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Diffusion-weighted magnetic resonance imaging in ileocolonic Crohn's disease

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inflammatory activity; 135-790 - mild inflammatory activity; ≥ 790 - moderated to severe inflammatory activity).

Results: Included 69 patients, 62% (n=43) were female, with mean age 33 years (range 18-75); inflammatory activity was observed in 41 (59%) patients, and was moderate to severe in 28 (41%).

Eighteen patients (26%) presented with anemia, and 74% (n=51) with iron deficit (defined as ferritin levels < 100 ng/mL or transferrin saturation $< 16\%$); nutritional deficits of albumin, folic acid and Vitamin B12 were encountered in 4 patients each (8,7%). Proximal small bowel disease was significantly correlated with lower acid folic serum levels (p=0,004). LS superior to 790, independently of disease location, was significantly associated with anemia (p=0,039) and low serum proteins (p=0,002).

Conclusions: In our series, we observed an important prevalence of both anemia and iron deficit. Proximal inflammatory activity in the small bowel was significantly associated with lower folic acid levels, while anemia and low serum proteins were correlated with the severity of the inflammatory lesions, assessed through Lewis Score, regardless of their distribution.

P166

Upper gastrointestinal involvement in asymptomatic Crohn's disease patients in two countries of emerging disease: Asia and Eastern Europe

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Background: The incidence of inflammatory bowel disease (IBD) is still increasing in Asia and Eastern Europe. Disease phenotype may differ when compared the East and the West. However, limited studies have reported on the frequency of upper gastrointestinal (GI) involvement in patients with Crohn's disease (CD) in non-Western countries. In this prospective, international, multicenter study we compared the prevalence of macroscopic and microscopic upper GI manifestations and Helicobacter pylori positivity in asymptomatic CD patients in Asia and Eastern Europe in comparison with sex- and age-matched non-IBD controls.

Methods: Consecutive asymptomatic CD patients were prospectively recruited for upper GI endoscopy between 2013 and 2014 in Hong Kong and in Hungary. Endoscopy and biopsy findings were recorded and histology was performed to assess for Helicobacter pylori and microscopic signs characteristic for CD.

Results: One hundred and thirteen CD patients (50 Hong Kong; 63 Hungary; 66.4% male; median age, 35 years) and 114 controls (49 Hong Kong; 65 Hungary) were included. CD patients in Hungary (median age, 33 years, range 18-76) were younger than those in Hong Kong (median age 39 years, range 19-73; p=0.027). There was no difference in the presence of macroscopic inflammation (30% vs. 47.6%; p=0.059), microscopic inflammation (92% vs. 74.6%; p=0.075), gastroduodenal erosions (22% vs. 11%; p=0.122) or Helicobacter pylori positivity (6% vs 9.5%; p=0.376) in CD patients in Hong Kong and in Hungary. Peptic ulcer or duodenal strictures were found in 1.6% of patients in Hungary and none in Hong Kong. Granulomas were detected in 4% in Hong Kong and 9.5% in Hungary (p=0.135). Two CD cases (3.2%) in Hungary were

diagnosed with celiac disease. Overall CD subjects had a significantly lower Helicobacter pylori positivity as compared to controls (8.0% vs 20.2%; p=0.010).

Conclusions: The rate of upper GI lesions in CD patients in Asia was similar to that of Hungary, and comparable to Western countries. CD patients had a significantly lower Helicobacter pylori positivity rate as compared to controls. The convincingly high frequency of macroscopic and especially microscopic inflammation observed in our study justifies the need of upper GI endoscopy in asymptomatic CD patients independently of ethnicity.

P167

Prolonged Small Intestinal Transit in Crohn's Disease is associated with a history of stricturing and penetrating disease.

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Background: Gastrointestinal motor disorders may complicate Crohn's disease (CD) and make clinical evaluation difficult. In spite of this, little is known about gastrointestinal motor disorders in CD. Moreover, it is not clear which clinical characteristics of CD are associated with abnormal transit patterns. This is relevant to the clinician, especially when symptoms are present in otherwise quiescent CD. Our aim was to investigate which clinical characteristics of CD are associated with abnormal small intestinal transit time (SITT).

Methods: This retrospective study includes data from capsule endoscopy examinations and medical reports of 118 patients with CD and 43 controls without CD performed at Aarhus University Hospital, Denmark from 2002 to 2011. Cases with capsule retention were excluded. Data were analysed using regression models.

