

cancer (n = 1), lymphangiectasia (n = 1), mesenteric desmoid (n = 1), and others (n = 4). We evaluated the insertion performance of the EUS probe, visualization rate of intraluminal lesions, visualization rate of lesions outside the intestinal lumen, the mean duration of investigation, and related complications. Results: We were able to insert the EUS probe and obtain clear images in all cases. Intraluminal lesions were visualized by EUS in 9 patients (69.2%). Of these 9 patients, 5 underwent surgical intervention after the examination. The EUS image accurately represented the resected specimen in these patients. Lesions outside the intestinal lumen were detected in 3 patients (23.1%), but these lesions showed few endoscopic findings. The mean time necessary for the investigation was 74 ± 28 minutes. The only related complication observed was a small mucosal break caused by the EUS probe in a patient (7.7%). Conclusions: The SBE system made it possible to obtain ultrasonic tomographic images from any region of the small bowel. EUS provided supplemental information on the endoscopic findings of small bowel disease.

W1592

Narrow Band Imaging With Optical Magnification in Coeliac Disease: Real-Time Video Validation of a Simplified Classification and Assessment of Inter and Intra Observer Agreement

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Background: Conventional white light endoscopy have poor predictive values in identifying patients with Coeliac Disease (CD). The aim of the study was to evaluate the utility of Narrow Band Imaging with optical magnification (NBI-Z) in predicting villous morphology. Methods: Adult patients considered being at risk of having CD exhibiting at least one of the following features: positive serology for CD, iron deficiency anaemia, chronic diarrhea/malabsorption and abdominal pain/bloating were invited to participate in the study. After standard endoscopy, patients underwent NBI-Z using a novel endoscope which enables magnification upto 115X (GIF-Q160Z, Olympus Australia Pty.Ltd). All procedures were digitally recorded. Targeted biopsies of each videoed area were taken, placed in separate pots and sent for histopathological analysis. Forty one representative images of the videos were compared with histopathology and viewed by 2 expert endoscopists (developmental phase). Villous patterns were first classified as normal (N) or abnormal (A). Abnormal villi were then further classified as cerebiform / stunted (C) or flat (F). This morphological pattern corresponded to partial or total villous atrophy respectively on histology. Three NBI-Z naive endoscopists were then invited to grade the videos. These endoscopists first underwent an interactive training session (learning phase) before embarking on the assessment (validation phase). To test for reproducibility, all videos were then randomly reordered and graded again. Results: 21 patients (41 videos (10 CD, 31 normal)) were analyzed. Sensitivity (Sn) and specificity (Sp) in differentiating normal or abnormal villi was 93.3% and 97.8% respectively with inter and intra observer agreement (kappa, k) at 0.82 and 0.86 respectively. The Sn and Sp in differentiating partial from total villous atrophy was 83.3% and 100% with k at 0.73 and 0.68 respectively. Conclusions: Using a simplified classification, we demonstrated very high Sn and Sp with substantial inter/intra observer agreement by a group of NBI-Z naive endoscopists. This novel imaging tool can potentially aid the endoscopist in case finding and targeting biopsies quickly during routine endoscopy in patients presenting with suspicion of CD.

W1593

Usefulness of Polyethylene Glycol Solution for Bowel Preparation Before Capsule Endoscopy in Patients With Obscure Gastrointestinal Bleeding

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Background: In some cases, target sites are very difficult to visualize due to residual substances, and so on, at the time of capsule endoscopy (CE). We previously reported bowel preparation using 1L of polyethylene glycol (PEG) solution, containing dimethylpolysiloxane, before CE to significantly improve target site visualization (Journal of Gastroenterology and Hepatology, September, 2009). Herein, we report the usefulness of the same preparation in patients with obscure gastrointestinal bleeding (OGIB) at the time of CE. Patients and Methods: The subjects were 63 patients with OGIB, in whom CE was performed at our institution. All subjects were fasted for 12 hours before CE and randomized into two groups: 32 (Group A) were given bowel preparation with PEG, and 31 (Group B) received no preparation. The details of bowel preparation in Group A included the subjects receiving, during a one-hour period, 1L of PEG with 200 mg of dimethylpolysiloxane three hours before CE. The usefulness of this preparation was compared in terms of the diagnostic rate between the two groups, and the statistical significance of differences was determined. Results: The

