A case of hepatic amyloidosis with CT, MRI and angiographic findings

Published on 22.06.2016

DOI: 10.1594/EURORAD/CASE.13773
ISSN: 1563-4086
Section: Abdominal imaging
Area of Interest: Abdomen
Procedure: Diagnostic procedure
Imaging Technique: CT
Imaging Technique: CT-Angiography
Imaging Technique: MR
Imaging Technique: Catheter arteriography
Special Focus: Pathology Case Type: Clinical Cases
Authors: Ophelia K.H. WAI, Lawrence F.H. NG, Peter S.M. YU
Patient: 61 years, male

Clinical History:

A 61-year-old gentlemen, smoker and social drinker, was clinically admitted to workup for sub-acute painless jaundice and deranged liver function. Hepatitis serology, AFP and CEA were all negative. MRI of the liver was performed, and liver biopsy showed amyloidosis. CT abdomen and angiography were subsequently done for suspected post-biopsy haemorrhage.

Imaging Findings:

On contrast MRI of the liver (Fig. 1), mild hepatosplenomegaly with smooth outline was observed. There was diffuse increase of T1 signal in the liver parenchyma. No evidence of biliary obstruction, and no focal hepatic mass was seen.

Non-contrast and contrast-enhanced CT of the liver was performed after liver biopsy for suspected post-biopsy haemorrhage. Pre-contrast CT showed homogeneous hypoattenuation of the liver and mild hepatosplenomegaly (Fig. 2). On arterial phase, there was diffuse narrowing of the coeliac trunk and hepatic arteries (Fig. 3). On portal venous and delay phases, the liver demonstrated heterogeneous enhancement with geographic pattern (Fig. 4). Periportal hypoenhancement was also noted (Fig. 5). Diffuse hypoenhancement of the spleen was also observed (Fig. 4).

Angiogram and transcatheter embolisation were arranged. Coeliac trunk angiogram showed diffuse stenosis of the coeliac trunk, common hepatic artery and intrahepatic arteries. Intraluminal irregularities were observed along the branches of the hepatic arteries (Fig. 6).

Discussion:

Background:

Amyloidosis is an uncommon disease, characterised by abnormal extracellular deposition and accumulation of protein and protein derivatives, commonly composed of fibrillar protein, amyloid P and glycosaminoglycans. This results in organ dysfunction due to replacement of normal cell structure or by the mass effect of the abnormal protein accumulation. Amyloidosis can be primary or secondary, and can affect any organ, most commonly with cerebral, cardiac and gastrointestinal involvement. Patients usually present with constitutional symptoms. Hepatic involvement of amyloidosis is common, but clinical manifestation of hepatic involvement is rare, usually with mild
hepatomegaly and mild impairment of liver function only.

Imaging perspective:
Imaging is usually part of the baseline investigation in these patients. In hepatic amyloidosis, the most commonly described radiological findings are mild hepatomegaly, diffuse parenchymal infiltrations with diffuse hypoattenuation on CT and increased T1 signal on MRI, and heterogeneous liver enhancement [1, 2]. However, they are non-specific. Kim et al described a unique CT finding specific to hepatic amyloidosis, which is the asymmetric and triangular hepatomegaly due to mild atrophic changes of the lateral border of both hepatic lobes [2]. Yaghoobian et al. reported a case of angiographic findings in liver amyloidosis, showing luminal irregularities and abrupt changes in the calibre of the branches of hepatic artery, due to abnormal protein accumulation in the vessel wall [3]. Similarly, Schroeder et al also reported two cases of gastrointestinal amyloidosis showing irregular vascular stenosis in superior and inferior mesenteric arteries and veins [4]. It was also postulated that the diffuse hypoenhancement and decreased T2 signal in the spleen in amyloidosis are also due to the impaired perfusion from vascular deposition of amyloid [2].

Teaching Points:
Through this case, we described the common and specific imaging findings of the hepatic amyloidosis on CT, MRI and angiography. The specific radiological findings are subtle, but if they are being evaluated carefully, one can suspect the diagnosis of amyloidosis and suggest further tissue biopsy for a definitive diagnosis.

Differential Diagnosis List: Hepatic amyloidosis, Fatty liver disease, Sarcoid, Haemochromatosis, Wilson's disease

Final Diagnosis: Hepatic amyloidosis

References:

**Description:** Mild hepatosplenomegaly and diffuse increase of T1 signal in the liver parenchyma on T1 fat saturation image. **Origin:** United Christian Hospital
Description: Homogeneous hypoattenuation of liver and mild hepatosplenomegaly. Origin: United Christian Hospital
Figure 3

Description: Marked narrowing of hepatic arteries  
Origin: United Christian Hospital
Description: Liver demonstrated heterogeneous enhancement with patchy and geographic pattern.

Origin: United Christian Hospital
Description: Periportal hypoenhancement in bilateral hepatic lobes. Origin: United Christian Hospital
Description: Diffuse stenosis of the coeliac trunk, common hepatic artery and intrahepatic arteries, with intraluminal irregularities. Origin: United Christian Hospital