

Masquerading Hypervascular Exophytic Liver Nodule

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ABSTRACT

Patients with liver cirrhosis are at increased risk of developing hepatocellular carcinoma (HCC) and are placed on routine surveillance for HCC. Diagnosis algorithms are in place to guide clinicians in the evaluation of liver lesions detected during surveillance. Radiological assessments are critical with diagnostic criteria based on identification of typical hallmarks of HCCs on multiphasic computed tomography (CT) and dynamic contrast-enhanced magnetic resonance imaging (MRI). We report a patient with a hypervascular exophytic lesion indeterminate for HCC on CT imaging. While the detection of an exophytic arterially-enhancing lesion in an at-risk patient on CT imaging may prompt clinicians to treat the lesion as HCC without further evaluation, the patient underwent contrast-enhanced MRI with the lesion being eventually diagnosed as an exophytic haemangioma. Thus, no further action was necessary and the patient was continued on routine HCC surveillance.

LEARNING POINTS

- Radiological surveillance for hepatocellular carcinoma (HCC) is routine in patients at risk of HCC.
- Diagnosis algorithms that are in place for indeterminate lesions detected during HCC surveillance should be adhered to in order to achieve an accurate diagnosis.
- Sequential imaging with contrast-enhanced (gadoxetate) MRI should be used to obviate the need for an invasive biopsy when an exophytic lesion indeterminate for HCC is identified during CT imaging in a patient with liver cirrhosis, especially when a hepatic haemangioma remains a differential diagnosis.

KEYWORDS

Exophytic liver nodule, hepatic haemangioma, hepatocellular carcinoma surveillance

CASE DESCRIPTION

A 63-year-old woman with liver cirrhosis secondary to non-alcoholic steatohepatitis (NASH) was evaluated for worsening abdominal discomfort and distension of 2 weeks' duration. She had undergone oesophagogastroduodenoscopy (OGD) 5 months previously with banding of oesophageal varices.

On examination, her abdomen was distended with shifting dullness without any hepatomegaly. Liver blood tests showed decreased serum albumin of 32 g/l (40–51 g/l), elevated alanine aminotransferase (ALT) of 98 U/l (6–66 U/l) and aspartate aminotransferase (AST) of 109 U/l

(12–42 U/l). Total bilirubin and alpha-fetoprotein (AFP) were normal at 15 $\mu\text{mol/l}$ (7–32 $\mu\text{mol/l}$) and 4.0 $\mu\text{g/l}$ (<7.1 $\mu\text{g/l}$), respectively. In view of her clinical presentation, a quadriphasic contrast-enhanced computed tomography (CT) scan was performed to evaluate for underlying portal venous thrombosis and hepatocellular carcinoma (HCC). This revealed a cirrhotic liver with an exophytic 1.1 cm nodule in segment VII that showed arterial hyper-enhancement without venous or delayed phase washout. The nodule remained iso-attenuating to the liver in the delayed phase (Fig. 1). There was ascites.

The CT imaging findings raised the possibility of HCC in this patient with liver cirrhosis. She then underwent gadoxetate-enhanced magnetic resonance imaging (MRI) (Fig. 2). The nodule showed moderate to marked T2-weighted (T2-w) hyper-intensity, an increased apparent diffusion coefficient (ADC) value of $2.1 \times 10^{-3} \text{mm}^2/\text{s}$ on diffusion weighted imaging (DWI), and post-contrast arterial hyper-enhancement with persistent enhancement until the late venous phase. These MRI imaging features were consistent with a small pedunculated haemangioma. No further diagnostic evaluation was required, and the patient was continued on regular routine HCC surveillance.

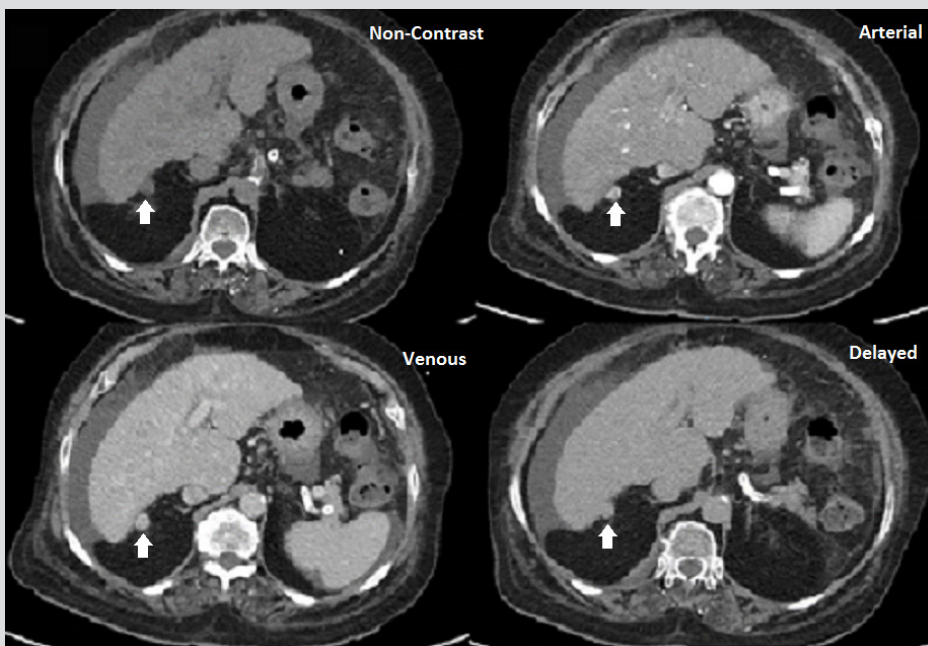


Figure 1. Quadriphasic contrast-enhanced CT scan images, showing the exophytic lesion (white arrows)

