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Magnetic Resonance Cholangiography: Comparison of two- and three-dimensional sequences for assessment of malignant biliary obstruction

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Purpose: To compare two-dimensional (2D) MR cholangiography (MRC) including breath-hold single-shot rapid acquisition with relaxation enhancement (RARE) and multislice half-Fourier RARE versus navigator-triggered 3D RARE MRC in the evaluation of biliary malignancy.

Materials and Methods: MRC findings were evaluated in 31 patients with malignant biliary obstruction. Pathologic diagnoses included biliary malignancy, gallbladder carcinoma, and ampullary cancer. Two observers independently reviewed the images in a blinded fashion to assess the overall image quality, artifacts, ductal conspicuity, extent of disease, diagnostic confidence of tumor extent, and origin of the tumor. The results of MRC were compared with the definitive diagnosis based on surgical and histopathologic findings.

Results: Studies obtained with 3D-MRC were of significantly higher technical quality than those obtained with 2D-MRC. However, the accuracy between the two sequences for classification of the tumor was 67.7% (21 of 31) and 70.9% (22 of 31) for 2D-MRC and 74.1% (23 of 31) and 77.4% (24 of 31) for 3D-MRC, showing no statistical significance. There was also no significant difference between the Az values of 2D- and 3D-MRC for overall tumor extent in the left and right second order branch, intrapancreatic CBD involvement (Az = 0.889, 0.881 for 2D and Az = 0.903, 0.864 for 3D). Nor was there a significant difference between 2D-MRC and 3D-MRC in the assessment of the origin of the tumor ($P > 0.05$).

Conclusion: Although 3D-MRC has superior image quality over 2D-MRC, 3DMRC showed no statistical difference in accuracy compared with 2D-MRC for evaluating the extent of disease in malignant biliary obstructions.