# Primary lymphoma of the liver: a diagnostic surprise

Luís Amaral Ferreira, João Filipe Costa, Paulo Donato, Filipe Caseiro-Alves

Medical Imaging Department, Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal

**Correspondence to**
Luís Amaral Ferreira,
luisamaralferreira@gmail.com

Accepted 13 December 2018

## DESCRIPTION

An asymptomatic 45-year-old man, with no relevant medical history, underwent an abdominal ultrasound that revealed a markedly hypoechoic focal liver lesion in S4b.

Contrast-enhanced multidetector CT (MDCT) was performed for further characterisation. The nodule displayed heterogeneous enhancement in the late arterial phase (figure 1A), with sustained enhancement in the portal venous and equilibrium phases (figure 1B,C). Six months after MDCT, a liver MR was performed using extracellular paramagnetic contrast. The liver showed steatosis (figure 1D,E) but no stigmata of chronic hepatopathy. The liver nodule had increased in size displaying low signal on T1-w images (figure 1D,E), high signal on T2-w (figure 1F) and a hyperintense central scar on T2-w. There was no signal change in the chemical shift sequence (figure 1D,E) and the restricted diffusion with low apparent diffusion coefficient was seen (figure 1G,H). The dynamic contrast-enhanced MR showed an intense blush at the late arterial phase with intralesional contrast retention and a faint peripheral rim enhancement (figure 1I–L). The nodule was deemed uncharacterised and the main differential diagnoses considered were such as hepatocellular carcinoma, inflammatory hepatocellular adenoma or hypervascular metastasis (renal cell carcinoma, thyroid carcinoma, neuroendocrine, sarcomas, melanoma).

A combination of positron emission tomography with $^{18}$F-labelled fluoro-2-deoxyglucose and CT ($^{18}$F-FDG) was performed revealing hypermetabolic activity of the nodule (figure 1M) but no further lesions.

Based on the conjunction of imaging features, a malignant nature was foreseen and an ultrasound-guided core biopsy performed. The histopathological study revealed a follicular-type B-cell non-Hodgkin's lymphoma. Since no extrahepatic foci of lymphoma were found with the imaging techniques preformed, the diagnosis of primary lymphoma of liver was made.

Primary lymphoma of the liver is considered when no extrahepatic disease is detected.[1] It is a very rare neoplasm, corresponding to about 0.02% of non-Hodgkin lymphomas and 0.4% of extranodal lymphomas.[2] Primary lymphoma of the liver usually presents as a unique lesion, hypoechogenic on ultrasound, hypodense on CT after contrast administration due its hypovascular nature. MR typical features include low signal on T1-w, high signal on T2-w and markedly restriction to diffusion. It usually has a discrete enhancement effect because of the hypovascular nature, with peripheral ring enhancement. Like other lymphomas, it has high uptake for $^{18}$F-FDG.[1–3]

This particular case, in addition to the rarity of the entity, presented as a diagnostic challenge given the hypervascular behaviour, clearly unusual for lymphomas. A core biopsy was essential for diagnosis and patient management.

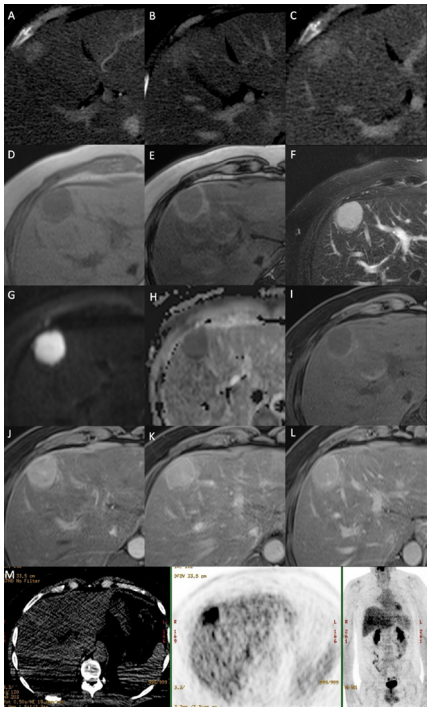


**Figure 1** Imaging workup. Contrast-enhanced CT (A–C): late arterial phase (A), portal venous phase (B) and equilibrium phase (C); MRI (D–L): T1-w in-phase (D), T1-w opposed phase (E), T2-w with fat suppression (F), diffusion-weighted imaging b=700 s/mm² (G), apparent diffusion coefficient map (H), T1-w with fat suppression before (I) and after extracellular paramagnetic contrast administration in late arterial phase (J), portal venous phase (K) and equilibrium phase (L); $^{18}$F-FDG PET-CT (M). There is a focal liver lesion on S4b that shows on CT in homogeneous enhancement on late arterial phase (A) that maintains high density on portal venous (B) and equilibrium phases (C). Liver parenchyma has signal drop out on opposed-phase T1-w (E) comparing with in-phase T1-w (D) due to steatosis. There is no evidence of fat or iron within the nodule (D, E). It has a high signal on T2-w (F), restricted diffusion (G, H) and early intense enhancement with intralesional retention and a faint peripheral rim enhancement (I–L). The nodule shows high uptake of $^{18}$F-FDG on PET-CT (M). $^{18}$F-FDG PET, positron emission tomography with 18F-labelled fluoro-2-deoxyglucose.

Check for updates

© BMJ Publishing Group Limited 2019. No commercial re-use. See rights and permissions. Published by BMJ.

**To cite:** Amaral Ferreira L, Costa JF, Donato P, *et al*. *BMJ Case Rep* 2019;**12**:e228444. doi:10.1136/bcr-2018-228444



BMJ Case Rep: first published as 10.1136/bcr-2018-228444 on 10 January 2019. Downloaded from http://casereports.bmj.com/ on November 14, 2019 by guest. Protected by copyright.

## Learning points

- Primary lymphoma of the liver is a rare neoplasm and can present as a hypervascular focal liver lesion.
- Positron emission tomography with $^{18}$F-labelled fluoro-2-deoxyglucose/CT should be performed to rule out extrahepatic foci of lymphoma.
- Core biopsy is mandatory to guide patient management.

**Contributors** LAF and JFC: concept, design, processing, writing manuscript and critical analysis. PD and FC-A: supervision, critical review of the manuscript and final approval of the version to be published.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent** Obtained.

**Provenance and peer review** Not commissioned; externally peer reviewed.

## REFERENCES

1 Tomasian A, Sandrasegaran K, Elsayes KM, *et al*. Hematologic malignancies of the liver: spectrum of disease. *Radiographics* 2015;35:71–86.
2 Ugurluer G, Miller RC, Li Y, *et al*. Primary hepatic lymphoma: A retrospective, multicenter rare cancer network study. *Rare Tumors* 2016;8:118–23.
3 Elsayes KM, Menias CO, Willatt JM, *et al*. Primary hepatic lymphoma: imaging findings. *J Med Imaging Radiat Oncol* 2009;53:373–9.

Copyright 2018 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit
https://www.bmj.com/company/products-services/rights-and-licensing/permissions/
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:
- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow



BMJ Case Rep: first published as 10.1136/bcr-2018-228444 on 10 January 2019. Downloaded from http://casereports.bmj.com/ on November 14, 2019 by guest. Protected by copyright.