came to our Department complaining of worsening of chronic symptoms, such as right-hypochondriac pain, early satiety, sickness, and vomiting. Sierological exams were negative.

Imaging Findings

US-scan revealed a huge cystic formation, occupying the major part of hepatic dome, dislocating down and left of the whole liver, elevating the diaphragm and compressing the inferior vena cava, suprahepatic veins and intrahepatic biliary ducts (Fig.1a). The cyst appeared uniloculated, without internal septations, filled by anechoic fluid and surrounded by a three-layer wall (Fig.1b):

- inner layer (germinal) finely granular hyperechoic;
- intermediate layer (laminated membrane) hypo-anechoic;
- outer layer (adventitial) hyperechoic.

MR-scan (Fig.2) defined the exact edges of the lesion (maximum diameter 23cm; involvement of VII, VIII, part of IV, V, VI segment). Post contrastographic phases didn't show any enhancement (Fig.3).

After US-guided percutaneous drainage and alcoholisation, follow-up evaluation showed signs of

hepatic abscess therefore the patient underwent urgent CT-scan with iodine ionic contrast administration through the drainage (Fig.4a). CT-examination showed a voluminous formation occupying right hepatic lobe (12x9cm) within layer of parenchymal-density tissue and air component (Fig.4b). Cyst-wall presented inhomogeneous contrast-enhancement (Fig.4c). The patient underwent laparoscopic treatment (Video 5).

Discussion

Echinococcal cyst is a parasitic disease caused by the larvae of Echinococcus, primarily E. Granulosum (EG), characterised by a worldwide distribution. Mediterranean areas, Africa, South America, the Middle East, Australia and New Zealand are interested by an endemic distribution due to the transmission of EG by means of the dog-sheep cycle [1]. EG has a vital cycle that needs two hosts: definitive (dog) and intermediate (most commonly sheeps or rarely humans). This zoonotic infection is transferred to humans by ingestion of contaminated food by dog feces within parasite's eggs. Liver (>65%) and lung (25%) are the organs where humans mainly develop cystic disease [2]. The echinococcal cyst is an evolution of a oncosphere (a stage of asexual reproduction cycle of EG), coming from the bowel through mesenteric veins. This formation appears like a fluid-filled, spherical, unilocular cyst that consists of an inner germinal layer of cells supported by a characteristic acellular, laminated membrane of variable thickness. Each cyst is surrounded by a host-produced layer of granulomatous adventitial reaction [3].

The clinical manifestations are frequently variable due to site, size, and condition of the cysts. At first, patients are often asymptomatic because of the slow growth of the echinococcal cyst, until its size might cause organ dislocation and dysfunction. In the hepatic involvement common signs and symptoms include hepatomegaly (with eventual palpable mass), right hypocondriac pain, sickness and vomiting [3]. Lung echinococcal cysts, the second most frequent localisation, are clinically characterised by fever, cough and chest pain, simulating a typical bacterial pneumonia, eventually with typical radiographic findings, but unresponsive to empiric antibiotic treatment [2]. Furthermore, the inner content, released if a cyst ruptures, causes allergic reactions ranging from mild to fatal anaphylaxis. Dissemination of protoscolices, floating in the cystic fluid, might result in multiple secondary echinococcosis disease [3].

Diagnosis requires an index of suspicion (endemic areas), typical radiographic findings and specific serological test, which has low sensitivity in extra-hepatic cases [2].

Traditional radiography allows detection of echinococcal cysts in the lung, appearing like a hyperdense mass, eventually with cyst-wall calcifications; in other sites, US, MR and CT are useful to identify the deep-seated lesions [3], showing single or multiple uniloculated cysts (EG), without internal septations, filled by fluid and surrounded by the typical three-layer wall.

Treatment is complicated and carries significant risks. Therapeutic options include the use of antihelminthic drugs, surgery and medico-surgical procedures such as PAIR (puncture, aspirate, injection of a scolicide, re-aspirate) [4].