details of the final diagnosis, including other test results, of the 63 subjects with OGIB were: 20 had ulcerations and erosions (8 with NSAIDs-induced injury, the largest subgroup), 15 had vascular diseases (8 with vascular ectasia, the largest subgroup), and 3 with tumors and polyps. In the remaining 25 subjects, diagnosis was difficult. There were no significant differences in patient background factors, such as age and sex, between the two groups. The diagnostic rate was 75% in Group A (24/32, 14 subjects with ulcerations and erosions, 9 with vascular diseases, and 1 with tumors and polyps), 45% in Group B (14/31, 6 subjects with ulcerations and erosions, 6 with vascular diseases, and 2 with tumors and polyps), showing a statistically significant difference between the two groups ($P = 0.021$ by Fischer's exact probability test). Conclusions: Bowel preparation using 1L of PEG with dimethylpolysiloxane before CE significantly increased the diagnostic rate in OGIB patients, and can therefore be regarded as useful.

W1594

New Method for Better Detection and Visualization of Vascular and Non-Vascular Lesions of Small Bowel by Using Blue Mode Viewing: Capsule Endoscopy Study

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Background & Aim: The introduction and further continuous development of capsule endoscopy opened a new chapter in the study of small bowel diseases allowing, finally, to cross the frontier of the endoscopic examination of the small bowel. However, the global miss rate of capsule endoscopy is about 11%. To date, there no study showed the difference between the blue mode and normal mode (while light) in diagnosis of small bowel lesions. Our aim is to compare between blue mode as a new method and normal mode viewings for detection and visualization of vascular and non-vascular lesions of small bowel. Materials and Methods: A total 20 patients with liver cirrhosis prospectively included. All patients have small bowel mucosal lesions compatible with portal hypertensive enteropathy detected by using normal mode viewing (RAPID reader software, version 5 - Given Imaging, Yoqneam, Israel). We restudied the patients again using blue mode viewing, and then we compared the results with those of normal mode. Both mode viewings have the same speed (8 frames/ sec), and same image resolution factors such as brightness and darkness. Results: The vascular lesions included red spots, angioectasias, and small bowel varices. The non-vascular comprised erythematous, edema, and superficial erosions. The total number of vascular ($p = 0.001$) and non-vascular lesions ($p = 0.004$) detected by blue mode was significantly higher than those detected by normal mode (Table). Moreover, blue mode viewing offered better visualization of the both types of lesions than normal mode. Conclusions: Blue mode is a good new method, which has better ability to detect and visualize both vascular and non-vascular lesions of small bowel than normal mode. As a result, we suggested that blue mode viewing might reduce the miss rate of capsule endoscopy to a reasonable degree.

Lesions	Normal mode	Blue mode	P value
Vascular (N) Red spots Angiectasias	74 13 5 92	104 15 5 123	0.001
Varices Total			
Non vascular (N) Total	31	41	0.004

W1595

New Scoring System for Mucosal Lesions of Portal Hypertensive Enteropathy Detected by Capsule Endoscopy: Prospective Study

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Background and Aim: There is limited data about the mucosal lesions of portal hypertensive enteropathy (PHE) detected by capsule endoscopy (CE) as well as, there is no scoring system to evaluate their severity. To date, there is no published study showed the association between PHE and transient elastography (TE). The aim of this study was to study the clinical impact of TE in the field of PHE, and to create a reliable scoring system for mucosal findings of PHE detected by CE. Materials and Methods: We compared medical records of 30 cirrhotic patients complicated with portal hypertension (PTH) with 20 control patients who underwent CE. Our scoring system of PHE depends on classification of small bowel (SB) mucosal lesions into main four types; 1- red spots, 2- angioectasias, 3- SB varices, and 4- inflammatory like lesions. The first three types comprised the vascular lesions of PHE. Each of these four lesions worthy 2 points if it was multiple (more than 2 lesions), and only one point if it was not. We calculated the positive points for every patient to make a final PHE

