

CECDAIc – A new score for panenteric evaluation in Crohn's Disease patients

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Abstract

Background: Crohn's Disease (CD) is a chronic and progressive disease characterized by inflammation affecting all the gastrointestinal tract. Panenteric capsule endoscopy has been used to assess both the small and large bowel in a single examination. The Capsule Endoscopy Crohn's Disease Activity Index (CECDAI or Niv score) was initially devised to measure mucosal disease activity in small bowel, although in 2018 it was extended to the colon for standardization of inflammatory activity (CECDAIc).

The aim of this study was to apply the CECDAIc in a cohort of CD patients that underwent panenteric capsule to evaluate the inter-observer agreement among 3 observers and the correlation between this score and inflammatory parameters.

Methods: CECDAIc was calculated after dividing the bowel in 4 segments (1=proximal small bowel, 2=distal small bowel, 3=right colon, 4=left colon) and according to the formula defined by the authors ($A1 \times B1 + C1 + A2 \times B2 + C2 + A3 \times B3 + C3 + A4 \times B4 + C4$), A-inflammation; B-extent of disease and C- presence of strictures.

The videos were read and scored by the 3 independent and experienced operators, blinded to the results of the standard workup.

Statistical analysis was performed with SPSS®, using Kendall's Coefficient to evaluate the interobserver agreement. Spearman correlation (r_s) was used to assess the correlation between the score and inflammatory biomarkers.

Results: Included 22 patients, 59.1% (n=13) male gender with median age 28.0 (17-54) years. In 3 patients (13.6%) the capsule was not exteriorized within the battery time. The median CECDAIc score was 9.17 (0-37). The overall CECDAIc score Kendall coefficient was 0.94, demonstrating a statistically significant ($p < 0.001$) excellent agreement between the 3 observers.

In addition, we verified a high concordance between the observers for all the parameters of CECDAIc score analyzed with Kendall's coefficient of concordance ($A1=0.91; B1=0.95; C1=1; A2=0.91; B2=0.91; C2=0.87; A3=0.84; B3=0.80; C3=1; A4=0.94; B4=0.88; C4=1; p < 0.001$).

We found a very good correlation between CECDAIc and Calprotectin ($r_s=0.82; p=0.012$) and a moderate correlation with C-reactive Protein ($r_s=0.50; p=0.019$).

Conclusion: CECDAIc is a new score with excellent inter-observer agreement and with a strong correlation with calprotectin. These characteristics, associated with its ease of application, may enable CECDAIc to become the tool of choice when reviewing panenteric capsule endoscopy, in order to more accurately and objectively assess CD inflammatory activity.