Primary hepatic lymphoma: contrast-enhanced spiral CT and dynamic contrast-enhanced MRI findings

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Case Type: Clinical Cases
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Patient: 70 years, male

Clinical History:

The patient was referred for investigation of a hepatic mass of unknown nature detected at a previous US examination. He had normal laboratory tests and no history of malignancy.

Imaging Findings:

The patient was referred for further investigation, after a mass of unknown nature located in the left hepatic lobe was detected on US examination. The patient had concomitant liver cirrhosis and normal serum alpha-fetoprotein and carcinoembryonic antigen levels.

The patient underwent a repeat abdominal US examination and then contrast-enhanced spiral CT of the abdomen.

The abdominal US study showed the presence of a mass arising in the left hepatic lobe, with a maximum diameter of 10 cm. The mass, partially exophytic and lobulated, compressed and dislocated the left portal branch and middle and left hepatic veins, but did not infiltrate these vessels. The mass was hypoechoic with internal and peripheral anechoic areas.

On contrast-enhanced spiral CT examination the mass appeared hypodense both on unenhanced and on arterial and portal venous phases.

Because neither US nor contrast-enhanced spiral CT examination allowed diagnosis of the mass, the patient underwent dynamic contrast-enhanced MRI examination. On MRI examination the mass showed low signal intensity on T1-weighted SE images and high signal intensity on fast T2-weighted SE images. After the administration of Gd-DTPA contrast agent, the mass showed a slight enhancement in the arterial phase on T1-weighted GRE sequences.

US, contrast-enhanced spiral CT and dynamic contrast-enhanced MRI studies of the abdomen did not show any other parenchymal or lymphonodal pathological findings. Contrast-enhanced spiral CT and dynamic contrast-enhanced MRI findings suggested the diagnosis of a primitive highly cellulated and poorly vascularised hepatic lesion such as hepatic primary lymphoma.
Histological confirmation of the mass, obtained by performing US-guided tissue-core percutaneous biopsy, showed features typical of non-Hodgkin's lymphoma, diffuse large B-cell type (CD20+; CD79a+; CD3-; CD45RO-).

**Discussion:**

Liver lymphoma is considered to be primary when the malignancy is limited to the hepatic parenchyma. Primary hepatic lymphoma is extremely rare; fewer than 100 cases of this malignancy have been reported in the literature. Non-Hodgkin's B-cell variety has the highest prevalence. This tumour is more common among immunocompromised patients. Moreover a strong association has been identified between chronic hepatitis C and hepatic lymphoma. It typically occurs during the fifth decade of life and has a male predominance (1, 2).

The most common clinical features are abdominal pain or discomfort, weight loss and fever. Liver function tests are usually normal except for elevated lactic dehydrogenase and alkaline phosphatase levels. The tumour is usually a single large mass involving both hepatic lobes, usually composed of lymphocytes reacting with B-cell markers. Most cases of primary lymphoma of the liver are of intermediate or high grade according to the classification of the Working Formulation for Clinical Usage. Diffuse large cell lymphoma is the most commonly encountered histological subtype.

Sonographically it appears as a large hypoechoic mass, sometimes with a cystic-like appearance (2). In the literature, CT findings of hepatic lymphoma consist of a large, lobulated solitary mass with decreased attenuation with respect to the surrounding liver parenchyma, on unenhanced, arterial phase and portal venous phase images. The degree of necrosis and presence of calcification can be variable (2, 3). On MRI the tumour usually appears homogeneously hypointense to the liver parenchyma on T1-weighted imaging, variously hyperintense in T2-weighted imaging and enhanced minimally on early post-gadolinium spoiled gradient echo images (4, 5).

Although the appearance of primary lymphoma on any single imaging study is not specific for lymphoma, the integration of the findings of several different imaging studies may suggest the diagnosis.

In this case CT findings revealing a hypovascular lesion allowed the diagnosis of typical hypervascular hepatocellular carcinoma (HCC) to be ruled out. However, On MRI examination the sclerosing variety of HCC, which consists mainly of desmoid tissue, appears hypointense in T2-weighted images. On the contrary the MRI images in this case clearly showed hyperintensity in this sequence. In the differential diagnosis of this case a solitary metastasis must also be considered. However, a unique, large metastasis is very unusual in the absence of a known, primary tumour. Lastly the appearance of a normal biliary tree and the absence of a late enhancement on dynamic MR imaging are useful signs in order to exclude a cholangiocarcinoma (1).

**Differential Diagnosis List:** Primary hepatic lymphoma

**Final Diagnosis:** Primary hepatic lymphoma

**References:**

Figure 1

a

Description: Unenhanced CT scan shows a large low attenuation mass that occupies most of the left hepatic lobe. Origin:

b

Description: In the arterial phase the lesion appears hypodense. Origin:
Description: In the portal-venous phase the lesion appears hypodense. Origin:

Description: In the delayed phase the lesion appears hypodense. Origin:
Figure 2

a

Description: T1-weighted image of the liver shows a homogeneous hypointense mass. Origin:

b

Description: T2-weighted image at the same level shows a hyperintense mass that is almost isointense to fat. Origin:

c

Description: After Gd-DTPA administration the nodule reveals moderate enhancement in the arterial phase. Origin:
Figure 3

a

Description: Liver tissue (right) replaced by neoplastic lymphocytes (left). (H & E x40) Origin:

b

Description: Large lymphoma cells with vesicular nuclei and moderate amounts of cytoplasm; mitoses are easily identifiable. (H & E x250) Origin:

c

Description: CD20 immunostain: neoplastic cells show diffuse, strong reactivity; morphology and immunophenotype are consistent with diffuse large B-cell lymphoma (according to REAL classification). (Haematoxylin counterstain x250) Origin: