# Crohnova choroba tenkého střeva

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## CROHNOVA CHOROBA

- > 50 % nemocných (> 80 % v Asijské populaci) postižení tenkého střeva
- 30 % izolované postižení tenkého střeva
- cíl léčby = slizniční hojení (éra biologické léčby)

**Vind I. et al. Am J Gastroenterol 2006; 6: 1274 – 1282**
**Sjoberg D. et al. JCC 2014; 8: 215 – 222**

## KAPSLOVÁ ENDOSKOPIE x ENTEROKLÝZA

| Study | Design | Number of cases | Tests | Definition/description for positive findings | Diagnostic yield | Sensitivity/specificity |
|---|---|---|---|---|---|---|
| Chong et al. (2005) [15] | Prospective | 22 established CD | VCE ($n = 21$) | Erosions/ulcers | 77% (17/21) | NA |
| | | | EC ($n = 21$) | Narrowing or an irregular terminal ileum/neoterminal ileum | 19% (4/21) | NA |
| Chong et al. (2005) [15] | Prospective | 21 suspected CD | VCE ($n = 21$) | Erosions/ulcers | 19% (4/21) | NA |
| | | | EC ($n = 16$) | NA | 6% (1/16) | NA |
| Albert et al. (2005) [32] | Prospective | 27 established CD | VCE ($n = 14$) | Aphthous mucosal lesions, irregularly shaped or fissural ulcers (occasionally associated with bleeding), cobblestone appearance, luminal narrowing due to oedema and/or fibrous scarring, and granularity with attenuated or lost vascular pattern | 93% (13/14) | NA |
| | | | EC ($n = 27$) | NA | 59% (16/27) | NA |
| Albert et al. (2005) [32] | Prospective | 25 suspected CD | VCE ($n = 13$) | Same as above | 92% (12/13) | NA |
| | | | EC ($n = 14$) | NA | 29% (4/14) | NA |

VCE, video capsule endoscopy; NA, not available; SBFT, small bowel follow-through; EC, enteroclysis; CD, Crohn's disease.
[1]No specific criteria for positive findings of CD were provided in the text. Diagnosis was made by a consensus panel of the coinvestigators in this study.

**Dong-Hoon Y. et al. Gastroenterol Res Pract 2016; 12: 2016**

# KAPSLOVÁ ENDOSKOPIE x CT ENTEROGRAFIE

| Study | Design | Number of cases | Tests | Definition/description for positive findings | Diagnostic yield | Sensitivity/specificity |
|---|---|---|---|---|---|---|
| Voderholzer et al. (2005) [20] | Prospective | 41 established CD | VCE | Small lesions (aphthoid ulcerations, villous denudation, and patchy erythema) and large lesions (such as cobblestone pattern, deep/fissural ulcerations) | 61% | NA |
| | | | CTEC | Contrast enhancement of the mucosa and the other bowel wall layers, increased density of the peri-intestinal fat representing inflammatory changes and increased vascularity, separation of bowel loops, and possible lymphadenopathy<br>The length and location of stenotic areas, the presence of fistulae, ulcerations, pseudodiverticulae, and polypous changes of the mucosa | 29% | NA |
| Eliakim et al. (2004) [12] | Prospective | 35 suspected CD | VCE | Ulcers/erosions, erythema, aphthae, and nodular lymphoid hyperplasia | 77% | NA |
| | | | CTE | Wall thickening, nodularity in terminal ileum, and ulcers | 20% | NA |
| Hara et al. (2006) [21] | Prospective | 17 (8 suspected and 9 established CD) | VCE | Erosions, ulcers, or strictures | 71% | NA |
| | | | CTE | Increased mucosal or wall enhancement, bowel wall thickening > 3 mm, fistulas, or abscesses | 53% | NA |
| Solem et al. (2008) [23] | Prospective | 27 | VCE | NA[1] | NA | 83%/53% |
| | | | CTE | NA[1] | NA | 82%/89% |
| Jensen et al. (2011) [22] | Prospective | 80 | VCE[2] | More than 3 ulcerations (aphthous lesions or ulcers), irregular ulcers/fissures, or stenosis caused by fibrosis or inflammation | 30%[3] | 100%/91% |
| | | | CTE[2] | Mucosal ulcerations, bowel wall thickening, bowel wall hyperenhancement, small bowel stenosis, creeping fat, dilated vasa recta, and the presence of an abscess or fistula in conjunction to a diseased small bowel segment | 33%[3] | 76%/85% |

CD, Crohn's disease; VCE, video capsule endoscopy; NA, not available; CTEC, computed tomography enteroclysis; CTE, computed tomography enterography.
[1]No specific criteria for positive findings of CD were provided in the text. Diagnosis was made by a consensus panel of the coinvestigators in this study.
[2]VCE and CTE were performed for 69 of 80 and 73 of 80 patients, respectively.
[3]Diagnostic yield for terminal ileal CD.

**Dong-Hoon Y. et al. Gastroenterol Res Pract 2016; 12: 2016**

# KAPSLOVÁ ENDOSKOPIE x MRI ENTEROGRAFIE

Table 3: Continued.