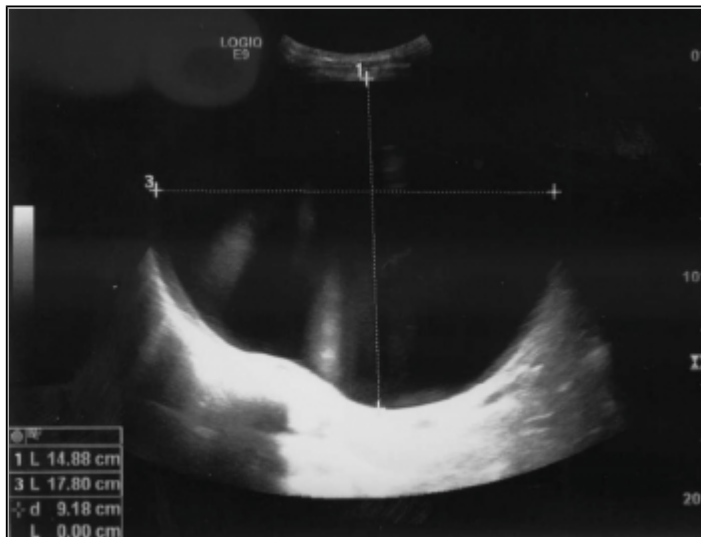
Final Diagnosis

Differential Diagnosis List

Congenital liver cysts, Polycystic liver disease, Post-traumatic cysts (haematoma or biloma), Abscess, Benign mucinous biliary cystadenoma, Cystic metastases, Malignant cystic neoplasm, Benign cysts, Cavitory tuberculosis, Mycosis

Figures

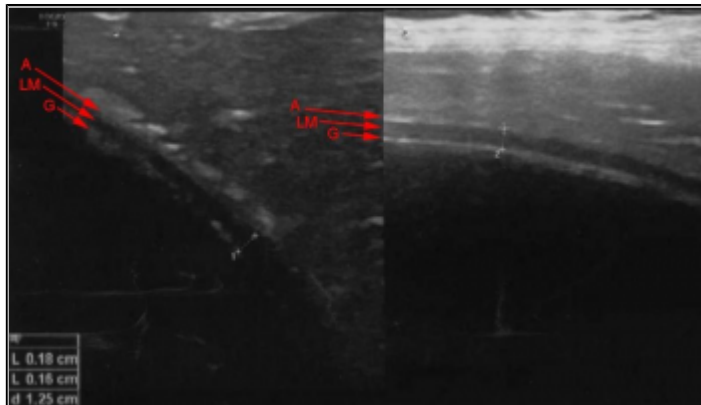
Figure 1 US



Ultrasound scan shows an unilocular anechoic cyst of 23cm in diameter.

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Area of Interest: Liver;
Imaging Technique: Ultrasound;
Procedure: Diagnostic procedure;
Special Focus: Cysts;



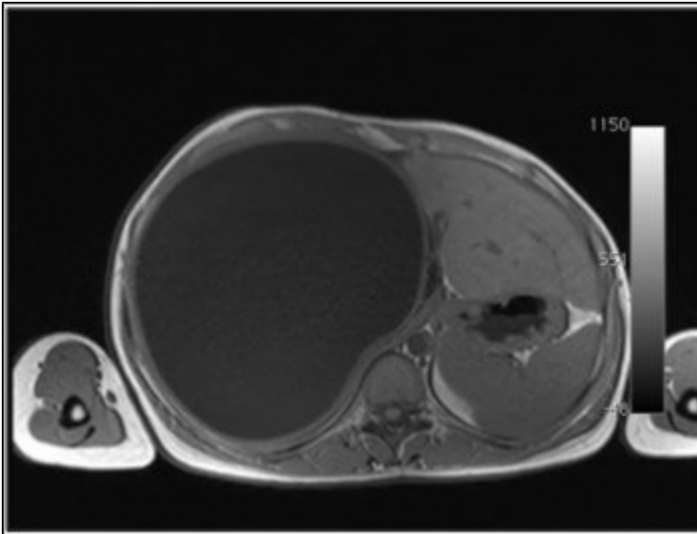
Ultrasound scan shows the cyst appearing uniloculated, without internal septations, filled by anechoic fluid and surrounded by a three-layer wall.

