

Multiple cysts in a dog liver

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Signalment: 3-year-old female neutered Labrador named Pippa

Specimen: Computed tomographic (CT) image of the cranial abdomen, FNA of the fluid from one of the cysts

History and clinical findings:

Pippa was a 3-year-old female castrated Labrador that was referred to the Clinic for Small Animal Medicine, Ludwig Maximilian University Munich. Pippa's current medication included metacam twice daily due to her existing orthopedic (meniscus) problems. On her initial presentation a week earlier, she had markedly enlarged abdomen and decreased general condition. CBC and biochemistry analysis (performed on a Fuji dry-chemistry analyzer FDI 4000i) by a referring veterinarian were unremarkable, except for a mild increase in alkaline phosphatase activity (90 U/l, reference interval 13-83 U/l), and a mild increase in total protein (7.8 g/dl, reference interval 5-7.2 g/dl). Albumin was 3.2 g/dl (reference interval 2.6-4 g/dl), revealing increased globulins of 4.6 g/dl.

Pippa was referred to imaging center for CT of the abdomen. Multiple non-vascularized, fluid-filled cysts have been detected (Fig. 1). In addition, focal areas of partial mineralization were noted in the right liver lobe. Hepatic lymph nodes were moderately enlarged, and other abdominal structures were unremarkable. Differential diagnosis included echinococcosis, abscess, and hepatic necrosis (e.g. secondary to hepatic neoplasia, but considered unlikely in this case). In order to further investigate cysts detected on CT, patient has been referred for an ultrasound-guided biopsy.

Clinical examination performed in Clinic for Small Animal Medicine at LMU was unremarkable, except for mild dehydration (less than 5%), and a bulging, non-painful abdomen that could not be palpated completely. Contrast-enhanced ultrasonographic imaging has been performed. The liver was significantly enlarged. Only small parts on the right side showed a normal liver architecture. Most of the liver parenchyma appeared very inhomogeneous with large cavitory lesions of up to 20 cm diameter. Cystic structures with irregular wall and hypoechoic content were detected in several liver lobes. No increased perfusion of the cystic wall and no perfusion of the cysts could be seen on color doppler examination. Ultrasound-guided fine-needle aspirate (FNA) samples of the fluid from one of the cysts have been obtained for cytological examination. Analysis of the fluid revealed total nucleated cell count of $11.77 \times 10^9/L$, and refractometric protein concentration of 4.3 g/dl.

Figure 1. Transverse computed tomographic image of the cranial abdomen of a 3-year old Labrador showing one of the liver cysts.

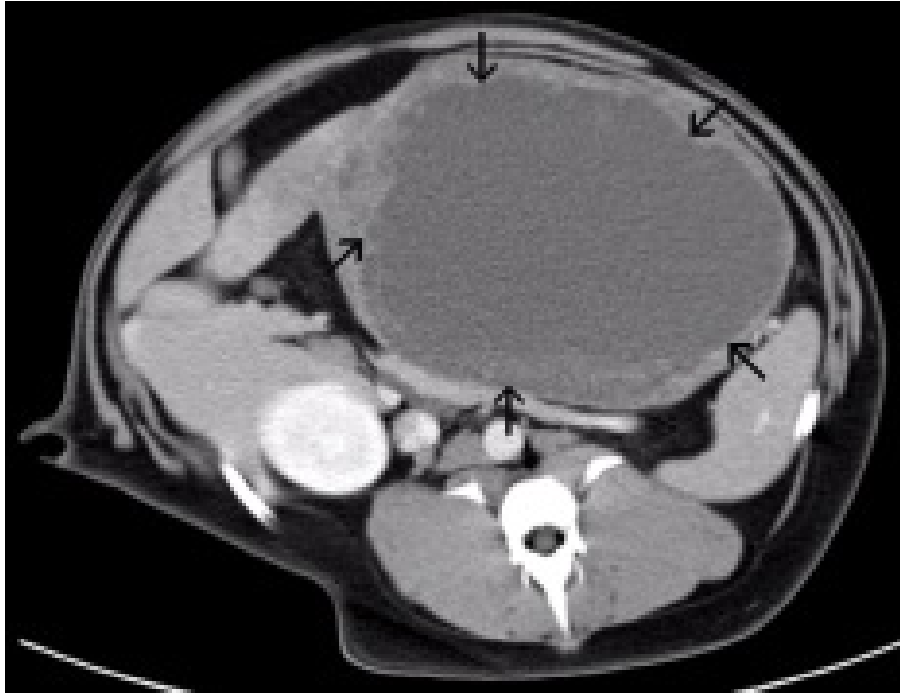


Figure 2. Fine-needle aspirate of a liver cyst from a 3-year old Labrador. Note the numerous large membrane-like structures. Modified Wright's stain. Scale bar = 500 μ m.