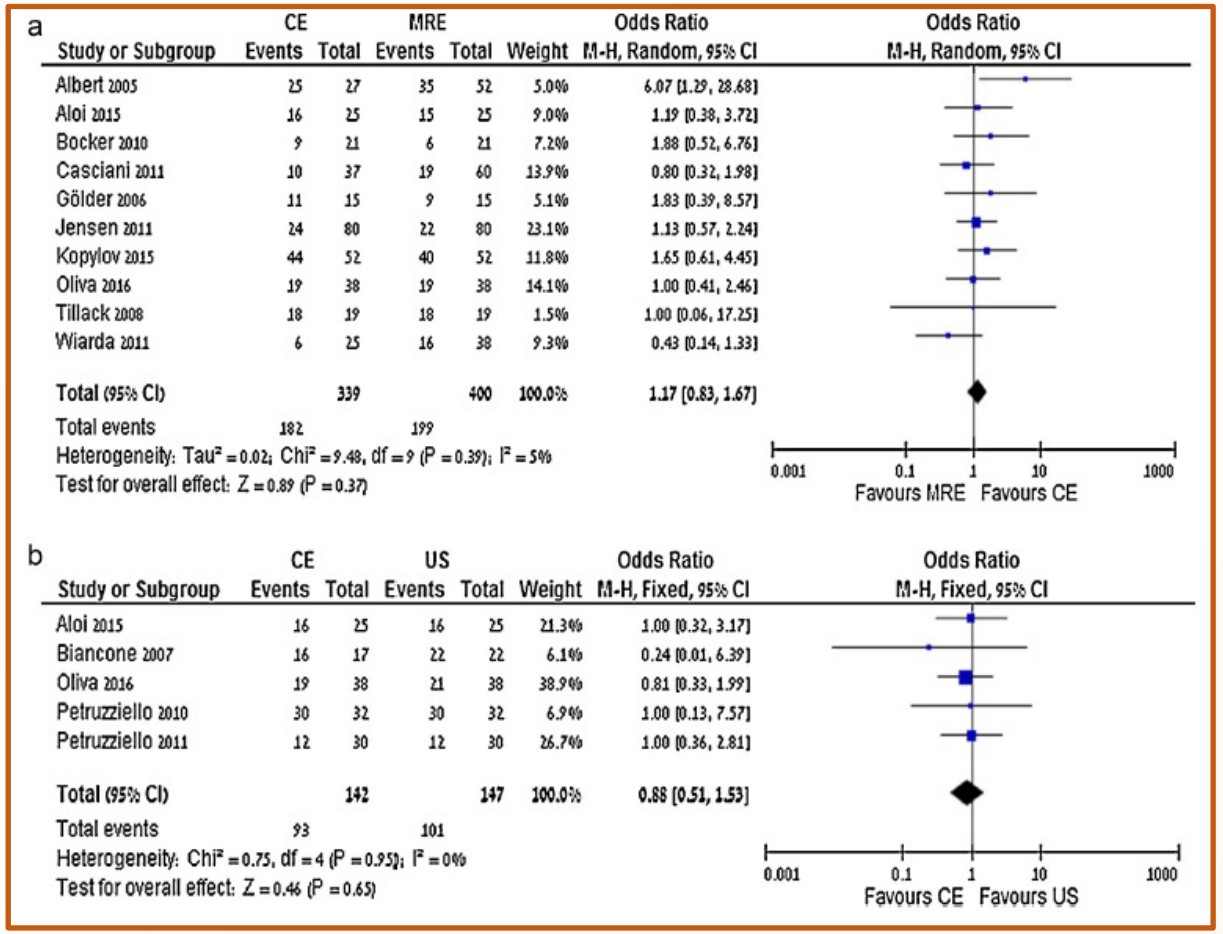
| Study | Design | Number of cases | Tests | Definition/description for positive findings | Diagnostic yield | Sensitivity/specificity |
|---|---|---|---|---|---|---|
| Jensen et al. (2011) [22] | Prospective | 80 | VCE[2] | More than 3 ulcerations (aphthous lesions or ulcers), irregular ulcers/fissures, or stenosis caused by fibrosis or inflammation | 30%[3] | 100%/91% |
| | | | MRE[2] | Mucosal ulcerations, bowel wall thickening, bowel wall hyperenhancement, small bowel stenosis, creeping fat, dilated vasa recta, and the presence of an abscess or fistula in conjunction with a diseased small bowel segment | 28%[3] | 76%/85% |
| Wiarda et al. (2012) [24] | Prospective | 38 (20 suspected and 18 established CD) | VCE[4] | Mild: erythematous and/or edematous mucosa and/or small ulcerative lesions (<0.5 mm) within otherwise normal appearing mucosa<br>Moderate: larger ulcerative lesions (≥0.5 mm and <20 mm)<br>Severe: large ulcerative lesions (≥20 mm) and/or significant stenotic lesions, with or without macroscopic signs of inflammation. | NA | 57%/89% (for 25 nonstenotic CD) |
| | | | MREC | Bowel wall thickness >4 mm, intramural and mesenteric edema, mucosal hyperemia, wall enhancement and enhancement pattern and transmural ulcerations, and fistula formation | NA | 73%/90% (for all participants) |

CD, Crohn's disease; VCE, video capsule endoscopy; NA, not available; MRE, magnetic resonance enterography; MREC, magnetic resonance enteroclysis.
[1] Diagnostic yield for small intestinal CD.
[2] VCE and MRE were performed for 69 of 80 and 72 of 80 patients, respectively.
[3] Diagnostic yield for terminal ileal CD.
[4] VCE was not done for 13 patients showing small intestinal stenosis in MREC.

