RADIOLOGIC PATHOLOGIC CORRELATION / Gastrointestinal imaging

A hepatic and renal presentation of B-cell non-Hodgkin lymphoma

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KEYWORDS

Lymphoma; Renal masses; Hepatic nodule; MRI; Biopsy

Lymphoma of the liver with a follicular growth pattern is rare and an association with renal involvement may assist with diagnosis.

Clinical case report

A 37-year-old male attended a consultation due to the progressive appearance of jaundice and pruritus. He had no known medical history and no risk factors for chronic liver disease. He remained in good general health. Laboratory tests showed cholestasis with conjugated bilirubin changes (total bilirubin = 450 \( \mu \)moles/L), negative viral serology and a normal complete blood count.

An abdominal sonogram demonstrated a single mass of the left liver, extending to the hepatic hilum, leading to dilated intrahepatic bile ducts.

An MRI scan of the liver was carried out, which showed a left liver mass with slightly high signal intensity on T2-weighted images (Fig. 1a), low signal intensity on T1-weighted images (Fig. 1b), no enhancement with a Gadolinium contrast agent irrespective of the time since the injection (Fig. 1c) and even with delayed phase acquisition, and a non-dysmorphic liver. The intrahepatic bile ducts were noted to be dilated and there was left liver atrophy.
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Figure 1. Axial MRI view on T2-weighted sequence (a): the left liver mass (white arrow) shows slightly high signal intensity. The mass resting on the hilum is causing the intrahepatic bile ducts above to dilate (dotted arrows). The liver (F) and the spleen (R) show normal signals and morphology. Axial MRI view on T1-weighted sequence with fat suppression (b): the left liver mass (white arrow) shows low signal intensity. Axial MRI view on T1-weighted sequence with fat suppression and portal phase gadolinium enhancement (c): the liver mass (white arrow) does not enhance.

Figure 2. Axial MRI view on T1-weighted sequence with fat suppression and portal phase gadolinium enhancement. Images a and b show bilateral renal masses that are hypointense compared to normal kidneys.
Immunohistochemistry usually increased of (having masses)

This MRI also showed several rounded, sub-capsular renal masses that were isointense on T1- and T2-weighted images, homogenous, and did not enhance with use of a contrast agent (Fig. 2). These findings are all in opposition to those of a conventional clear cell renal cell carcinoma, which is usually a single encapsulated lesion that is non-homogenous (having both solid and necrotic components), and shows increased vascularisation (early and intense enhancement).

The proposed diagnosis was hepatic and renal lymphoma.

A percutaneous needle biopsy of the mass at the left liver lobe was carried out and this led to confirmation of the diagnosis. Pathological assessment of the biopsy specimen showed tumour infiltration made up of medium to large cells with substantial nuclei and clear cytoplasm (Fig. 3). Immunohistochemistry demonstrated the following phenotype: CD20+, CD3+ and Cyclin D1+, CD10–, BCL6– (Fig. 4).

The final diagnosis was the pleomorphic variant of mantle cell lymphoma.

Discussion

Both renal and hepatic lymphomas are rare and account for less than 1% of liver and kidney tumours. The vast majority of cases are secondary non-Hodgkin lymphoma. Primary hepatic or renal lymphomas are exceptionally rare, because in their normal state these organs do not contain lymphoid tissue [1]. Around 200 cases of primary renal lymphoma are reported in the literature.

The lymphoma’s pattern of growth in the liver is either diffuse or diffuse and follicular, usually sparing the vessels and the bile ducts [2]. These lymphomatous masses show low signal intensity on T1-weighted images and high signal intensity on T2-weighted images, with very minimal enhancement seen or not seen at all are irrespective of the delay in acquisition.

A renal lymphoma is typically made up of multiple, bilateral, solid masses (60% of cases) that are homogenous and measure between 1 and 3 cm. When a contrast agent is used, very minimal enhancement is seen and the masses seem to be hypodense/hypointense compared to the normal kidney [3].

A liver biopsy is recommended when lymphoma is suspected (evidence level D, no data or only supported by case series) [4]. The biopsy is ultrasound-guided and one needle entry is usually sufficient. The specimen must be swiftly immersed in 10% buffered formalin and it must be sent to the laboratory in the following few hours. Studying the fragment fixed in formalin allows for morphology to be analysed and immunohistochemistry to be carried out. The analysis of morphology is itself divided into cytology (type and size of cells) and histology (architecture of and between the cells). If a lymphoma is suspected then special preparations can be

Figure 3. Histology slide of the liver mass biopsy. PAS staining. Medium to large cells with an increased nuclear-cytoplasmic ratio (black arrows).

Figure 4. Histology slide of the liver mass biopsy. Immunohistochemistry. Positive CD20 (a, black arrows) and CD5 markers (b, white arrows), supporting the diagnosis of lymphoma.
used (evidence level B, good quality studies) [4]. In these cases the freezing of a biopsy fragment is advised, as this improves conservation of tissue DNA and RNA. Immunophenotyping can also be studied using this fragment, as can gene rearrangement and an assessment can be made of whether oncogenes are present.

Intraperitoneal haemorrhage is the most serious potential complication of biopsy, with the overall risk evaluated at between 0 and 2.5% with a 0.4% mortality rate for malignant tumours [5]. Haemorrhage may occur over 24 hours later in cases of lymphoma.

The contraindications to percutaneous biopsy are: compromised haemostasis (PT < 50%, ACT > 1.5 control and platelets < 60,000/mL), ascites, and dilated intrahepatic bile ducts [4]. There are specific precautions that must be taken during the biopsy: a coaxial biopsy system must be used, the healthy lobe must not be crossed if the disease affects one lobe only, and a section of healthy liver should always be left between the point where the capsule is punctured and the tumour.

CD20 is one of the classic immunohistochemical markers of B-cell lymphoma, while cyclin D1+ (which may or may not be combined with CD5+) is suggestive of mantle cell lymphoma [6].

The renal abnormalities were highly suspicious for this diagnosis, but the liver involvement was atypical, given the appearance of a single nodule and the dilated intrahepatic bile ducts above the hilar mass.

This case report illustrates the fact that analysing the whole of an imaging examination can straighten out a difficult diagnosis. In this case, it was because of the typical features of the solid and bilateral, non-enhancing renal masses that we suspected a diagnosis of lymphoma. The MRI findings for the renal masses were in distinct opposition to those of conventional clear cell renal cell carcinoma, which is usually a single encapsulated lesion that is non-homogenous (having both solid and necrotic components) and shows increased vascularisation (early and intense enhancement). Based on this suspicion, diagnosing the hepatic disease was much more straightforward and the patient was given the appropriate treatment.

**Disclosure of interest**

The authors declare that they have no conflicts of interest concerning this article.

**References**


