PDF hosted at the Radboud Repository of the Radboud University Nijmegen

The following full text is a publisher's version.

For additional information about this publication click this link.
http://hdl.handle.net/2066/49514

Please be advised that this information was generated on 2017-08-26 and may be subject to change.
Abdominal MRI made easy with orally administered manganese: a CMR 2005: 14.02

Rationale and Objectives: The SC was outlined and the mean signal was calculated. A second ROI was placed outside the animal contours for noise measurement. The mean signal-to-noise ratio (SNR) and standard deviation (SD) were calculated.

Results: After 2–3 days, a homogeneous enhancement in the SC lasting for 36 h was observed, after which a slow washout started. Uninjured animals displayed a homogeneous SNR of about 18 without and 36 with contrast agent throughout the SC. Proximal to the injury, injured mice showed an SNR comparable to uninjured mice. On moving further distal towards the lesion, the SNR gradually decreased, reaching background levels just at the lesion site.

Conclusion: An in vivo method for structural and functional spinal cord imaging in mice using MEMRI was developed. Manganese was readily taken up and transported through the spinal cord although means of uptake and transportation need to be elucidated. Changes in manganese uptake profiles on comparing injured and healthy mice suggest a function-dependent decrease in uptake in the injured mice. The decrease in enhancement proximal to the lesion site may correlate with dying back of axons. The decrease to baseline levels may indicate a near total loss of functional neurons at these levels. Correlation with histology supports this hypothesis.

References

CMR 2005: 14.02
Abdominal MRI made easy with orally administered manganese: a liver-specific contrast agent and a bowel marker

P. Leander,1 P. Höglund,2 K. Golman,3 G. Pettersson,3 and S. Månsson1

Department of Radiology and Experimental Research, Malmö University Hospital, Malmö, Sweden
2Competence Centre for Clinical Research, Lund University Hospital, Lund, Sweden
3GE-Health Biosciences, Malmö, Sweden

Rationale and Objectives: A first clinical trial of orally administered manganese with and without ascorbic acid as a promoting agent in liver MRI was planned. The objectives of the study were to assess efficacy of manganese with and without ascorbic acid as a promoting agent in liver imaging in daily routine.

Methods: Six patients were studied. All had known liver metastases from colorectal cancers. From midnight the patients were not allowed to drink or eat. Between 8 and 9 a.m. the patients drank CMC-001 dissolved in 200 mL of water and 2 h later the MR examination (1.5 T) took place. The sequences are still being optimized.

Results: In three of the six patients, important new knowledge was obtained. The uptake in the liver was excellent in all patients. There were segmental differences in the uptake in four of the six patients, probably due to early fibrosis induced by chemotherapeutics or decreased portal vein flow due to metastatic compression. There was excellent visualization of the biliary system on the $T_1$-weighted images. No contrast medium adverse events were reported.

Conclusion: CMC-001 seems to be useful in the work-up of patients with liver metastases regarding both the liver parenchyma and the biliary tract. Further research is strongly warranted.

CMR 2005: 14.04
Oral manganese as contrast medium in detecting liver metastases with MR imaging at 1.5 and 3 T

H. Dekker,1 C. van Herpen,1 Y. Hoogeveen,1 H. Thomsen,2 T. Ruers2 and J. Barentsz1

1Department of Radiology, Medical Oncology and Surgery, University Medical Center St. Radboud, Nijmegen, The Netherlands
2Department of Diagnostic Radiology, Copenhagen University Hospital at Herlev, Herlev, Denmark

Rationale and Objectives: Recently, a new liver specific MR agent has been introduced that is administered orally and only small amounts enter the general circulation. It is the only contrast medium that is delivered to the liver in high doses in the portal vein and very low doses in the hepatic artery. It is taken up by the hepatocytes and excreted together by the bile. We recently received permission from the Danish Health Authorities to use CMC-001 clinically (phase IV). In this paper we evaluate retrospectively our preliminary experience.

Methods: Six patients were studied. All had known liver metastases from colorectal cancers. From midnight the patients were not allowed to drink or eat. Between 8 and 9 a.m. the patients drank CMC-001 dissolved in 400 mL of water and 2 h later the MR examination (1.5 T) took place. The sequences are still being optimized.

Results: In three of the six patients, important new knowledge was obtained. The uptake in the liver was excellent in all patients. There were segmental differences in the uptake in four of the six patients, probably due to early fibrosis induced by chemotherapeutics or decreased portal vein flow due to metastatic compression. There was excellent visualization of the biliary system on the $T_1$-weighted images. No contrast medium adverse events were reported.

Conclusion: CMC-001 seems to be useful in the work-up of patients with liver metastases regarding both the liver parenchyma and the biliary tract. Further research is strongly warranted.