**Dong-Hoon Y. et al. Gastroenterol Res Pract 2016; 12: 2016**

# KAPSLOVÁ ENDOSKOPIE x MRI ENTEROGRAFIE a UZ

## DIAGNOSTICKÁ VÝTĚŽNOST




Kopylov U. et al. Dig Liv Dis 2017; 49: 854–863

# KAPSLOVÁ ENDOSKOPIE x MRI ENTEROGRAFIE

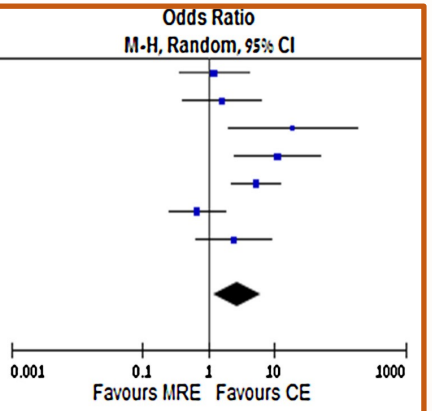
## DIAGNOSTICKÁ VÝTĚŽNOST

### Proximální tenké střevo

a

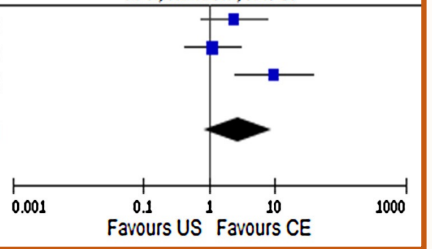
| Study or Subgroup | CE Events | CE Total | MRE Events | MRE Total | Weight | Odds Ratio M-H, Random, 95% CI |
|---|---|---|---|---|---|---|
| Aloi 2015 | 18 | 25 | 17 | 25 | 15.2% | 1.21 [0.36, 4.07] |
| Bocker 2010 | 7 | 21 | 5 | 21 | 14.1% | 1.60 [0.41, 6.19] |
| Gölder 2006 | 9 | 16 | 1 | 16 | 8.6% | 19.29 [2.03, 183.41] |
| Jensen 2011 | 18 | 80 | 2 | 80 | 13.0% | 11.32 [2.53, 50.67] |
| Kopylov 2015 | 32 | 52 | 12 | 52 | 18.0% | 5.33 [2.27, 12.52] |
| Oliva 2016 | 14 | 38 | 13 | 28 | 16.9% | 0.67 [0.25, 1.82] |
| Tillack 2008 | 13 | 19 | 9 | 19 | 14.3% | 2.41 [0.64, 9.03] |
| Total (95% CI) | | 251 | | 241 | 100.0% | 2.79 [1.20, 6.48] |
| Total events | 111 | | 59 | | | |

Heterogeneity: Tau² = 0.84; Chi² = 18.78, df = 6 (P = 0.005); I² = 68%
Test for overall effect: Z = 2.38 (P = 0.02)




| Study or Subgroup | CE Events | CE Total | US Events | US Total | Weight | Odds Ratio M-H, Random, 95% CI |
|---|---|---|---|---|---|---|
| Aloi 2015 | 18 | 25 | 13 | 25 | 33.5% | 2.37 [0.73, 7.68] |
| Oliva 2016 | 11 | 38 | 10 | 38 | 36.7% | 1.14 [0.42, 3.12] |
| Petruzziello 2010 | 16 | 32 | 3 | 32 | 29.8% | 9.67 [2.44, 38.27] |
| Total (95% CI) | | 95 | | 95 | 100.0% | 2.76 [0.84, 9.02] |
| Total events | 45 | | 26 | | | |

Heterogeneity: Tau² = 0.73; Chi² = 6.07, df = 2 (P = 0.05); I² = 67%
Test for overall effect: Z = 1.68 (P = 0.09)

