

Abdominal pain in a veterinarian with cysts in the liver

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A 44-year-old male veterinarian from the Kyrgyz Republic has been living in the Czech Republic for the last 18 months. He has a history of vomiting, nausea and epigastric pain which always lasted approximately one hour. The vomiting and epigastric pain worsened, and would persist for several hours, so he was hospitalised in May 2005. Physical examination revealed stable vital signs; the abdomen was soft with mild epigastric tenderness. Liver function tests showed elevated serum values: total bilirubin 32 mmol/l (range 0-20), alanine transaminase 3.65 μ kat/l (range 0-0.8), aspartate transaminase 6.23 μ kat/l (range 0-0.65), alkaline phosphatase 2.67 μ kat/l (range 0-2.13), and γ -glutamyl transpeptidase 7.44 μ kat/l (range 0-1.1). Other laboratory investigations were C-reactive protein 4 mg/l (range 0-8), white blood cells 6.3×10^6 /l (range 4.0-10.0), eosinophils 0.16 (range 0.00-0.05) and S-IgE total >2000 IU/ml (range 1.0-200.0).

Surgical examination ruled out any acute abdominal event.

CT scanning of the abdomen was performed (figures 1 and 2) which showed multiple multilocular septic cystoid lesions with large calcifications in the right liver lobe and lobus quadratus, cholecystolithiasis and one cyst in the core of the left kidney.

WHAT IS YOUR DIAGNOSIS?

Is it possible to judge the diagnosis from the characteristics of the lesions?

Figure 1. CT scan of the abdomen demonstrates multilocular cysts and large calcifications in the right liver lobe

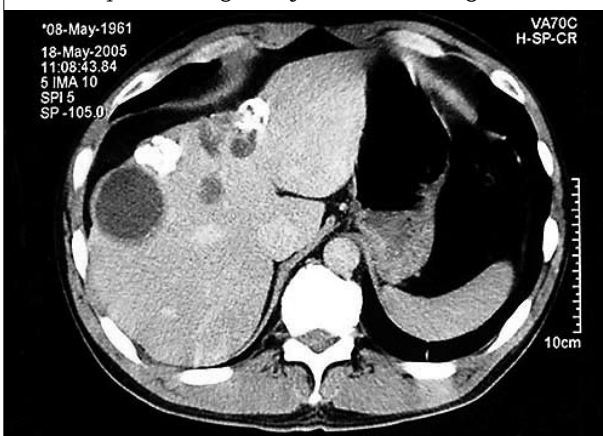


Figure 2. CT scan demonstrates cystoid multiseptic lesion in the right liver lobe



ANSWER TO PHOTO QUIZ (ON PAGE 119)

ABDOMINAL PAIN IN A VETERINARIAN WITH CYSTS IN THE LIVER

DIAGNOSIS

The diagnosis is hydatid disease, with hypereosinophilia due to toxocariasis.

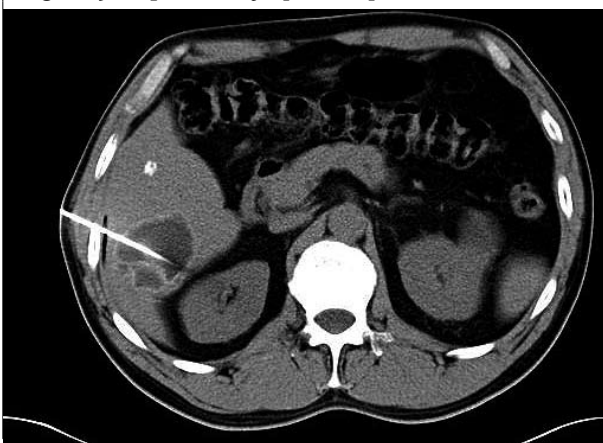
Hydatid disease (also known as cystic echinococcosis) is caused by the larval stage of the small tapeworm *Echinococcus granulosus*, whose primary host is the dog (particularly sheepdogs), and whose cysts mainly affect sheep. Humans are infected by the eggs that migrate from the gut to parenchymal organs, usually the liver and occasionally the lung, where they develop into cysts containing several tapeworm scolices. *E. multilocularis* tapeworm affects foxes (but can exist in dogs), and cysts are found in small rodents on which the foxes prey. This disease (alveolococcosis) is very aggressive, tumour-like and induces much more serious liver damage than cystic echinococcosis.^{1,2}