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Area of Interest: Abdomen; Liver;
Imaging Technique: Ultrasound;

Procedure: Diagnostic procedure;
Special Focus: Cysts;

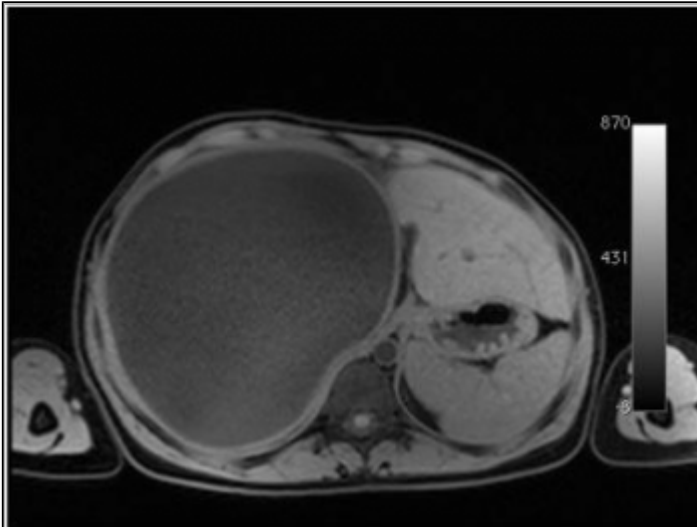
Figure 2 MR



Axial T1-weighted FLASH (Fast Low Angle SHot) 2D image shows an hypointense lesion.

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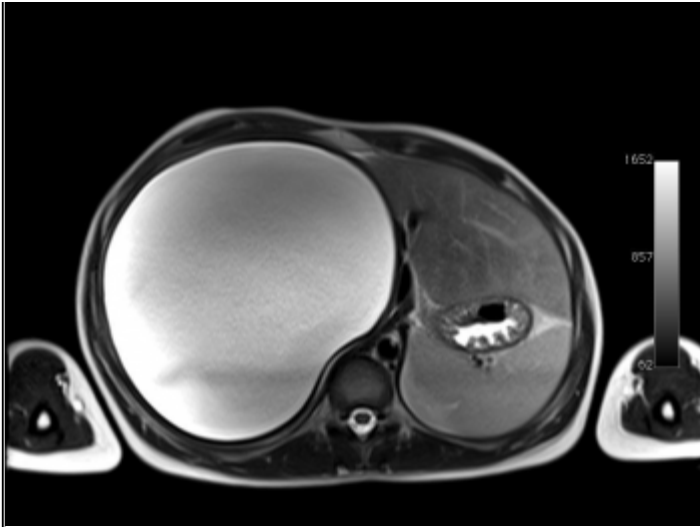
Area of Interest: Liver;
Imaging Technique: MR;
Procedure: Diagnostic procedure;
Special Focus: Cysts;



Axial T1-weighted fatsat FLASH 2D image.

