

Usefulness of Transabdominal Ultrasonography for Evaluating Lesion Area and Severity of Ulcerative Colitis

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Abstract

Ulcerative colitis (UC) is a non-specific chronic intestinal inflammation with unknown etiology, resulting in erosion and ulceration in the mucosa and submucosa of the colon. For treatment and follow-up of this disease, information about the extent of lesions and severity of the disease is critical. In general, colonoscopy (CS) and barium enema examination are used for diagnosis of UC, but these are invasive. On some occasions, CS is carried out without any bowel preparation during the UC active stage. In this study, transabdominal ultrasonography (US) was compared to CS for their capabilities to reveal the large intestine and to determine the disease severity and lesion area. Eighty five sessions for 41 UC patients that underwent both US and CS simultaneously between August 2003 and July 2012 were studied. Regarding evaluation of the capability to detect the large intestine, the inserted area was used for CS, and the detected area with systematic scanning was used for US. Regarding determination of the disease severity, "Guidelines for the Management of Ulcerative Colitis in Japan" prepared by the Ministry of Health, Labour and Welfare, Research Group for Intractable Inflammatory Bowel Disease was applied for CS, and the following classification determined for the layer structure was used for US: the normal wall structure (normal: U1); wall thickening in the mucosa (mild: U2); wall thickening in the submucosa without hypoechoic change (moderate 1: U3); wall thickening in the submucosa with hypoechoic change (moderate 2: U4); and marked thickening and lowering of echogenicity without stratification (severe: U5). US could reveal all the large intestines in 90% of the study sessions, and it was able to evaluate deeper lesions than CS could. There was a significant difference in determination of the disease severity between US and CS. Lesion area evaluated by the two tended to be more similar as the disease was more active. In conclusion, US could be used for determining the disease stage, lesion area and disease severity of UC as a noninvasive diagnostic imaging tool.

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Keywords

ulcerative colitis, transabdominal ultrasonography, imaging ability of the large intestine, judgment of severity, layer structure of the large intestine.

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