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Don't Forget the Fox in The Black Forest

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1. Text

Before already scheduled liver surgery a previously healthy 19-years old female was referred to our pediatric oncology outpatient clinic by parents wish for re-evaluation of a liver mass. The mass was incidentally detected by ultrasound due to a 6-months history of abdominal pain. The adolescent lived in the Black Forest area and had not travelled abroad or performed any special eating habits. There was no contact to dogs or hunters. B-mode ultrasonography showed a single heterogeneous echogenic liver mass with slight central calcification and without cystic components. Due to heterogenous contrast enhancement on MRI without cystic appearance and rapid washout in portal venous and late phase after hyperenhancement in arterial phase on contrast-enhanced ultrasound (CEUS) the mass was externally classified as hepatocellular carcinoma (see Figure 1 + 2; Cai et al., 2019). Liver function tests and AFP value were within normal limits. HCC is very rare in this age group, with fibrolamellar carcinoma being the most common HCC in adolescents (Kelly et al., 2015). Due to the very low incidence of liver cancer and unremarkable medical history for metabolic or infectious disease like tyrosinemia or hepatitis C we considered other differential diagnoses. Surprisingly, the Echinococcus IgG was 19◦0 U/ml (reference value <10 U/ml) and Echinococcus multilocularis ELISA was positive with an index of 10◦1 (reference value <0◦9). Treatment with albendazol was started several days preoperatively to avoid intraoperative spilling and the patient underwent a left lateral liver resection. Histology was compatible with Echinococcus multilocularis infection (see Figure 3). The patient is doing well more than 24 months after resection and has continued albendazol therapy for a total of 1 year. This case highlights the importance of suspecting very rare infectious diseases mimicking tumors even in healthy and young patients from suburban areas without known risk factors for infections.

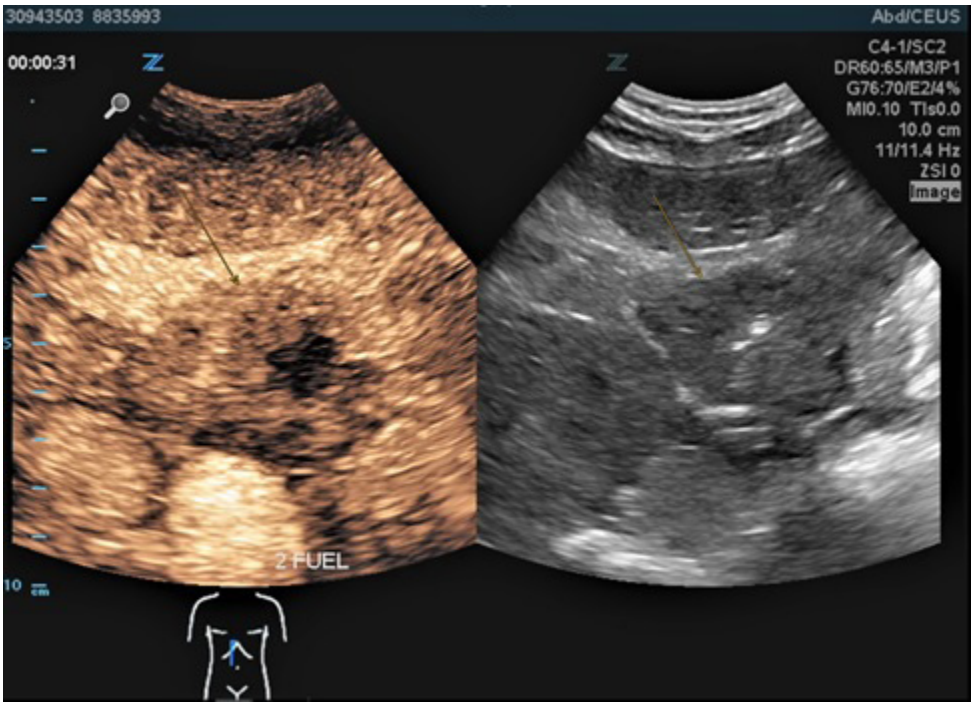

Figure 1: Contrast enhanced ultrasonography of the liver displaying solid, inhomogenous liver lesion with slight central hyperechogenicities and immediate uptake of contrast agent with rapid washout starting from the center of the lesion.

