



# PILLCAM CROHN'S CAPSULE – THE USE OF A PANENTERIC CAPSULE ENDOSCOPY IN A PORTUGUESE CENTER

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## BACKGROUND

In Crohn's disease (CD), the small bowel (SB) is affected in about 75% of the patients, often in locations not within the reach of ileocolonoscopy. **PillCam Crohn Capsule (PCC)** was introduced as a new system composed of a two-headed capsule which allows an extensive coverage of the gastrointestinal (GI) tract.

**Lewis score (LS)** and **Capsule Endoscopy Crohn's Disease Activity Index (CECDAl)** are validated scores to evaluate SB activity. LS results of the sum of the worst affected tertile (villous and ulcer parameters) plus the score of stenosis (independently of the division in tertiles), and classify as: <135 normal or non-significant inflammation; ≥135 and <790 mild inflammation and ≥790 moderate to severe activity. CECDAl (Table 1) has no cut-off of inflammatory severity, although different correspondent values of LS cut-offs have already been determined.

**CECDAl<sub>ic</sub>** was introduced as an extended version of CECDAl to the colon, allowing a comprehensive view of the whole intestine of CD patients (Table 1).

The correlation of these endoscopic activity indices with clinical activity scores, as well as serum or fecal inflammatory markers, has shown to be globally poor.

Table 1. CECDAl Scoring System Worksheet

A. Inflammation score	
0	None
1	Mild to moderate edema/hyperemia/denudation
2	Severe edema/hyperemia/denudation
3	Bleeding, exudate, aphthous ulcer, erosion, small ulcer (< 0.5 cm)
4	Moderate ulcer (0.5-2 cm), pseudo polyp
5	Large ulcer (> 2 cm)
B. Extent of disease score	
0	None
1	Focal disease (single segment)
2	Patchy disease (multiple segments)
3	Diffuse disease
C. Narrowing (stricture)	
0	None
1	Single passed
2	Multiple passed
3	Obstruction

$$CECDAl_{ic} = (A1 \times B1 + C1) + (A2 \times B2 + C2) + (A3 \times B3 + C3) + (A4 \times B4 + C4)$$

(1= proximal small bowel, 2= distal small bowel, 3 = right colon, 4 = left colon)

**Aim:** To correlate endoscopic activity in **PCC** with clinical (Harvey-Bradshaw index (HBI)) activity and biomarkers (fecal calprotectin, C-reactive protein (CRP)).

## METHODS

Retrospective single-center analysis of **PCC** in CD patients. Spearman Correlation was used to correlate each of the parameters (HBI, CRP and calprotectin) with PCC endoscopic activity scores.

## RESULTS

- 24 patients (median age of 39.9 years, 66.7% females). Clinical, biomarkers and endoscopic scores in Table 2.

### PillCam Crohn Capsule

- Main indication:** 58.3% assessment of treatment response
- Adequate enteric cleansing:** 100%
- Adequate colonic cleansing:** 95.8%
- Endoscopic activity:** 79.2% (58.3% Panenteric; 20.9% limited only to SB)

Table 2. Clinical, Biomarkers and Endoscopic scores

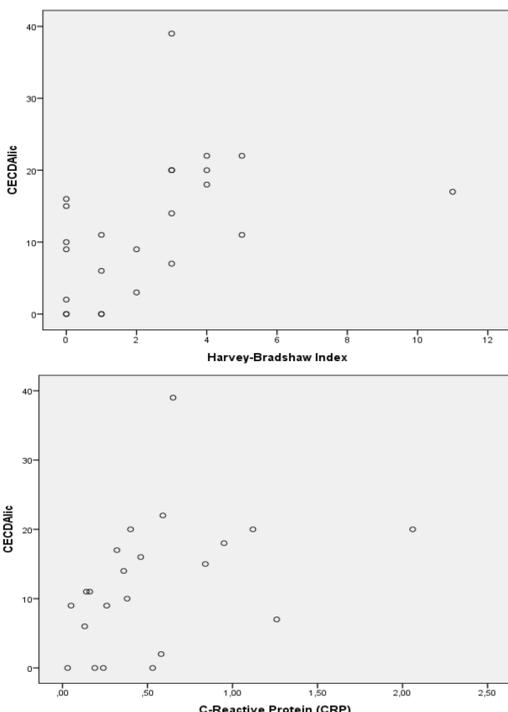
Variable	Median (IQR)	
<b>HBI</b>	2 (0-3.8)	
<b>CRP</b>	0.4 (0.2-0.7)	
<b>Fecal Calprotectin</b>	295 (58.5-544)	
Endoscopic Scores	<b>Lewis</b>	900 (225-1004)
	<b>CECDAl</b>	9 (3-11.8)
	<b>CECDAl<sub>ic</sub></b>	11 (3.75-19.5)

HBI: Harvey-Bradshaw index; CRP: C-reactive protein

Table 3. Correlation between Clinical/Biomarkers and Endoscopic Scores

Clinical and Biomarkers	Strength of Correlation		
	Lewis	CECDAl	CECDAl <sub>ic</sub>
<b>HBI</b>	Weak (rs 0.46, p=0.02)	Moderate (rs 0.54, p=0.006)	Moderate (rs 0.67, p=0.001)
<b>CRP</b>	No correlation (p<0.05)	No correlation (p<0.05)	Moderate (rs 0.54, p=0.009)
<b>Fecal Calprotectin</b>	No correlation (p<0.05)	No correlation (p<0.05)	No correlation (p<0.05)

Figure 1. Correlation between CECDAl<sub>ic</sub> and: A – HBI, B - CRP



## CONCLUSIONS

In patients with CD, small bowel endoscopic scores (**LS and CECDAl**) showed a weak to moderate correlation with clinical activity, and no correlation with biomarkers. **CECDAl<sub>ic</sub>** showed to be moderately correlated with clinical activity and serum biomarkers, suggesting that either symptoms and CRP could be more reliably interpreted in patients with colonic involvement.