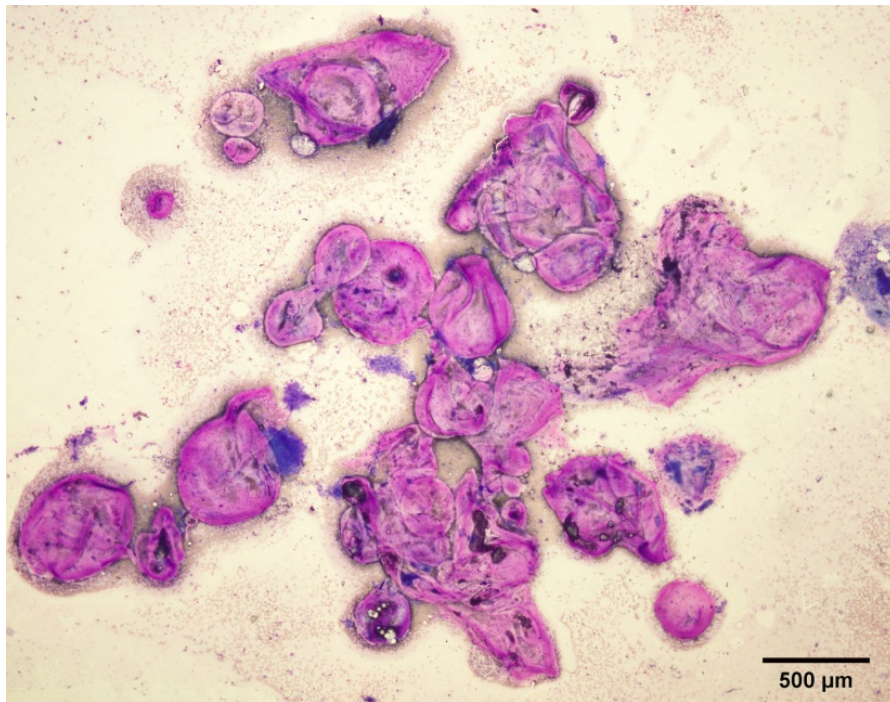


Figure 3. Fine-needle aspirate of a liver cyst from a Labrador. Modified Wright's stain. Scale bar = 100 μ m.

