Large Heterogeneous Calcified Masses in Liver: A Diagnostic Dilemma

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A 27-year-old female presented to our hospital with complaints of jaundice and epigastric pain. The patient had history of progressive cholestatic jaundice for the last 3 months. She was also suffering from continuous epigastric pain for the last 1 month. General physical examination revealed icterus. On palpation, hepatomegaly was noted. Laboratory investigations revealed mild anaemia (10 g/dl), increased white blood counts ($13,000/\text{mm}^3$) and normal platelet count ($380 \times 10^3/\text{mm}^3$). Liver function tests were abnormal (increased total

serum bilirubin 8 mg/dl, serum alkaline phosphatase 1000 IU/L, serum alanine aminotransferase 110 IU/L, aspartate aminotransferase 100 IU/L). Ultrasonography showed large heterogeneously hypoechoic mass lesions in liver, largest measuring approx. 14×13 cm in size. There were multiple punctate echogenic foci with shadowing within these lesions suggestive of calcification. Multiphasic CT was performed to further characterize these lesions. What is your diagnosis based on CT images (Figure 1(A-C))?

Figure 1 (A) Axial non-contrast CT scan showing large heterogeneous hypodense masses (arrow) with irregular margins and several scattered calcific foci in liver. (B and C) Post contrast arterial phase and venous phases showing no enhancement in the masses (arrows). Focal biliary dilatation was seen in left lobe of liver (dashed arrow).

Keywords: liver, hydatid, alveolar, *Echinococcus multilocularis*

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Abbreviations: cm: centimeter; CT: computed tomography; g/dl: grams per decilitre; IU/L: international units per litre; mm^3 : cubic millimetre; U/L: units per litre

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Images in Hepatology—Answer

Figure 2 (A) Haematoxylin and eosin stain showing cellular membranous areas in the background of dense fibrosis. (B) Periodic acid–Schiff special stain showing bright magenta colour membranous areas of *Echinococcus multilocularis*.

Hepatic Alveolar Echinococcosis (caused by *Echinococcus multilocularis* parasite).

On non-contrast CT, large heterogeneous hypodense masses with irregular margins and several scattered calcific foci, were seen in liver (Figure 1(A), arrow). No enhancement was seen on post contrast arterial phase (Figure 1(B), arrow) or venous phase (Figure 1(C), arrow). Focal biliary dilatation was seen in left lobe of liver (Figure 1(C), dashed arrow). CT features were suggestive of Hepatic Alveolar Echinococcosis. Partial surgical resection of the lesions was undertaken. Histopathological evaluation of the resected specimen was done to confirm the diagnosis. Cellular membranous areas in the background of dense fibrosis were seen on haematoxylin and eosin stain (Figure 2(A)). Bright magenta colour membranous areas of *E. multilocularis* were seen on Periodic acid–Schiff special stain (Figure 2(B)). Patient was put on antihelminthic drugs and she improved symptomatically.

no enhancement or faint enhancement on delayed phases.⁴ These features are characteristic for Hepatic Alveolar Echinococcosis and help to differentiate from other hepatic lesions. The differential diagnosis on imaging includes cholangiocarcinoma, biliary cystadenoma, biliary cystadenocarcinoma and metastasis. It is important to diagnose Hepatic Alveolar Echinococcosis early, as without timely intervention, prognosis is dismal. The only curative treatment is surgical resection.⁵

CONFLICTS OF INTEREST

The authors have none to declare.

DISCUSSION

In the life cycle of *Echinococcus multilocularis*, foxes are definite hosts and rodents the intermediate hosts.¹ Human beings are accidental hosts, who become infected by ingestion of plants or water, which are contaminated by eggs of *E. multilocularis* or by contact with the host.² Liver is the most common site of infection.³ Diagnosis is made with the help of imaging, serology, histopathology and detection of parasite nuclei acids. Hepatic Alveolar Echinococcosis is seen on ultrasound as amorphous, heterogeneous, hyperechoic masses.³ CT reveals infiltrating tumour-like masses with areas of hypoattenuation secondary to necrosis, multiple punctate scattered calcifications, and

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