Cystic echinococcosis in a child

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History

A 13-year-old boy, suffering from epigastric pain, nausea and vomiting, with aggravation after meals over the past three days, came to the hospital. He lived on a livestock farm, was otherwise healthy (1.58 m tall and 46 kg in weight) and reported no other symptoms. An ultrasound examination revealed a large, heterogeneous mass with multiple cyst-like lesions in the right hepatic lobe, suspicious of hepatic cystic echinococcosis (CE). A differential diagnosis with other hepatic cystic lesions and neoplasms was required and a CT examination was performed for further assessment.

Diagnosis

CT images showed a large, oval, subdiaphragmatic mass, measuring 11 x 13 x 13 cm in size, in the right hepatic lobe, involving segments VI, VII and VIII. The mass was multivesicular with a well-defined thin wall. No intralesional enhancement was seen in all phases, except a mild and heterogeneous enhancement in the thin wall in the delayed phase. The mass compressed and displaced the portal veins which caused moderate narrowing here. No signs of calcifications or of bile duct dilation were evident. A diagnosis of a CE was suggested. Subsequently, the patient underwent a successful total cystectomy and recovered uneventfully. The histopathological results confirmed the diagnosis of a CE.

Comments

Echinococcosis is a zoonosis caused by metacestodes of Echinococcus. It refers principally to two severe zoonotic tapeworm diseases in humans – CE caused by Echinococcus granulosus, and Alveolar echinococcosis (AE) caused by Echinococcus multilocularis. [1] The liver is the most common site of the infection, and a differential diagnosis with other hepatic cystic lesions and neoplasms is mandatory requiring a 4-phase scan protocol. A differential diagnosis between CE and AE is also important, as they vary in their classifications, clinical manifestations, course of disease, treatment approaches and prognosis. CE is typically characterized as unilocular fluid-filled hydatid cysts causing displacement and pressure atrophy. However, with time, internal septations and daughter cysts can form, disrupting the unilocular pattern. AE is specified as a multilocular root-like network of interconnecting vesicotubular formations, expanding by infiltrative growth and demonstrating malignant behavior. Imaging is essential during the diagnosis, follow-up and management of the disease. Ultrasound, being the primary choice, is usually complemented or validated by CT and/or MRI imaging. These being indicated in case of subdiaphragmatical lesions, disseminated disease, extraabdominal location, complicated cysts and for presurgical evaluation. [2] Both CT and MR provide anatomical and morphological characterization of the lesions. CT, being widely available, is faster, less expensive and can depict the characteristic pattern of calcifications. Chinococcal cysts grow slowly and have a long incubation period. Even though infections may be acquired in childhood, most cases first become symptomatic, and are diagnosed, in adult patients. Only 10–20% of cases are diagnosed in patients younger than 16 years. [3] The preferred treatment for a hepatic CE is surgery. Only the excision of the cyst, without any leakage, leads to a complete cure. [4] ●