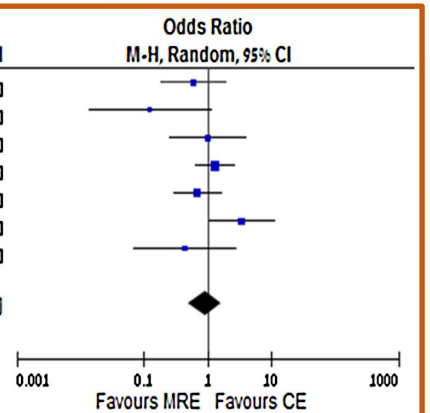



### Distální tenké střevo

b

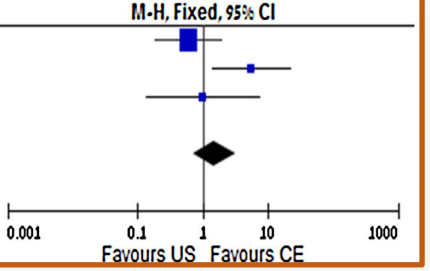
| Study or Subgroup | CE Events | CE Total | MRE Events | MRE Total | Weight | Odds Ratio M-H, Random, 95% CI |
|---|---|---|---|---|---|---|
| Aloi 2015 | 14 | 25 | 17 | 25 | 15.1% | 0.60 [0.19, 1.90] |
| Bocker 2010 | 1 | 21 | 6 | 21 | 5.8% | 0.13 [0.01, 1.15] |
| Gölder 2006 | 9 | 16 | 9 | 16 | 11.8% | 1.00 [0.25, 4.04] |
| Jensen 2011 | 24 | 80 | 20 | 80 | 24.0% | 1.29 [0.64, 2.58] |
| Kopylov 2015 | 35 | 52 | 39 | 52 | 20.5% | 0.69 [0.29, 1.61] |
| Oliva 2016 | 11 | 18 | 12 | 38 | 14.8% | 3.40 [1.06, 10.96] |
| Tillack 2008 | 15 | 19 | 17 | 19 | 8.0% | 0.44 [0.07, 2.76] |
| Total (95% CI) | | 231 | | 251 | 100.0% | 0.91 [0.50, 1.63] |
| Total events | 109 | | 120 | | | |

Heterogeneity: Tau² = 0.24; Chi² = 10.37, df = 6 (P = 0.11); I² = 42%
Test for overall effect: Z = 0.33 (P = 0.74)




| Study or Subgroup | CE Events | CE Total | US Events | US Total | Weight | Odds Ratio M-H, Fixed, 95% CI |
|---|---|---|---|---|---|---|
| Aloi 2015 | 14 | 25 | 17 | 25 | 66.3% | 0.60 [0.19, 1.90] |
| Oliva 2016 | 15 | 18 | 18 | 38 | 17.1% | 5.56 [1.38, 22.38] |
| Petruzziello 2010 | 30 | 32 | 30 | 32 | 16.6% | 1.00 [0.13, 7.57] |
| Total (95% CI) | | 75 | | 95 | 100.0% | 1.51 [0.72, 3.20] |
| Total events | 59 | | 65 | | | |

Heterogeneity: Chi² = 5.99, df = 2 (P = 0.05); I² = 67%
Test for overall effect: Z = 1.08 (P = 0.28)




Kopylov U. et al. Dig Liv Dis 2017; 49: 854–863

## ZVÝŠENÍ DIAGNOSTICKÉ VÝTĚŽNOSTI

- **MRI enterografie:** 10 %
- **ileoskopie:** 22%
- **enteroklýza:** 32%
  (p < 0.001)
- **CT enterografie:** 47 %
  (p < 0.001)

Dionisio PM et al. Am J Gastroenterol 2010;105:1240-8; quiz 1249.

## PANENTEROSKOPIE

- zobrazení vyšších etáží tenkého střeva

## VYŠŠÍ DIAGNOSTICKÁ VÝTĚŽNOST

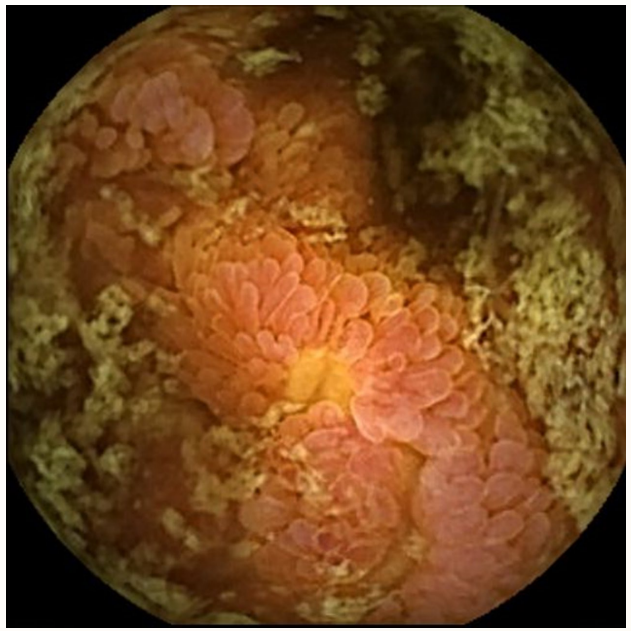
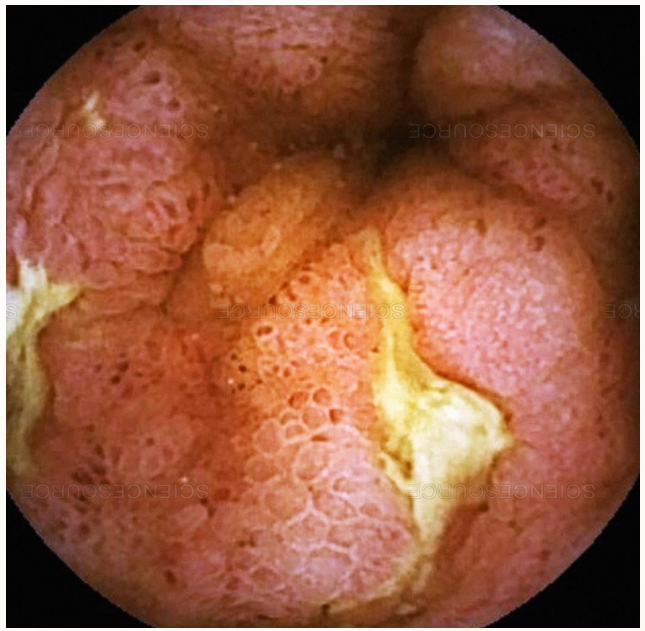
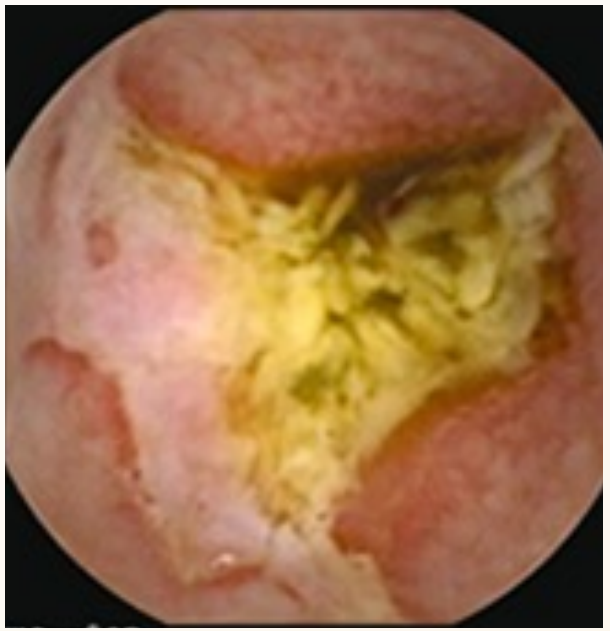
- přímá vizualizace sliznice
- detekce časných lézí

