

Magnetic Resonance Enterography with Diffusion Weighted Imaging (DWI) Sequence Helps to Reveal Early Inflammatory Changes in Patients with Suspect Bowel Disease

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Introduction. Over the past decades incidence of inflammatory bowel diseases (IBD) has markedly increased in both adults and children in developed countries. Up to 15% of patients belong to the unclassified IBD, category, and in around 80% of them either Crohn's disease or ulcerative colitis develops within next several years. IBD impairs quality of life, causes disability, and in a number of cases surgical treatment, colectomy, is needed. The progression of IBD can be prevented only by timely treatment based on early diagnosis.

Aim, Material and Methods. The study aim is to evaluate whether magnetic resonance DWI is applicable in revealing early inflammatory changes in patients with suspect inflammatory bowel disease (IBD). 21 patients (14–77 years old) suspected for IBD were divided into two groups of faecal calprotectin level – elevated (300 µg/kg and more; n = 9) and low (less than 300 µg/kg; n = 12), and were examined by 1.5 T MR scanner maintaining bowel distention with Mannitol solution (2.5%). Restricted diffusion areas found in MRI were correlated with macroscopic inflammatory signs in ileocolonoscopy or capsule endoscopy.

Results. Among subjects with elevated calprotectin levels (n = 9), 5 patients showed both restricted diffusion and endoscopic inflammatory signs, in 2 patients restricted diffusion was found but no macroscopical inflammatory signs, but in 2 patients neither restricted diffusion nor macroscopic inflammatory signs were found. Among subjects with low calprotectin levels (n = 12) in 4 patients both restricted diffusion and endoscopic inflammatory signs were present, 4 patients showed restricted diffusion but no macroscopical inflammatory signs were found, and in 4 patients neither restricted diffusion nor macroscopic inflammatory signs were present.

Conclusions. DWI sequence demonstrates the high diagnostic potential of finding presence of inflammation in patients with suspect IBD; its sensitivity might be superior over sensitivity of calprotectin test and it could improve early IBD diagnostics in patients, suspect for IBD, with low calprotectin levels; further research with more data is needed.