

Crohn's Disease: Comparison of MR Enteroclysis with MRI Using Polyethylene Glycol (PEG) Solution as Oral Contrast Medium.

G. Masselli¹, M. G. Brizi², L. Menchini³, L. M. Minordi³, A. Vecchioli³, M. Guazzaroni

¹Radiology, S. Eugenio Hospital, Rome, Italy, Italy, ²Radiology, Gemelli University hospital, Rome, Italy, Italy, ³Radiology, Gemelli University hospital, Rome, Italy

Purpose: Magnetic Resonance (MR) enteroclysis imaging is an emerging technique for evaluation of the small bowel diseases. This method has the disadvantage common to all enteroclysis methods: the need for a nasoenteric tube. The aim of our study was to compare the diagnostic value of MRE with MRI using Polyethylene Glycol (PEG) Solution as Oral Contrast Medium (MRI per OS).

Method and Materials: We undertook a prospective randomized trial of forty patients with known Crohn's disease who were examined with MRE (22) or with MRI per OS (18) on 1.5 T magnet (GE). MRE was performed by injection of 1,5-2 l of PEG solution via a nasojejunal catheter, whereas MRI per OS was performed with orally administration of 700-1100 ml of PEG solution, started sixty minutes before MR examination.

The same MR protocol was performed for MRE and MRI and included: FIESTA, ssFSE, obtained on coronal and axial plane and gadolinium enhanced fat suppressed 3D FSPGR sequences with the patient in prone position using a phase array body coil. Images were assessed by two radiologists who were unaware of the patient's symptoms, clinical scoring, and other imaging tests, and who reached a consensus about the following imaging findings: small bowel filling and distension of the small bowel, bowel wall conspicuity using 5-point grading scale. Furthermore the assessment of ulcer wall, stenosis of bowel segments and fistulas was determined. Conventional enteroclysis was employed as a standard of reference. The imaging findings of two procedures were compared using Mann-Whitney test, with $p < .05$ considered statistically significant.

Results: Good or excellent small bowel filling and distension was obtained in 21/22 patients (95%) examined with MRE and in 12/18 (66%) with MRI per OS ($p = .0001$), and bowel wall conspicuity was graded good or excellent in 21/22 (95%) and in 13/18 (72%) ($p = .02$), respectively.

With MRE the sensitivity and specificity were respectively in detection of ulcer wall 90%-92%, of stenosis 95-100% and of fistulas 88-100%. With MRI per OS the sensitivity and specificity were respectively in detection of ulcer wall 57% -94%, of stenosis 88%-89% and of fistulas 83-100%. Ulcers wall were statistically better delineated with MRE than MRI per OS ($p = .02$), whereas the specificity and sensitivity of detection of stenosis segments and fistulas although higher with MRE didn't reach statistical significance ($p > 0.05$).

Conclusions: Both MRE and MRI using per os PEG offer reliable information on superficial, mural and extramural abnormalities, but visualization of mural ulcers was statistically better with MRE.