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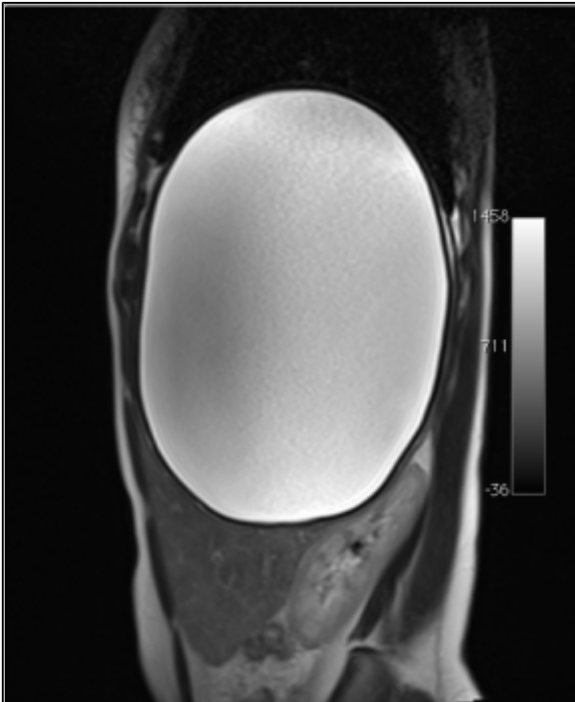
Area of Interest: Liver;
Imaging Technique: MR;
Procedure: Diagnostic procedure;
Special Focus: Cysts;



Axial T2-weighted HASTE (Half Fourier Acquisition Single Shot Turbo Spin Echo) MR image shows the lesion with an hyperintense fluid and a simple cystic appearance, without internal septa or solid portions.

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Area of Interest: Liver;
Imaging Technique: MR;
Procedure: Diagnostic procedure;
Special Focus: Cysts;

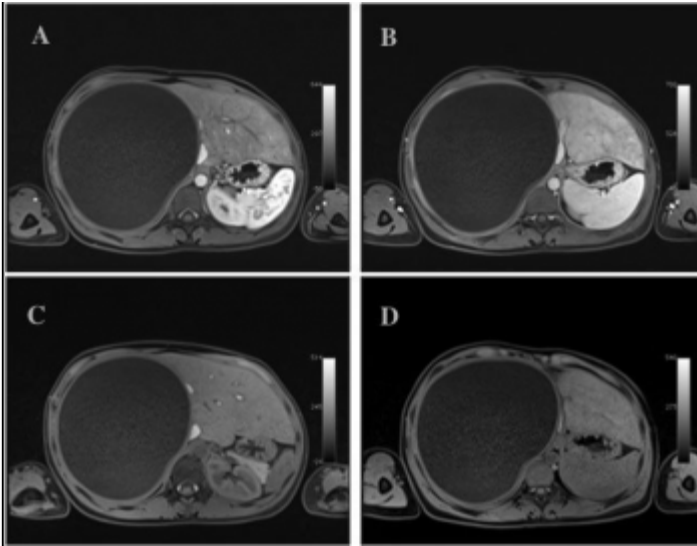


Sagittal T2-weighted HASTE MR image.

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Area of Interest: Liver;
Imaging Technique: MR;
Procedure: Diagnostic procedure;
Special Focus: Cysts;

Figure 3 MR T1-weighted fat-sat images with contrast

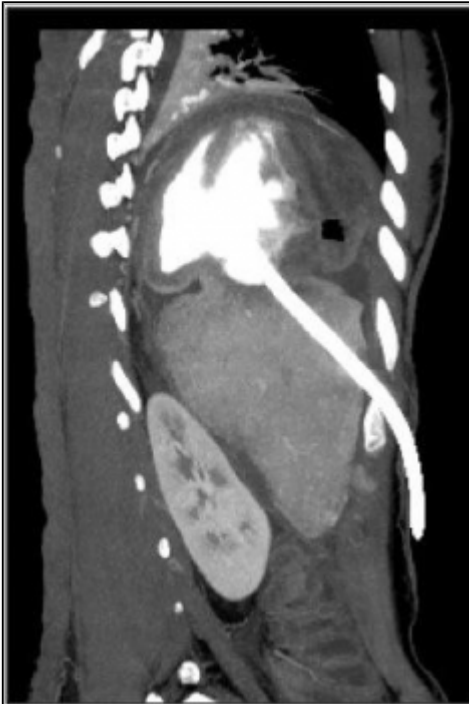


The figure shows vascular arterial phase (A); parenchymal arterial phase (B); portal phase (C); delayed phase (D). There is no contrast-enhancement of the lesion. The pericyst wall is highlighted during delayed phase.