## VYSOKÁ NEGATIVNÍ PREDIKTIVNÍ HODNOTA

- 96 – 100 %

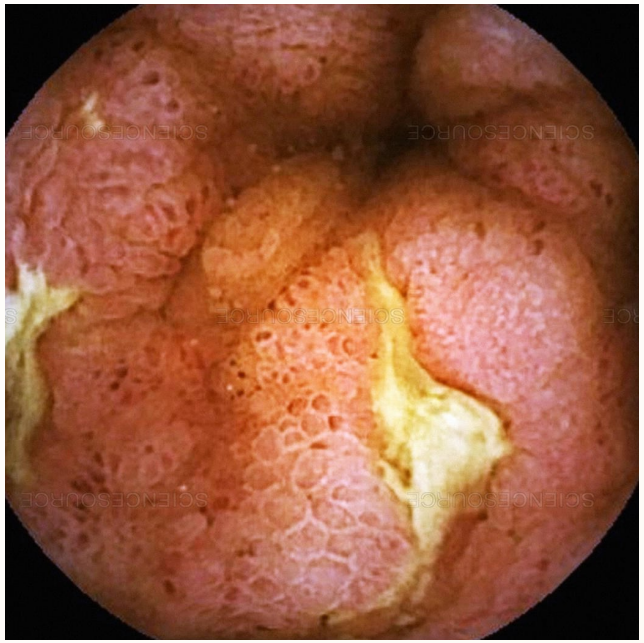
## NIŽŠÍ SPECIFICITA

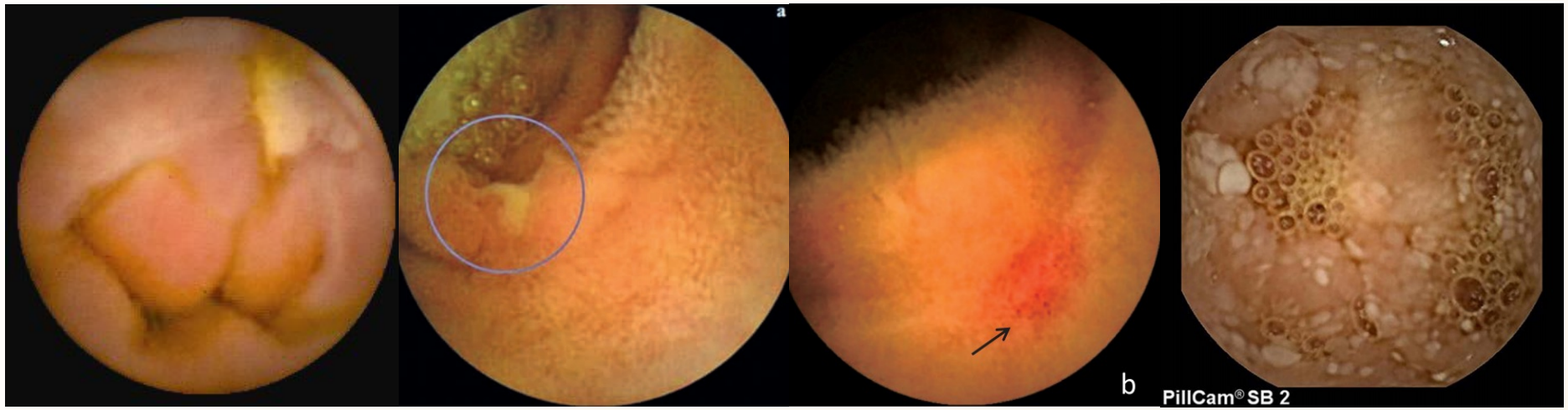
Edém
Erytém
Atozní léze
Ulcerace
Cobble stones
Stenózy

