

MONITORING INFLAMMATORY ACTIVITY IN CROHN'S DISEASE: SIMPLE ULTRASONOGRAPHIC SCORE VERSUS CEUS WHICH ONE TO USE?

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Background: Gastrointestinal Ultrasound (GIUS) is increasingly being used in Crohn's Disease (CD) as an essential tool in monitoring inflammatory activity, given its low cost and the absence of ionizing radiation exposure. In 2017 emerged a simple ultrasonographic score (SUS) that allows the accurate noninvasive assessment of inflammatory activity based on 2 parameters: bowel wall thickness (bwt) and color Doppler.

The aim of this study was therefore to compare the accuracy of bowel GIUS with SUS versus Contrast Enhanced Ultrasound (CEUS) in predicting inflammatory activity in ileocolonoscopy.

Methods: All CD patients underwent a conventional GIUS directed to terminal ileum followed by a CEUS using a microbubble contrast agent (SonoVue®). GIUS examinations were performed using a Hitachi HI VISION Avius®, employing a linear abdominal transducer. Qualitative and quantitative parameters from the sonographic analysis included maximum bowel wall thickness (bwt), semi-quantitative analysis of vascularity pattern by Doppler GIUS and quantitative measurement of contrast bowel wall enhancement using CEUS (peak intensity). SUS was calculated according to the authors = $(0.0563 \times \text{bwt}_1) + (2.0047 \times \text{bwt}_2) + (3.0881 \times \text{bwt}_3) + (1.0204 \times \text{doppler}_1) + (1.5460 \times \text{doppler}_2)$.

Disease activity was assessed by ileocolonoscopy (reference) and patients were graded as inactive (normal or mild disease) or active (moderate or severe inflammation).

Results: Thirty known CD patients were included, 60% female with median age 33.5 (17-63) years. Regarding endoscopic disease severity, 14 (46.7%) patients presented inactive disease and 16 (53.3%) patients were classified as active disease.

Median bwt was 6.1 (3-13) mm and Doppler intensity was absent in 1 patient (3.3%), mild in 7 patients (23.3%) and moderate to severe in 22 patients (73.3%). Patients presented a median SUS of 5.1 (0.1-12.4) and was not different between patients with active or inactive disease ($p=0.50$) with a poor capability to predict endoscopic activity in ileoscopy (AUROC 0.6, 95% CI 0.38-0.75).

Regarding CEUS, the median peak intensity was 10.9 (2.5-44) and was related with disease severity ($p=0.005$) with a good capability to predict endoscopic activity in ileoscopy (AUROC 0.8, 95% CI 0.61-0.92). We found that peak intensity of 7.8 is the optimal cut off point predicting active disease with a sensitivity of 87.5% and a specificity of 71.4%.

Conclusion: Although SUS is a validated score including bowel wall thickness and color Doppler parameters, in our population was not capable to predict with good accuracy endoscopic activity. CEUS is an emerging technique that must be considered routinely part of the entire sonographic evaluation in CD with good diagnostic accuracy for bowel inflammation.