

Liver diseases diagnosis: the role of contrast-enhanced MR Venoportography

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Purpose: To study the diagnostic possibilities of contrast-enhanced (CE) MR venoportography (VPG) in revealing of the liver diseases, to optimize the CE MR VPG techniques.

Materials and Methods: This multicenter study, performed in several MRI centers, included 69 patients (47 males and 22 females; mean age 51) with a diagnosis of portal hypertension and thrombosis of the common trunk and branches of portal vein caused by various focal and diffusive liver lesions (27 patients - secondary infiltration of the liver, 12 - HCC, 13 - hemangiomas, 11 - diffusive lesions of the liver), 3 patients with splenorenal shunt, 3 - with mesenterio-caval shunts. These patients were studied with breath hold ultra short sequences FLASH 3D and FISP 3D (TR/TE=5.2/2.02 ms, FA=25°) with 1.5T units (Magnetom Vision, Magnetom Symphony) after intravenous contrast medium administration (Omniscan, 0.2 mmol/kg). The patients were imaged in the supine position using the body array RF coil. Post-processing was performed using the maximum-intensity projection algorithm.

Results: CE-MRA provided excellent depiction of the abdominal vasculature without any adverse event in all cases. The degree of image quality is estimated for aorta, celiac trunk, splenic artery and vein, renal arteries and veins, inferior vena cava system, portal vein and shunts (Fig.1). Pathologic changes have been revealed in 59 patients including 24 cases of thrombosis of the one of the portal vein branches (Fig.2), 15 - common trunk of the portal vein thrombosis, 20 - varicose dilatation of the gastric and esophageal veins. The revealed changes have been confirmed by digital angiography. False negative results have been received in 3 cases with distal branches of the portal vein thrombosis. In one of six patients with shunts the stenosis of the shunt has been revealed.



Fig.1. 3D CE MRA. MR angiogram shows a continued splenorenal shunt in cirrhotic patient (arrow).



Fig.2. 3D CE MRA. MR venoportogram shows the left portal vein branch thrombosis (arrow).

Conclusion: CE MR venoportography is a highly informative method for diagnosing of portal hypertension, lesions of the common trunk and main branches of the portal vein, caused by various focal and diffusive liver diseases. CE MR VPG is the method of choice for the control of imposed anastomosis in early post-operative period.

References:

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