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**Feasibility of single breath-hold multiarterial dynamic MR imaging of the liver using the THRIVE-CENTRA-keyhole technique**

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Purpose: To evaluate the feasibility of single breath-hold, multi-arterial MRI of the liver using the THRIVE-CENTRA-keyhole technique.

Materials and Methods: Twenty-eight patients with 63 focal hepatic lesions underwent liver MR examinations that included the three-dimensional THRIVE-CENTRA-keyhole sequence. Three- or six-phase images were obtained for arterial scanning during a single breath-hold. The central k-space data was collected for each phase, but the remaining peripheral k-space data were collected only once. Two readers performed image analysis by consensus. Focal hepatic lesions were analyzed according to the enhancement pattern as well as with regard to a specific diagnosis.

Results: Hepatocellular carcinomas (n = 24) showed various enhancement patterns; rim enhancing (n = 9), homogeneous (n = 7), nodule-in-nodule (n = 5), or heterogeneous (n = 3). Early central washout and a late peritumoral rim were demonstrated in four (16.7 %) of the hepatocellular carcinomas. Most metastases (94.4 %) showed peripheral rim enhancement. The gradual centripetal enhancement was clearly depicted in all hemangiomas (n = 6). Focal nodular hyperplasia (n = 4) showed early homogeneous enhancement and one lesion demonstrated a low-signal intensity central scar.

Conclusion: The THRIVE-CENTRA-keyhole technique can be used to acquire single-breath-hold, multi-arterial images, which have an improved depiction of the enhancement characteristics of focal hepatic lesions. This technique will allow an accurate timing of arterial scanning with 3D acquisition and a high temporal resolution.