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Area of Interest: Liver;
 Imaging Technique: MR;
 Procedure: Diagnostic procedure;
 Special Focus: Cysts;

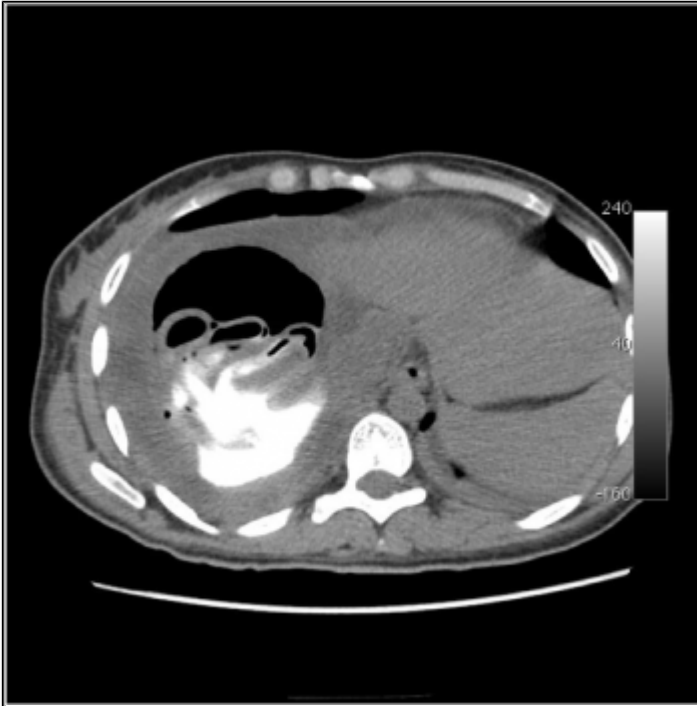
Figure 4 CT



Sagittal CT scan after iodine ionic contrast administration through the drainage.

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Area of Interest: Liver;
 Imaging Technique: CT;
 Procedure: Diagnostic procedure;
 Special Focus: Abscess;



Axial CT scan shows a voluminous formation occupying right hepatic lobe within layer of parenchymal-density tissue (germinal membrane) and air component.

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Area of Interest: Liver;
Imaging Technique: CT;
Procedure: Diagnostic procedure;
Special Focus: Abscess;



Axial CT scan after iodine ionic contrast administration shows an inhomogeneous contrast-enhancement of the cyst wall (maximum thickness, 25mm, in the cranial portion).

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Area of Interest: Liver;

Imaging Technique: CT;
Procedure: Diagnostic procedure;
Special Focus: Abscess;

Figure 5 video

Laparoscopic treatment.

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Area of Interest: Liver;
Imaging Technique: Percutaneous;
Procedure: Surgery;
Special Focus: Cysts;

MeSH

Echinococcosis, Hepatic [C06.552.664.272]

Helminth infection of the liver caused by *Echinococcus granulosus* or *Echinococcus multilocularis*.

Zoonoses [C01.908]

Diseases of non-human animals that may be transmitted to man or may be transmitted from man to non-human animals.

Liver Abscess [C01.539.830.025.020.455]

Solitary or multiple collections of pus within the liver. It is usually associated with systemic manifestations of toxemia and clinical signs of disease in the right upper quadrant of the abdomen. It was known in ancient times to Hippocrates and Celsus. (Bockus, Gastroenterology, 4th ed, p3288-9)

Echinococcosis [C03.335.190.396]

An infection caused by the infestation of the larval form of tapeworms of the genus *Echinococcus*. The liver, lungs, and kidney are the most common areas of infestation.

Parasitic Diseases [C03]

Infections or infestations with parasitic organisms. They are often contracted through contact with an intermediate vector, but may occur as the result of direct exposure.

References

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Citation

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