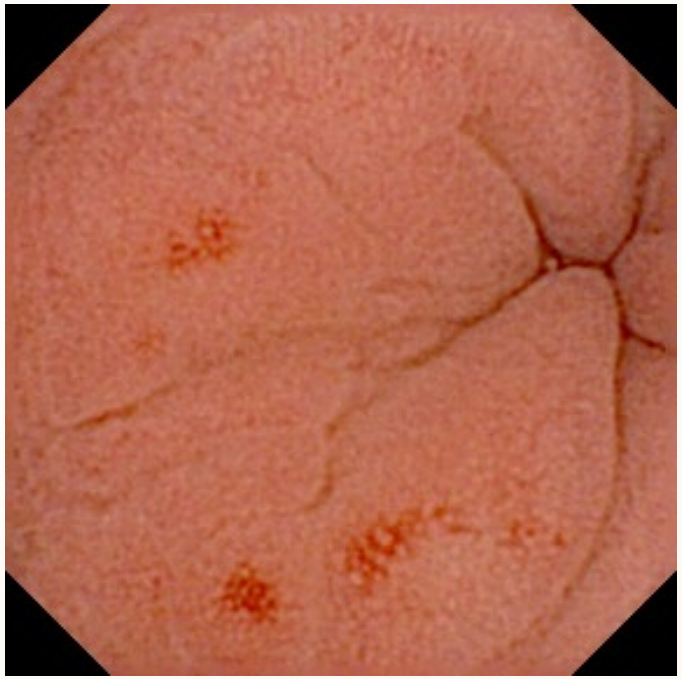
Crohnova choroba vs.

Enteropatie z NSAID
Behcetova nemoc
Infekční enteritida
Vaskulitida
Postradiační enteritida



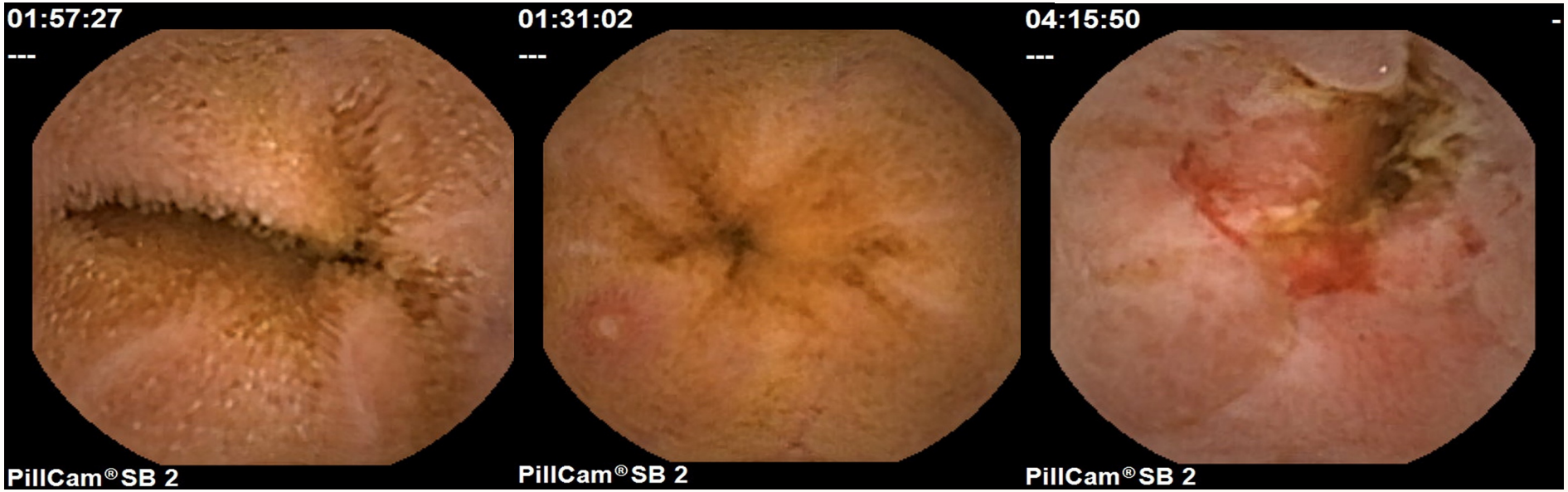


léze kompatibilní s Crohnovou chorobou u 10 - 14 % zdravých dobrovolníků



**Goldstein JL et al. Clin Gastroenterol Hepatol 2005;3:133-41**.

- tenké střevo: třetiny podle „SB transit time“
- pro každou třetinu: subskóre (**vředy, edém**)
- LEWISOVO SKÓRE: součet nejvyššího subskóre a skóre pro **stenozy** (celé tenké střevo)




Gralnek IM et al. Aliment PharmacolTher. 2008;27:146-154.

