

ROLE OF MR IN DETECTING PATHOLOGICAL SEGMENTS AND EXTENT OF CROHN DISEASE

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ABSTRACT

Background and aims: No diagnostic method is presently able to define the extent and differentiate between pathologic and normal segments of Crohn's disease (CD) without resorting to invasive measures or causing side effects (ionizing radiation). The present study evaluates the capacity of magnetic resonance imaging (MRI) to detect pathological segments and establish the extent of the disease in patients with CD.

Methods: Sixty patients with active phase CD (as determined by the clinical, laboratory and endoscopic data) and 10 healthy controls were prospectively studied for two years using MRI and comparing the results with the colonoscopic and histological findings. Two 1.5T superconducting magnets were used (General Electric and Sonata Siemens). Breath-hold images were obtained using T2- and fat-suppressed pre- and post-gadolinium-enhanced T1-weighted images. with a mean interval between colonoscopy and MRI of 2.4 days. All patients underwent bowel cleansing on the day before, and oral 2% barium sulfate contrast was posteriorly administered, with a rectal water enema (1.5-2 l) before MRI exploration. In order to compare the results, the colon and terminal ileum were divided into 6 segments; the presence of pathology per segment and extent of the disease was evaluated based on the wall thickening (abnormal if thickness >4.0 mm) measured after intravenous gadolinium-DPTA contrast injection. The results obtained were likewise contrasted with the corresponding endoscopic and clinical activity index (Crohn's Disease Activity Index, CDAI).

Results: A total of 311 segments of patients with CD were analyzed (161 abnormal and 150 without lesions based on colonoscopic and histologic findings), together with 60 segments in the control group. MRI proved able to differentiate between pathologic and normal segments ($p < 0.05$) with a sensitivity of 91.9% and specificity of 90.6%. A difference was observed ($p < 0.05$) in the thickness of the pathologic (6.9 ± 3.51 mm) and normal segments (3.6 ± 1.06) of CD. The correlation to the disease extent pattern determined by colonoscopy and histology being 84% (95% confidence interval, 95%CI). A significant correlation was found between the MRI findings and the endoscopic activity index (analysis of variance, ANOVA < 0.05), but not the CDAI.

Conclusions: MRI is useful for differentiating between pathologic and normal segments in CD, with a good correlation to the endoscopic findings. The high sensitivity and specificity of the technique in detecting pathological segments makes MRI an effective and safe alternative for evaluating the extent of the disease.