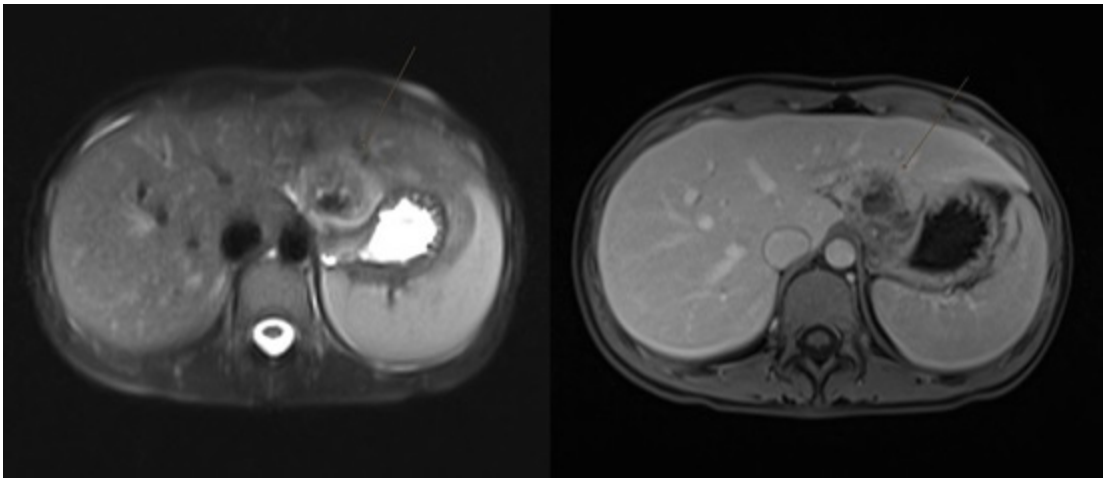

Figure 2: Axial MRI of the abdomen showing a solid, inhomogeneous and diffusion-impaired liver lesion in segment III with slight contrast enhancement and central hypoperfusion without cystic-septated appearance of echinococcus cysts. T_2-weighted MRI (left) and T_1-weighted MRI with fat saturation and contrast enhancement (right).

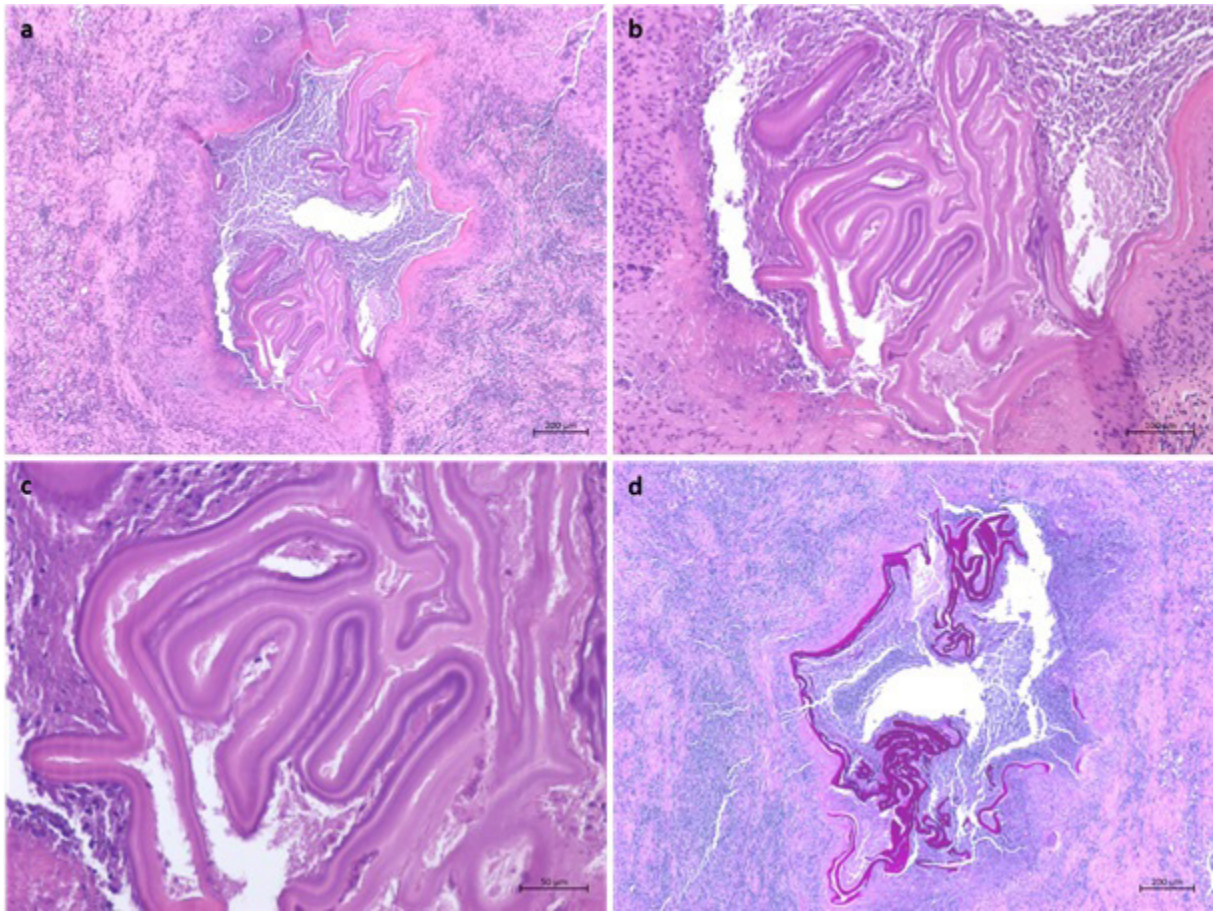

Figure 3: Hematoxylin and Eosin (H&E) stained sections of an *Echinococcus multilocularis* affected liver in three different magnifications (**a** 40x, **b** 100x and **c** 200x magnification). The laminated parasitic cyst is surrounded by a granulomatous inflammatory reaction. The laminated cyst demonstrates the typical strong Periodic Acid-Schiff staining (**d** 40x magnification).

References

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