score of maximum 8 points. Results: Mucosal lesions compatible with PHE were significantly more common in cirrhotic patients than control patients (70% vs. 10%, $p < 0.001$). The mucosal findings in cirrhotic patients included red spots (18 patients, 60%), angioectasias (17 patients, 56.7%), inflammatory like abnormalities (14 patients, 46.7%), and SB varices (5 patients, 16.7%). In control group, SB mucosal findings were present only in two patients and included red spots (one patient, 5%) and inflammatory-like abnormalities (one patient, 5%). Cirrhotic patients with worsening Child Pugh class, large EV, portal gastropathy, and history of endoscopic variceal injection sclerotherapy or ligation (EIS/EVL) were significantly associated with PHE. Comparison between our proposed PHE score and clinical data of patients showed that patients with higher TE score ($p = 0.029$), higher Child-Pugh score ($p = 0.027$), larger EV ($p = 0.013$), and prior EIS/EVL ($p = 0.013$) were significantly associated with higher PHE score. Conclusions: Mucosal lesions compatible with PHE were significantly more common in cirrhotic patients than control patients (70% vs. 10%, $p < 0.001$). Cirrhotic patients with high TE score, worsened Child-Pugh, large EV, and prior EIS/EVL are clinically associated with severe PHE. TE could be of clinical impact in predicting severe PHE in cirrhotic patients especially if presented with occult gastrointestinal bleeding and the esophagogastroduodenoscopy and colonoscopy are negative.

W1596

Duodenal Endoscopic Mucosal Resection: A Single, Prospective, Experimented Center Experience

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Aims: Endoscopic Mucosal Resection (EMR) is an alternative to surgery for removal of superficial carcinomas or premalignant lesions throughout the gastrointestinal tract. The efficacy of EMR in neoplastic lesions of oesophagus, stomach and colon has been widely described. The aim of this study was to report our experience of duodenal EMR, with regard to safety and efficacy. **Adenoma of the duodenal papilla and ampullectomy** (with different endoscopic resection) were excluded from this study. **Methods:** Twenty-nine patients (15 men, median age 57 years, range 28-85 years) were referred for endoscopic management of duodenal lesions in our center between 2004 and 2009. Data including precise location, size, technique of duodenal EMR, complications, pathology and follow up of the lesions were prospectively reviewed since 2007. **Results:** Thirty-four duodenal EMR were performed in 29 patients during the study period. 10 patients (29%) had a polyposis syndrome, as Familial Adenomatous Polyposis ($n=9$), or Peutz-Jeghers syndrome ($n=1$). The median size of the tumor was 15 mm (range 5-50 mm). Twenty-five lesions (74%) were found in the second part of the duodenum. In most of cases, the lesions were adenomas with mild ($n=18$) or severe ($n=10$) dysplasia. One lesion was a Brunner's gland hamartoma. All lesions were treated by snare excision, using 0.01% epinephrine solution in 82% of cases. Additional plasma argon coagulation was used in 14 cases, and hemostatic clips were placed in 18 cases to prevent bleeding. En-bloc resection was achieved in 17 cases (50%). Complication rate was 26% (9 procedures) including 3 perforations (one of whom requiring surgery), and 6 bleeding. All bleeding occurred within the first postprocedural day, there was none delayed bleeding. Seven additional endoscopic procedures were performed in 5 patients to treat complication with efficacy. There was no postoperative mortality. **Conclusion:** EMR is an effective treatment of duodenal tumors. Morbidity (26%) seems higher compared to EMR in other locations of the gastrointestinal tract, with a higher risk of bleeding (only precoc bleeding) and perforation (respectively 18% and 9% in this study). In most of cases, management of complication was based on a conservative and/or endoscopic treatment. Surgery was necessary in only one case in this series.

W1597

Preliminary Experience Single Balloon Enteroscopy in Pediatrics

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INTRODUCTION: Single balloon enteroscopy (SBE) is an endoscopic technique designed to evaluate and treat small bowel pathology. There were few data on pediatric experience with (SBE) in the published literature. **AIM:** The authors present the preliminary experience of Single Balloon Enteroscopy in pediatrics. The aim of our study was to evaluate the applicability, safety and efficacy of SBE in pediatrics. **METHODS:** In March, 2008 we began a prospective study on the applicability, safety and efficacy of SBE in pediatrics. Children with suspected small bowel disease who required deep enteroscopy were enrolled. The Olympus XSIF-Q260Y enteroscope [200 cm length, 9.2 mm outer diameter (OD), and 2.8 mm working channel] was coupled with a 132 cm long, 13.2 mm OD single use silicon overtube, which has a balloon at the distal end. Balloon is operated with Olympus balloon control unit (MAJ 1440). Sixteen patients (9 females and 7 males) with a median age (range) of 13.8 (7-18) years were examined. All procedures (18 procedures) were performed with sedations assisted by anesthesiologist. **RESULTS:** Nine (50%) examinations were done by oral approach and nine (50%) by rectal approach. Mean time of 43 ± 22 minutes