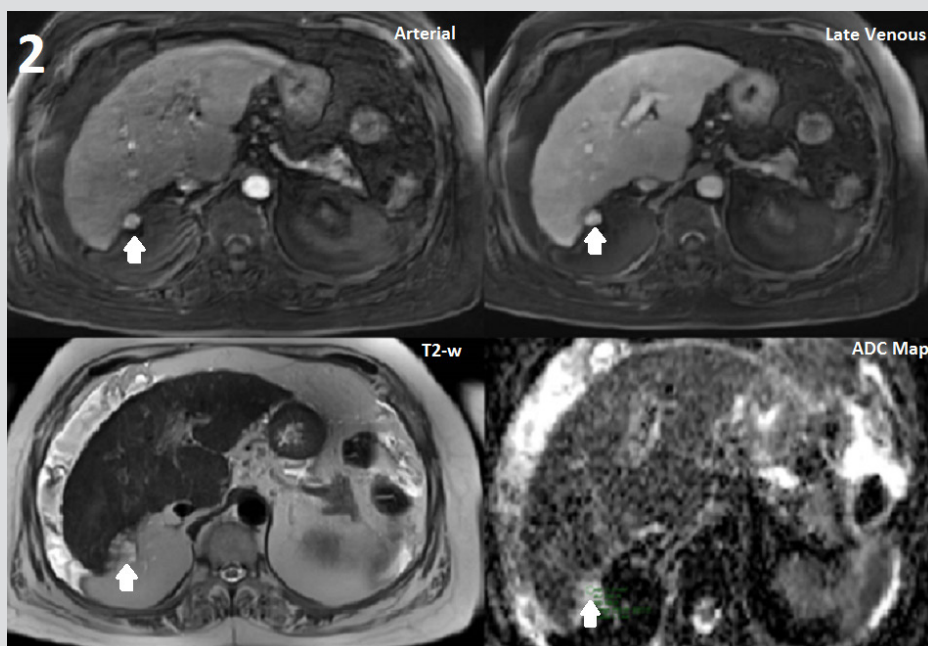


Figure 2. Contrast-enhanced (gadoxetate) MRI scan images (arterial phase, late venous phase, T2-w and ADC map), showing the exophytic lesion (white arrows)

DISCUSSION

It is recommended that regular routine surveillance should be performed in patients at risk of developing HCC^[1]. When liver nodules larger than 1 cm are identified on ultrasound, patients are advised to undergo multiphasic contrast-enhanced CT or dynamic contrast-enhanced MRI. The discovery of an exophytic arterially-enhancing lesion on CT imaging in a patient with decompensated liver cirrhosis may prompt clinicians to treat the lesion as HCC.

Hepatic haemangiomas are the most common primary benign neoplasms of the liver^[2]. They are largely asymptomatic and are detected incidentally. Exophytic forms are rare. On CT imaging, hepatic haemangiomas are hypo-attenuating relative to the liver parenchyma in the non-contrast phase, with discontinuous peripheral nodular enhancement in the arterial or portal venous phase. They demonstrate progressive centripetal enhancement with or without complete fill-in in the later phase, becoming iso or hyper-attenuating to the liver parenchyma.

Small haemangiomas and HCC are often indistinguishable on CT as the rapid filling during the arterial phase often results in the typical discontinuous peripheral nodular enhancement of haemangiomas not being demonstrable. Furthermore, small HCCs (<2 cm) often do not show washout^[3], appearing iso-attenuating in the delayed phase. Superior contrast resolution on MRI allows delayed phase hyper-intense enhancement to be more often demonstrated. In addition, with T2-w and DWI sequences, distinction between these two entities is easier. Markedly hyper-intense signals^[4] with increased ADC values ($>1.8 \times 10^{-3} \text{ mm}^2/\text{s}$) are generally hallmarks of haemangiomas, while HCCs tend to remain iso or mildly hyperintense on T2-w with restricted diffusion (lower ADC values).

CONCLUSION

This case report describes the rare finding of an exophytic haemangioma masquerading as HCC on CT imaging in a patient with liver cirrhosis. An accurate diagnosis was subsequently made with a contrast-enhanced (gadoteric acid) MRI. Our case highlights the importance of adherence to algorithms for evaluation of liver lesions detected in at-risk patients^[1]. If an initial contrast-enhanced radiological modality is not conclusively diagnostic, these patients should then undergo either an alternative contrast-enhanced imaging modality or a diagnostic biopsy. Sequential imaging with contrast-enhanced MRI may obviate the need for an invasive biopsy that is potentially hazardous in a patient with decompensated liver cirrhosis and ascites. This is clinically important, especially in the context of an exophytic arterially-enhancing lesion where a hepatic haemangioma is an uncommon but potential differential diagnosis.

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