Serological examinations were performed with the following results: positive values on hydatid disease (using ELISA and confirmation with haemagglutination reaction), positive values on toxocariasis and cysticercosis (ELISA in both). The patient was treated with albendazole at a dose of 400 mg twice daily for four weeks, and this was repeated three times, with two-weekly intervals between the courses. Liver and renal function were checked during the treatment. We saw a rapid normalisation of the elevated values of aminotransferases after starting the therapy, but alkaline phosphatase and γ -glutamyl transpeptidase were still moderately elevated. High values of eosinophilia (ranging between 0.21 and 0.25) persisted after the albendazole treatment and repeatedly positive serological examinations for toxocariasis made it possible to determine the concomitant diagnosis of toxocariasis. Toxocariasis is the most common cause of asymptomatic eosinophilia.² Eosinophilia is not usually seen in patients with hydatid disease,¹ moreover the therapy with albendazole is simultaneously efficacious in the treatment of toxocariasis. We interpret the positive titres for cysticercosis as a cross-reaction with hydatid disease, because both diseases are invasive cestode infections. We performed aspiration of the hydatid cyst in the liver after the first month of therapy (figure 3). The hydatid cyst did not contain fluid, so we could not instil ethanol into it, but we could also avoid major surgery. It might be important to mention that ethanol infusion is contraindicated in liver cysts if there is any possibility of a connection to the biliary tree.³

The CT findings (figures 1 and 2) are consistent with hydatid disease. Hydatid cysts at CT scanning are sharply limited and round; density is close to water (10-20 Hu) with masses in the cyst; the wall is thin. The cyst may be multilocular with internal septa representing the daughter cysts; calcifications can be present in the wall. Benign cysts are sharply, softly contoured, round or oval, with density close to that of water (10-20 Hu), with a thin wall, without internal septa, nonenhancement after administration of contrast medium intravenously. In polycystic liver disease there are multiple cysts of a low density (10-20 Hu); cysts are of different sizes, mostly up to 2 cm.

Pyogenic abscess: sharply limited, homogenous area with a density usually higher than in a benign cyst but lower than in a solid tumour (30-40 Hu), nonenhancement after administration of a contrast medium intravenously but a ring of tissue can be saturated on the periphery of the cavity more than in healthy tissue. A similar picture may be found also in solid, necrotic tumours.

Figure 3. Aspiration of hydatid cyst in the liver



Amoebic abscess: sharply limited, homogenous area with a density usually higher than a benign cyst but lower than a solid tumour (30-40 Hu). Saturation is not visible, even after administration of the contrast substance intravenously; however, the ring on the periphery of the cavity can be saturated. This saturation can be higher than the density of surrounding healthy tissue. A similar finding can occur in necrotic tumours.

Mycotic abscess: multiple, small, round lesions of low density, some lesions can have centrally increased density. The characteristic 'honeycomb' appearance on computed tomography scans was described recently in patients with *Burkholderia pseudomallei* liver abscesses.⁴

REFERENCES

1. Infections of the Liver. In: Bannister BA, Begg NT, Gillespie SH, eds. Infectious diseases, 2nd ed, Oxford : Blackwell Science, 2000:191-214.
2. Charles H. King: Cestodes (Tapeworms). Theodore E. Nash (Visceral Larva Migrans and Other Unusual Helminth Infections). In: Mandell, Douglas, and Bennett's, eds. Principles and Practice of Infectious Diseases, 6th ed, Vol 2. Philadelphia:Elsevir Churchill Livingstone, 2005;3285-93 and 3293-5.
3. Mackowiak PA, Lockwood TE, Jones SR, Thal ER, Smith JW. Pseudocholelithiasis in an elderly man with calcified hydatid cysts. Am J Med 1976; 60:707-10.
4. Apisarnthanarak A, Apisarnthanarak P, Mundy LM. Computed Tomography Characteristics of *Burkholderia pseudomallei* Liver Abscess. Clin Infect Dis 2006; 42:989-93.