Results: Gastric emptying (GE) and SITT did not differ between patients with CD (median GE: 27 min (range 1 - 592), SITT 295 min (range 78 - 481)) and controls (median GE: 16 min (range 1 - 138), SITT 285 min (range 114 - 481)). Among patients with CD, prolonged SITT was associated with stricturing (p = 0.012) and penetrating disease behaviour (p = 0.003). No statistically significant difference was found between stricturing and penetrating disease (p = 0.51). Age, gender, duration of disease, smoking, disease localization, active disease, level of faecal calprotectin, and specific findings on capsule endoscopy were not associated with significant changes in SITT.

Conclusions: This study indicates that prolonged SITT is associated with the behaviour or phenotype of CD. Furthermore, our findings imply that changes in small intestinal motility causing prolonged SITT are chronic rather than a transitory phenomenon since disease location and signs of inflammation present at the time of CE did not significantly affect SITT.

P168

Diffusion-weighted magnetic resonance imaging in ileocolonic Crohn's disease

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Table 1 ADC ($\times 10^{-3}$ mm²/s) in bowel segments with and without Crohn's disease.

		Normal	Crohn's disease	P-value
All segments	- Buscopan	1.48 (1.37-1.58)	1.43 (1.18-1.69)	0.08
	+ Buscopan	1.40 (1.27-1.53)	1.36 (1.51-1.59)	0.49
Terminal ileum	- Buscopan	1.22 (0.81-1.63)	1.09 (0.82-1.35)	0.30
	+ Buscopan	1.47 (0.73-2.21)	1.20 (0.68-1.72)	0.61
Ascending colon	- Buscopan	1.60 (1.21-1.99)	1.82 (0.86-2.78)	0.65
	+ Buscopan	1.34 (1.02-1.67)	1.54 (1.09-1.98)	0.29
Transverse colon	- Buscopan	1.58 (1.37-1.79)	1.18 (0.96-1.40)	0.01
	+ Buscopan	1.52 (1.17-1.87)	1.10 (0.74-1.46)	0.09
Descending colon	- Buscopan	1.45 (1.24-1.66)	1.27 (0.93-1.61)	0.29
	+ Buscopan	1.34 (1.01-1.66)	1.28 (1.07-1.50)	0.83
Rectum	- Buscopan	1.43 (1.29-1.58)	1.94 (1.07-2.80)	0.25
	+ Buscopan	1.38 (1.22-1.54)	1.73 (1.04-2.42)	0.46

95% confidence intervals are displayed in parenthesis.

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Background: Diffusion-weighted magnetic resonance imaging (dw-MRI) utilizes differences in the motion of water molecules between tissues for image formation without administration of contrast materials. Inflammation in the bowel wall slows water transit resulting in lower apparent diffusion coefficients (ADC). Previous studies have shown that dw-MRI combined with conventional MR sequences can be useful for detection of Crohn's disease in the terminal ileum and colon. The present feasibility study examined the diagnostic performance of free-breathing dw-MRI without fasting, bowel preparation or contrast administration in ileocolonic Crohn's disease.

Methods: A total of 10 patients with known Crohn's disease were included in this prospective and blinded study. dw-MRI was performed with a Philips Achieva 1.5T MR system and body coil (Philips Medical Systems, Eindhoven, The Netherlands). The MR protocol contained coronal e-thrive and SSHT2 with free-breathing and a factor b fixed at 800 s/mm². Patients were examined in the prone position before and after intravenous administration of 20 mg Hyoscin Butylbromide (Buscopan®, Boehringer Ingelheim, Basel, Switzerland). Ileocolonoscopy with Simple Endoscopic Score for

Crohn's disease (SES-CD) served as gold standard. Active Crohn's disease was defined as a segmental score ≥ 1 .

Results: A total of 46 bowel segments were assessed with ileocolonoscopy and dw-MRI of which 22 (48%) were inflamed according to the gold standard (median SES-CD segmental score 4, range 2-8). ADC obtained with and without Buscopan correlated with a Spearman's rho of 0.64 ($P < 0.001$). Without Buscopan, there was a trend towards lower ADC in segments with Crohn's disease compared to segments without inflammation (1.43×10^{-3} mm²/s vs. 1.48×10^{-3} mm²/s, $P = 0.08$, Table 1). However, this difference was not observed with Buscopan ($P = 0.49$). ROC-analysis revealed an area under the curve (AUC) of 0.56 and 0.64 with and without Buscopan, respectively ($P = 0.3$). In the transverse colon, dw-MRI significantly discriminated active from inactive Crohn's disease (1.58×10^{-3} mm²/s vs. 1.18×10^{-3} mm²/s, $P = 0.01$).

Conclusions: The ability of dw-MRI to discriminate Crohn's disease from normal bowel segments is inadequate. Large variations of ADC in normal and diseased bowel segments emphasize the importance of optimal anatomical distinction for obtaining precise measurements.