Case 12245

Solid organizing abscess of the liver
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Section: Abdominal imaging
Area of Interest: Liver Biliary Tract / Gallbladder
Procedure: Diagnostic procedure
Imaging Technique: MR
Imaging Technique: MR-Diffusion/Perfusion
Special Focus: Dilatation Calcifications / Calculi Varices
Abscess Case Type: Clinical Cases
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Patient: 52 years, male

Clinical History:

Recurrent cholangitis in a patient with long-standing stenosis of a roux-en-y choledochojejunostomy performed 30 years ago because of a chronic calcified mass-forming pancreatitis.
- Intrahepatic biliary stones.
- Portal cavernoma and prehepatic portal hypertension with esophageal varices, bleeding previously.
- Diabetes mellitus.

Imaging Findings:

MR imaging (Dec-2013): T2-weighted MRI shows dilatation of intrahepatic biliary tree, pneumobilia and intrahepatic stones; MR-cholangiopancreatography evidences marked stenosis of the choledochojejunostomy, dilatation of intrahepatic biliary ducts and intrahepatic stones (Fig. 1a-c). Portal cavernoma and portal-systemic collaterals are visible on CE-3D-GE MRI (Fig. 1d).

MR imaging (Oct-2014): T1-weighted GE MRI documents a hypointense mass-like lesion (2.5x5 cm) in segment IV of the liver; the lesion is isointense to the liver and circumscribed by an irregular hyperintense rim on T2-weighted MRI (Fig. 2a, b). The lesion does not exhibit water diffusion restriction but colliquative foci on multi-b DW-MRI (Fig. 3). No significant enhancement is evident on arterial phase of dynamic MRI with Gd-BOPTA; a wedge shape transient hepatic intensity attenuation is appreciable (Fig. 4a). The rim is hyperintense relative on late phase of CE-MRI; the mass does not take up the liver-specific contrast medium on hepatobiliary phase (Fig. 4b, c).

Discussion:

Among focal infection of the liver, organizing solid abscesses are relatively infrequent and are thought to be an atypical slow-healing process in patients partially responsive to antibiotic therapy. They are characterized by a prominent chronic inflammatory reaction bounded by a fibrous rim and centered on a suppurative core, only seldom recognizable on non-invasive imaging, without any identifiable bacteria at microscopy; patients often have a history of biliary stone disease and recurrent pyogenic cholangitis [1].
Solid organizing hepatic abscesses are hypodense/hypointense relative to the normal liver on non-enhanced CT.
and T1-weighted MRI respectively, whereas they exhibit a typical target appearance on T2-weighted MRI and
dynamic imaging [1]. The fibrous rim appears hyperintense on T2-weighted MRI and does not show water diffusion
restriction on DWI [1, 2]. Moreover, whereas the main inflammatory component enhances similarly to the liver on
dynamic imaging, the rim does not enhance on early dynamic phase but strongly enhances only on late phases [1].
Other hepatic abscesses (usually due to pyogenic pathogens, Brucella or parasites) can show a large solid
component on diagnostic imaging [3–7]. However these abscesses are not circumscribed by a rim and are
“predominantly” solid with a uniloculated or multiloculated liquefaction component [5].
Patients with chronic granulomatous disease, an inherited childhood immunodeficiency disease characterized by
primary phagocyte defect, can suffer from hepatic abscesses presenting a solid or target-like lesion in early stages
[3]. These abscesses, usually recurrent and often multiple, present a rim strongly enhancing on post contrast
imaging [3].
Differential diagnosis of organizing solid hepatic abscesses should also include solid masses. Hepatic inflammatory
pseudotumours can show a large spectrum of CT and MRI findings. They sometimes appear multilayered [8, 9], but
they are usually hypointense and hyperintense on T1-weighted and T2-weighted MRI respectively and enhance only
on delayed scans of CE-MRI [1, 8]. Hypovascular tumour, both primary and metastatic, enhance less than normal
hepatic parenchyma and on late phase of dynamic imaging only. DW-MRI can easily discriminate hepatic abscesses
from non-infected fluid collections of the liver [10]; moreover DW-MRI is very helpful in distinguishing a malignant
mimicker from an abscess, which rim shows ADC values higher than tumour pseudocapsule [2, 11]. In conclusion,
typical MRI findings can yield diagnosis of a solid organizing hepatic abscess in the appropriate clinical setting;
percutaneous biopsy should be indicated for a definitive diagnosis in equivocal cases only.
Differential Diagnosis List: Organizing hepatic abscess, Intrahepatic cholangiocarcinoma, Hypovascular
metastasis, Inflammatory pseudotumour

Final Diagnosis: Organizing hepatic abscess

References:

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Abdom Imaging 38:774–777 (PMID: 22801750)
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Description: Axial T2w-MRI: marked dilatation of intrahepatic biliary ducts and pneumobilia. Origin: UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: Axial T2w-MRI: intrahepatic biliary stones in the right lobe. Origin: UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: Thick-slab MR-CP: stenosis of choledochojejunostomy and dilatation of intrahepatic biliary ducts containing multiple stones. Origin: UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: Axial CE-3D GE: portal cavernoma and hepatofugal collaterals. Origin: UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: Axial T1 GE MRI: ovoid hypointense mass-like lesion of 2.5x5 cm in S4. Origin: UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: Axial T2w-FS-MRI: the lesion is isointense to the liver but circumscribed by irregular hyperintense rim. Origin: UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Figure 3

Description: DWI b800  Origin: UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: ADC map: no significant water restriction of the hepatic lesion (ADC value 1098/mm²/sec; liver ADC value 997 mm²/sec). The rim has higher ADC value of rim (1788 mm²/sec)

Origin:
UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: Arterial phase: no significant enhancement of the hepatic pseudomass, circumscribed by a transient hepatic intensity attenuation. Origin: UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
**b**

**Description:** Late phase (5 min): high signal intensity of the rim; tiny colliquative foci are also evident.  
**Origin:** UO Radiologia, Ospedale San Bortolo, Vicenza, Italy

**c**

**Description:** Hepatobiliary phase: no take up of the liver-specific contrast medium.  
**Origin:** UO Radiologia, Ospedale San Bortolo, Vicenza, Italy