# KAPSLOVÁ ENDOSKOPIE U CROHNOVY CHOROBY – LEWISOVO SKÓRE



| | Number | Extent | Descriptors |
|---|---|---|---|
| Villous appearance (worst-affected tertile) | Normal – 0<br>Oedematous – 1 | ≤10% – 8<br>11–50% – 12<br>>50% – 20 | Single – 1<br>Patchy – 14<br>Diffuse – 17 |
| Ulcer (worst-affected tertile) | None – 0<br>Single – 3<br>2–7 – 5<br>≥8 – 10 | ≤10% – 5<br>11–50% – 10<br>>50% – 15 | <1/4 – 9<br>1/4–1/2 – 12<br>>1/2 – 18<br>(percentage of the frame occupied by the largest ulcer)<br>ocupada |
| Stenosis (whole study) | None – 0<br>Single – 14<br>Multiple – 20 | Non-ulcerated – 2<br>Ulcerated – 24 | Traversed – 7<br>Not traversed – 10 |

- **LS < 135** normální (nesignifikantní) nález
- **LS > 135 a < 790** mírný zánět
- **> 790** střední – těžký zánět

**Gralnek IM et al. Aliment PharmacolTher. 2008;27:146-154.**

# KAPSLOVÁ ENDOSKOPIE U CROHNOVY CHOROBY – CECDAI

| A. Inflammation score |
|---|
| 0 = None |
| 1 = Oedema/hyperemia/denudation (mild to moderate) |
| 2 = Oedema/hyperemia/denudation (severe) |
| 3 = Bleeding, exudate, aphthae, erosion, ulcer <0.5 cm |
| 4 = Ulcer 0.5–2 cm, pseudopolyp |
| 5 = Large ulcer >2 cm |
| **B. Extent of disease score** |
| 0 = No disease |
| 1 = Focal disease (single segment) |
| 2 = Patchy disease (2–3 segments) |
| 3 = Diffuse disease (>3 segments) |
| **C. Stricture score** |
| 0 = None |
| 1 = Single-passed |
| 2 = Multiple-passed |
| 3 = Obstruction (non-passage) |
| CECDAI = proximal (A1 × B1 + C1) + distal (A2 × B2 + C2). |

- **LS < 135** normální (nesignifikantní) nález
- CECDAI: < 3.8

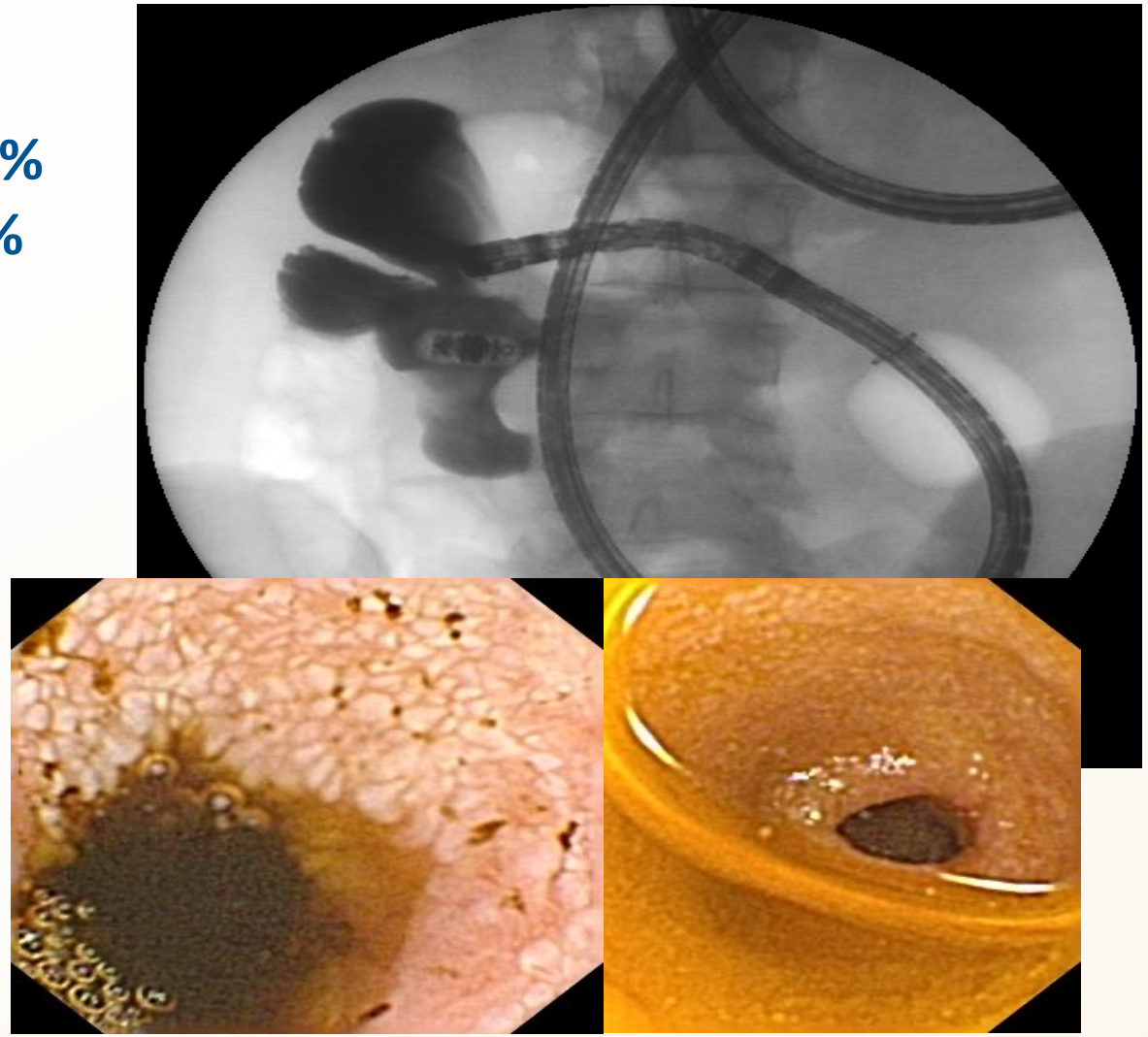
- **LS > 135 a < 790** mírný zánět
- CECDAI: < 3.8 a > 5.8