(range 15min. -120 min) The main indication was obscure gastrointestinal bleeding (68.8%). The other indication was Peutz-Jeghers syndrome in 3 patients (18.8%), polyposis in 3 patients (6.3%) and suspicion of lymphoma in ileon in 1 patient (6.3%). In 12 (75%) patients abnormal finding were detected with SBE: Polyps (5), GIST (2), Nodular Lymphoid Hyperplasia (2), Meckel diverticulum (1), parasitic infectious enteropathy (1), active bleeding (1). Diagnostic yield was 72.2% . 33.3% were therapeutic cases. 3 polyps were removed, Meckel diverticulum (1) and all the GIST (2) were treated surgically. Fluoroscopy was used in one (1) patient. No complications occurred during or after the SBE procedures. **CONCLUSION:** The single balloon enteroscopy demonstrated a high diagnostic yield, and frequently provided useful therapeutic intervention. It appears to be a safe and effective method of performing deep enteroscopy in pediatrics with suspected small bowel pathology.

W1598

Efficacy of Morning Versus Afternoon Small Bowel Enteroscopy: Does Timing Matter?

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Background/Aims: Physician fatigue which progresses as the day passes on has been hypothesized as a possible cause for decreased efficacy in endoscopic procedures like colonoscopy. Since, small bowel enteroscopy procedures are tedious and prolonged, their efficacy may similarly be decreased in afternoons. The aim of this study is to evaluate the differences in diagnostic and therapeutic efficacy of enteroscopies performed in morning versus afternoon. **Methods:** All small bowel enteroscopy reports performed at Cleveland Clinic between January 2008 and August 2009 for suspected small bowel disease were reviewed. Patient demographics, procedure details and complications were recorded. Morning procedures were defined as those that started before 12 noon and afternoon procedures as those that started after 12 noon. Estimated depth of insertion in antegrade approach was defined as the extent of small bowel examined distal to the ligament of Treitz and in retrograde approach it is the extent of small bowel examined proximal to the ileocecal valve. Diagnostic yield is defined as presence of a significant positive finding. Positive therapeutic yield is defined as performance of any significant therapy excluding biopsies. Enteroscopies with poor prep precluding procedure were excluded from analysis. Enteroscopies were performed by using one of the three systems: Single-balloon, Double-balloon or Spirus enteroscopy systems. Student's t-test, Pearson Chi-square and Fisher's Exact tests used to analyze data, $P < 0.05$ considered significant. **Results:** A total of 250 enteroscopies were performed, 182 antegrade and 68 retrograde. Results are summarized in table. **Conclusions:** Timing of procedure, morning versus afternoon, does not affect the diagnostic and therapeutic efficacy of small bowel enteroscopy. However, retrograde enteroscopies in afternoon might take longer procedure time than in morning.

	Antegrade, Morning (N=91)	Antegrade, Afternoon (N=91)	P value	Retrograde, Morning (N=34)	Retrograde, Afternoon (N=34)	P value
Age in yrs	63.2 (15.5)	60.8 (15.5)	0.29	59.5 (14.5)	60.9 (18.5)	0.74
Males	36 (39.6)	43 (47.3)	0.3	17 (50)	15 (44.1)	0.63
Procedure time in min	42.4 (21.5)	46.2 (22.4)	0.25	51.3 (24.3)	66.6 (32.9)	0.033
Depth of insertion in cm	224.8 (90.5)	239.3 (148.8)	0.45	100.7 (104.4)	106.2 (102.8)	0.83
Positive diagnostic finding	58 (63.7)	58 (63.7)	0.99	15 (44.1)	12 (35.3)	0.46
Therapy performed	31 (34.1)	28 (30.8)	0.63	3 (8.8)	7 (20.6)	0.17
Fluoroscopy used	7 (7.7)	10 (11)	0.44	5 (14.7)	6 (17.7)	0.74
Complications	4 (4.4)	2 (2.2)	0.68	2 (5.9)	2 (5.9)	0.99

Values presented as Mean(SD) or N(%)

W1599

Single Balloon Enteroscopy System Might Be More Efficient Among Three Available Enteroscopy Systems for Evaluation and Management of Suspected Small Bowel Disease

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Background/Aims: There are three enteroscopy systems available for evaluation of small bowel disease, namely single-balloon assisted enteroscopy (SBAE), double-balloon assisted enteroscopy (DBAE) and Spirus Enteroscopy (SE). Aims