References

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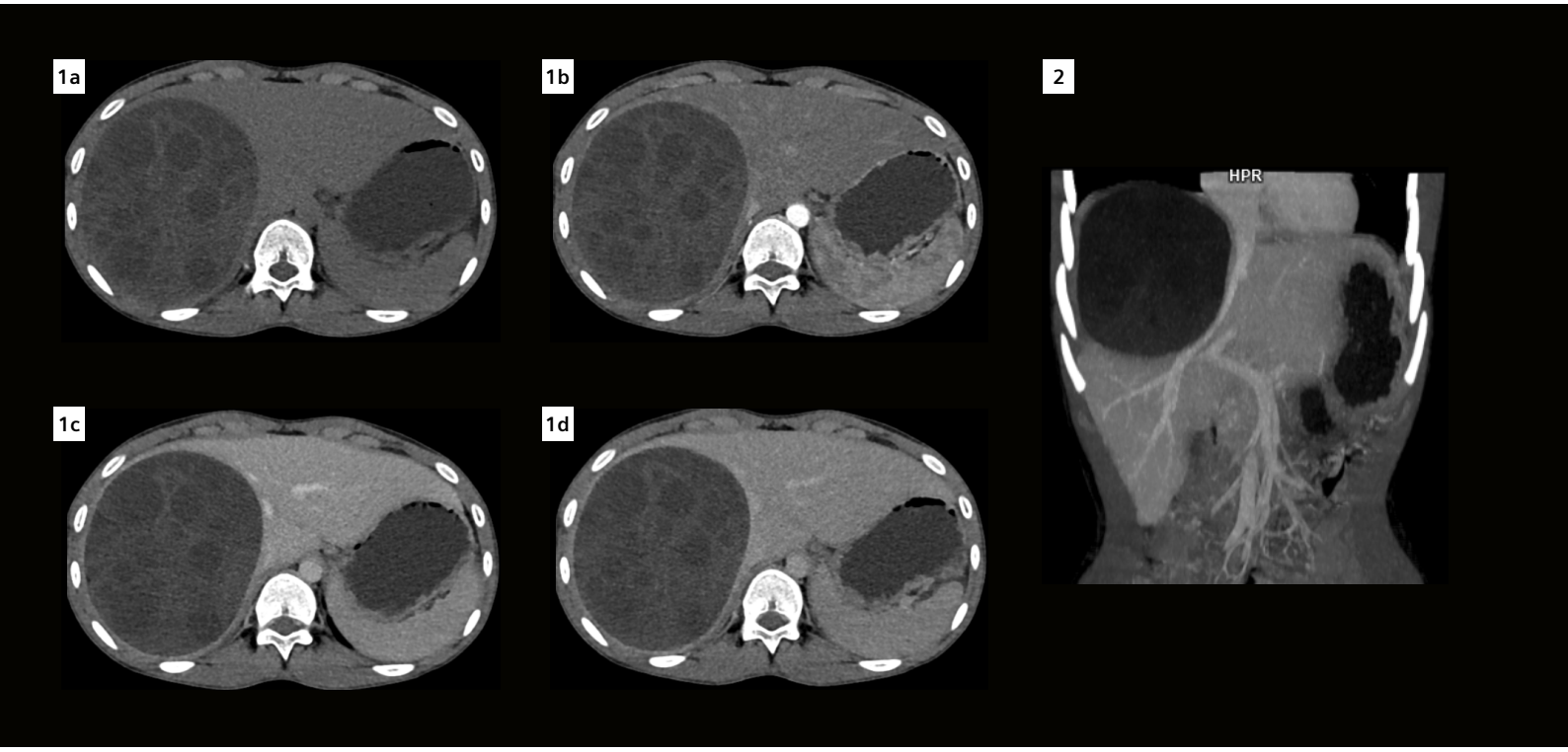
Examination Protocol

Scanner	SOMATOM Drive
Scan area	Abdomen/Pelvis
Scan mode	Spiral mode (native, arterial, venous, & delayed phase)*
Scan length	434 mm
Scan direction	Cranio-caudal
Scan time	8.5 s
Tube voltage	120 kV
Effective mAs	56 mAs
Dose modulation	CARE Dose4D
$CTDI_{vol}$	3.6 mGy
DLP	163.2 mGy*cm
Rotation time	0.5 s

Pitch	0.6
Slice collimation	128 x 0.6 mm
Slice width	2.0 mm
Reconstruction increment	2.0 mm
Reconstruction kernel	I26, ADMIRE 3

** same parameters for all 4 phases*

Contrast	300 mg/mL
Volume	30 mL + 30 mL saline
Flow rate	2 mL/s
Start delay	Bolus tracking triggered at 100 HU in the abdominal descending aorta + 5 s



1 Axial images of the native (Fig. 1a), arterial (Fig. 1b), portal venous (Fig. 1c) and delayed (Fig. 1d) phases show a large, well-defined, multivesicular mass in the right hepatic lobe, without intralesional enhancement. Mild and heterogeneous enhancement in the thin wall is visualized in the delayed phase.

2 A coronal thin MIP image shows the compression and displacement of the portal veins with moderate narrowing caused by the large mass.

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