- **> 790** střední – těžký zánět
- CECDAI: < 5.8

**CE CROHN'S DISEASE ACTIVITY INDEX**

Niv Y et al. Endoscopy 2012;44:21-6.

- **kapsle v GITu > 14 dní**
- zdraví dobrovolníci: **0 %**
- krvácení z neurčeného zdroje: **1,2 %**
- suspektní Crohnova choroba: **1,5 %**
- známá Crohnova choroba: **5 – 13 %**
- nádory tenkého střeva: **10 – 25 %**
- radioterapie: **> 30 %**
- NSAID ???



- **extrakce retinované kapsle:**

**a/endoskopická (hluboká enteroskopie)**

**b/ chirurgická**

Communication from the ASGE Standards of Practice Committee

GUIDELINE

# The role of endoscopy in inflammatory bowel disease

Volume 81, No. 5 : 2015 GASTROINTESTINAL ENDOSCOPY

We recommend CE to evaluate the small intestine in patients with suspected CD who have no obstructive symptoms and negative ileocolonoscopy results.

We recommend that a patency capsule, small-bowel follow-through, CT enterography, or magnetic resonance enterography be performed before CE in patients with known small-bowel CD involvement.

Communication from the ASGE Standards of Practice Committee

GUIDELINE

# The role of endoscopy in inflammatory bowel disease

Volume 81, No. 5 : 2015 GASTROINTESTINAL ENDOSCOPY

We recommend CE in patients with known CD and unexplained symptoms only when abnormalities detected with CE will alter management. (⊕⊕⊕◯)

ECCO Guideline/Consensus Paper

# 3rd European Evidence-based Consensus on the Diagnosis and Management of Crohn's Disease 2016: Part 1: Diagnosis and Medical Management

*Journal of Crohn's and Colitis*, 2017, 3–25

Small bowel capsule endoscopy (SBCE) should be reserved for patients in whom the clinical suspicion for CD remains high despite negative evaluations with ileocolonoscopy and radiological examinations (SBE/SBFT or CTE or MRI) [EL2]. SBCE has a high negative predictive value for small bowel CD [EL4]

Device assisted enteroscopy may be performed in expert hands if histological diagnosis is needed [EL3] or when endoscopic therapy is indicated, including dilatation of strictures, retrieval of impacted capsules, and treatment of bleeding [EL4]

- nediagnostická ileoskopie
- vysoká negativní prediktivní hodnota
- nízká specificita
  - nutná typická klinika + lab.
  - žádné NSAID > 1 měsíc
- skórovací systémy pro grading zánětu, nejsou diagnostické
- LS < 135: Crohnova choroba nepravděpodobná

- prediktivní markery zvyšující specificitu kapslové endoskopie
  - váhový úbytek
  - perianální postižení
  - elevace zánnětlivých markerů
  - fekální kalprotektin

**diagnostická výtěžnost:**

- bez průjmů, negativní laboratorní markery: **21,4 %**
- bez průjmů, pozitivní laboratorní markery: 66, 7 %
- průjmy i laboratorní změny: 90,1 %
- průjmy, negativní laboratorní markery: **0 %**

**Katsinelos P et al. Eur J Intern Med 2011;22:e63–e66**

- fekální kalprotektin > 100 mg/g : 43 %
- fekální kalprotektin > 200 mg/g : 65 %
- fekální kalprotektin < 100 mg/g **: 0 %**

**Koulaouzidis A et al. Scand J Gastroenterol 2011; 46:561–566**

- PERZISTUJÍCÍ SYMPTOMY
- ROZSAH ONEMOCNĚNÍ
  (prognóza, imunosupresivní terapie)
- SLIZNIČNÍ HOJENÍ
  (slizniční zhojení u nemocných v klinické a lab. remisi u 42 % s postižením tenkého střeva)
- POOPERAČNÍ REKURENCE
  (v orálních partiích – nejasný význam)