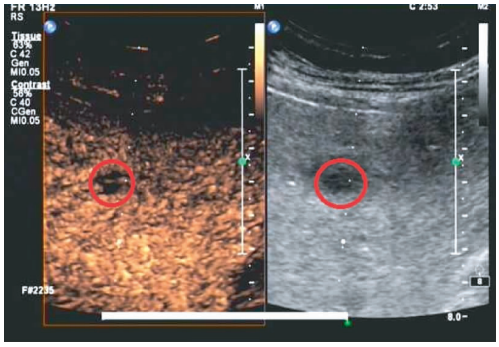
C virus infection: differentiating minimal from intermediate fibrosis with perfusion CT[J]. Radiology, 2010, 256(1): 135-142.
[11] 张水兴, 刘于宝, 梁长虹. 肝脏磁共振对比剂的过去, 现在和未来[J]. 磁共振成像, 2012, 3(1): 56-60.
[12] Van Beers BE, Leconte I, Materne R, et al. Hepatic perfusion parameters in chronic liver disease: dynamic CT measurements correlated with disease severity[J]. Am J Roentgenol, 2001, 176(3): 667-673.
[13] Goshima S, Kanematsu M, Kobayashi T, et al. Staging hepatic fibrosis: computer-aided analysis of hepatic contours on gadolinium ethoxybenzyl diethylenetriaminepentaacetic acid-enhanced hepatocyte-phase magnetic resonance imaging[J]. Hepatology, 2012, 55(1): 328-329.
[14] Ogura S, Saitoh S, Kawamura Y, et al. Magnetic resonance laparoscopy: a new non-invasive technique for the assessment of chronic viral liver disease[J]. Hepatol Res, 2013, 43(8): 836-845.
[15] Lucidarme O, Baleston F, Cadi M, et al. Non-invasive detection of liver fibrosis: is superparamagnetic iron oxide particle-enhanced MR imaging a contributive technique?[J]. Eur Radiol, 2003, 13(3): 467-474.
[16] Ryeom HK, Kim SH, Kim JY, et al. Quantitative evaluation of liver function with MRI using Gd-EOB-DTPA[J]. Korean J Radiol, 2004, 5(4): 231-239.
[17] Tsuda N, Okada M, Murakami T. New proposal for the staging of nonalcoholic steatohepatitis: evaluation of liver fibrosis on Gd-EOB-DTPA-enhanced MRI[J]. Eur J Radiol, 2010, 73(1): 137-142.
[18] Watanabe H, Kanematsu M, Goshima S, et al. Staging hepatic fibrosis: comparison of gadoxetate disodium-enhanced and diffusion-weighted MR imaging——preliminary observations[J]. Radiology, 2011, 259(1): 142-150.
[19] 庄园, 丁红. 超声新技术评估肝纤维化进程的临床应用进展[J]. 肿瘤影像学, 2015, 24(1): 67-70.
[20] Sugimoto K, Shiraishi J, Moriyasu F, et al. Analysis of intrahepatic vascular morphological changes of chronic liver disease for assessment of liver fibrosis stages by micro-flow imaging with contrast-enhanced ultrasound: preliminary experience[J]. Eur Radiol, 2010, 20(11): 2749-2757.
[21] Strader DB, Wright T, Thomas DL, et al. Diagnosis, management, and treatment of hepatitis C[J]. Hepatology, 2004, 39(4): 1147-1171.
[22] 丁红, 李娜, 林希元, 等. 超声造影评估肝纤维化程度的可行性及定量参数筛选[J]. 复旦学报(医学版), 2010, 37(3): 265-268.
[23] Shi Y, Wang XH, Xia GC, et al. Quantitative diagnosis of early-stage liver cirrhosis with contrast-enhanced ultrasound——a clinical study [J]. Adv Clin Exp Med, 2012, 21(3): 385-390.
[24] Gasparini C, Bertolotto M, Crocè SL, et al. Evaluation of liver parenchymal blood flow with contrast-enhanced US: preliminary results in healthy and cirrhotic patients[J]. Acad Radiol, 2003, 10(8): 869-876.
[25] Liu GJ, Ji Q, Moriyasu F, et al. Value of contrast-enhanced ultrasound using perflubutane microbubbles for diagnosing liver fibrosis and cirrhosis in rats[J]. Ultrasound Med Biol, 2013, 39(11): 2158-2165.

(收稿日期: 2016-09-30)

(上接 678 页)

肝右前叶见一大小约 1.1 cm×0.8 cm 低回声结节, 边界清楚, 边缘欠规则, 内部回声欠均质; CDFI: 结节内未探及血流信号。超声造影显示病灶在动脉相、门脉相及延迟相均未见明显造影剂填充(图 2), 不除外局灶性坏死可能。1 个月后患者随访腹部超声, 未发现既往肝右前叶结节, 故未进一步行超声造影。



红色标记处为病灶, 未见明显造影剂充填。

图 2 肝脏局灶性病变超声造影图

讨论: 肝脏局灶性病变多在常规检查中偶然发现, 且大多数为良性病变。在非肝硬化患者中, 超声造影检查的首要目的是确定占位性病变的良恶性。研究[1]显示超声造影在肝细胞癌诊断中有较高的准确率, 但美国肝脏疾病研究联盟仍将超声造影从最新版的诊疗指南中移除, 原因是 Vilana 等[2]研究表明约半数肝内胆管细胞癌患者的超声造影表现与肝细胞癌有相似表现, 故超声造影存在将肝细胞癌患者误诊为肝内胆管细胞癌的可能; 另外, 对于硬化性肝脏出现的小结节(直径<2 cm), 超声造影在动脉相缺少对比增强, 并不能除外肝细胞癌[3]。就本病例而言, CT 和 MRI 在诊断过程中得出相反结果, 分析原因为增强 CT 和 MRI 为机器预设静态间断摄片, 不同患者间循环存在个体差异, 且不同的注射部位也会影响造影剂到达肝脏的时间, 因此增强 CT 和 MRI 可能会漏扫病灶某一典型的时刻。而超声造影可以动态实时显示造影剂在 3 个时相的变化过程, 本例患者超声造影未见病灶有造影剂充填。虽然超声造影最终也未能明确其性质, 但该患者否认既往慢性硬化性肝脏疾病病史, 肿瘤标记物筛查也未见明显异常, 故建议密切随访, 随访中未发现该结节。

总之, 超声造影对肝脏局灶性病变有一定的诊断价值, 当其不足以明确病变性质时可考虑进一步行 CT 或 MRI 检查。

参考文献

[1] Strobel D, Seitz K, Blank W, et al. Contrast-enhanced ultrasound for the characterization of focal liver lesions——diagnostic accuracy in clinical practice (DEGUM multicenter trial)[J]. Ultraschall Med, 2008, 29(5): 499-505.
[2] Vilana R, Forner A, Bianchi L, et al. Intrahepatic peripheral cholangiocarcinoma in cirrhosis patients may display a vascular pattern similar to hepatocellular carcinoma on contrast-enhanced ultrasound[J]. Hepatology, 2010, 51(6): 2020-2029.
[3] Forner A, Vilana R, Bianchi L, et al. Lack of arterial hypervascularity at contrast-enhanced ultrasound should not define the priority for diagnostic work-up of nodules <2 cm[J]. J Hepatol, 2015, 62(1): 150-155.

(收稿日期: 2016-12-25)