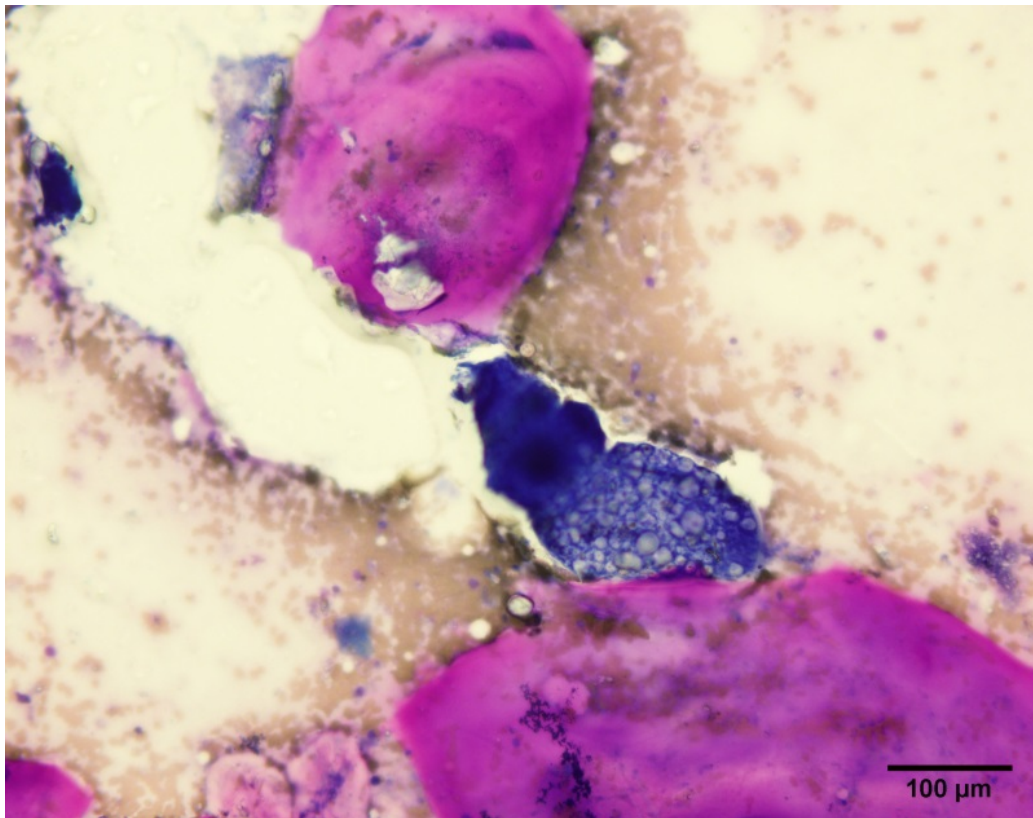
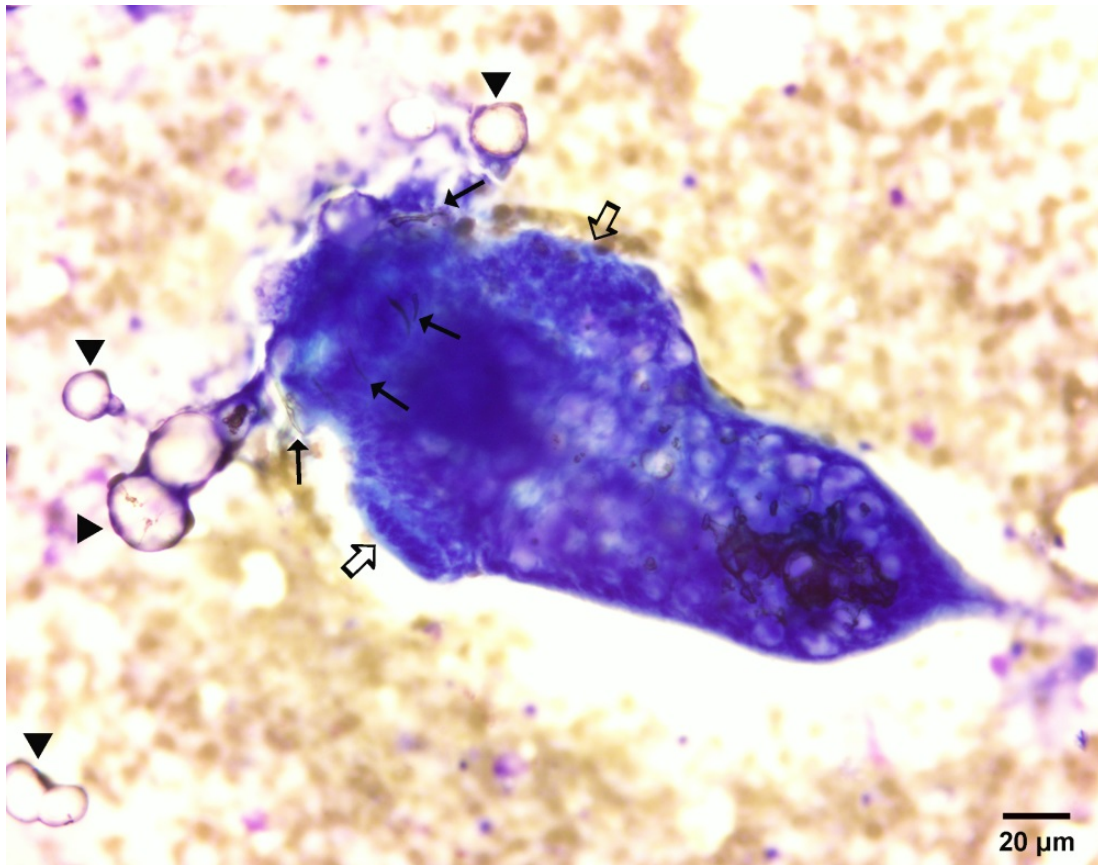


Figure 4. Fine-needle aspirate of a liver cyst from a Labrador. Higher magnification. Modified Wright's stain. Scale bar = 20 μ m.



Questions:

1. Which additional tests can be performed?
2. Does this dog pose a zoonotic risk to the owner?