month after TIPS, oesophageal varices were still present in 3/10 (30% p=0,005), congestive gastroscopy in 6/10 patients (60% p=1), whereas no patient had ascites (p=0.21). VCE still showed small bowel lesions in 7/10 patients (p=0.21), . CONCLUSION: In our study VCE allowed the identification of small bowel lesions in all patients with portal hypertension. TIPS effectively reduces presence and severity of oesophageal varices, but the reduction of small bowel lesions, congestive gastropathy.and ascites was not significant, possibly due to the small patient series. The role of differing post-TIPS intervals should also be evaluated.

Tu1203

First Study With a MGCE Simulator: Is There a Benefit of Chromoendoscopy in Magnetically Guided Capsule Endoscopy?

Stefan Foertsch, Henrik Keller, Philip W. Mewes, Rainer Kuth, Heinz Woern, Thomas Roesch

Background: In conventional endoscopy one of the most important methods for visibility enhancement of metaplasia and dysplasia mucosa is chromoendoscopy. It has been proven to significantly enhance the visibility of mucosa irregularities. In 2010 the Magnetically Guided Capsule Endoscopy (MGCE) was introduced (Rey, 2010). A small endoscopic capsule is swallowed by the patient and navigated by an external magnetic field in a water filled stomach. For the MGCE a virtual reality simulator was developed that can be used as a versatile tool for training and scientific (pre-)studies. Aim: To extend the new MGCE virtual reality simulator with chromoendoscopy to investigate benefits for the MGCE and to evaluated the use of the extended simulator for scientific (pre-)studies. Methods: Texture generation methods and image filters were used on images from conventional endoscopy and from pig stomach experiments in order to create virtual mucosa textures with methylene blue dyeing. The results were additionally enhanced with pathologies which include the characteristic appearance of diseases in chromoendoscopy. The textures were placed on a 3D stomach model to be used in the MGCE virtual reality simulator. Virtual examinations were performed in repeated trials with the new textures and compared to examinations with a normal texture which has no blue dyeing but the same pathologies. Results: The normal texture of the 3D stomach model can be replaced by textures with methylene blue dyeing. For both kinds of textures a number of pathologies were created, which can be positioned freely in the stomach model. This allows the same MGCE examination to be done with and without the help of chromoendoscopy. The parameters of the dyeing can be changed, such as the amount of methylene blue applied to the mucosa and a spatial distinction between different anatomical parts of the stomach. Repeated trials showed promising results in detecting mucosa irregularities comparable to conventional chromoendoscopy in a MGCE simulator. Conclusions: The new virtual reality simulator proofed to be a useful tool in conducting a first study on the concept of chromoendoscopy in MGCE. The results allow the training of this screening method. The method itself appears promising for future clinical studies. Its advantages for detecting mucosa irregularities in conventional gastroscopy were reproducible in virtual reality for the MGCE.

Tu1204

Fluorescein Transport is Decreased in Colon Cancer Cells: Implications for Confocal Endomicroscopy

Rajeev Prabakaran, Eladio Rodriguez-Diaz, Lisa I. Jepeal, Satish K. Singh

Background: Classically, IV-fluorescein-based confocal laser endomicroscopy (CLE) reveals dysplasia as "dark cells" with an extremely low cytoplasmic fluorescence compared to normal epithelium. Intracellular pH-dependent quenching of fluorescein (FL) fluorescence has been proposed to explain this phenomenon, but is unlikely in the range of physiological intracellular pH. Indeed, because FL is an anion we hypothesized that "dark cells" might be better explained by differences in FL uptake in dysplasia/cancer. **Aim:** To assess *In Vitro* whether differences in FL transport processes determine intracellular FL content in normal vs. cancer cell lines. **Methods:** INT 407, a nontransformed intestinal epithelial cell line, and two adenocarcinoma cell lines (HT29 and DLD1) were employed for FL uptake studies. Cells were exposed to 25 μM fluorescein in the presence or absence of test reagents (sodium, bicarbonate, butyrate, and the anion transport inhibitor DIDS) for indicated times at 37°C or 4°C, lysed, with fluorescence measured at 490 nm excitation / 525 nm emission wavelengths. Uptake was corrected for protein content and the active transport component was determined by subtracting values obtained at 4°C from those at 37°C. **Results:** Active, time dependent transport of fluorescein was demonstrated in all lines that reached a steady-state within 5-10 minutes. Consistent with clinical CLE observations, intracellular FL content at 5 mins was 40-50% lower in both colon cancer cell lines compared to the nontransformed INT 407 cell line. Furthermore, active FL uptake was stilbene-sensitive (1mM DIDS - 47% reduction, $p< 0.001$), bicarbonate sensitive (25mM - 70% reduction, $p< 0.001$), butyrate sensitive (5mM - 58% reduction, $p< 0.001$), and sodium-independent (5% ±1.9 reduction, $p> 0.05$). **Conclusion:** FL is actively transported into intestinal epithelial cells *In Vitro*, and these processes appear to be reduced in cells derived from dysplasia/cancer paralleling CLE findings of lower cytoplasmic fluorescence in dysplasia/cancer *In Vivo*. Transport appears to be decreased by stilbenes, bicarbonate and butyrate, consistent with the action of anion transport processes. Most intriguing is that *In Vivo* CLE with FL may actually be revealing specific *functional* information (i.e. anion transport) unique to dysplasia/cancer and warrants *In Vivo* validation.

Tu1205

The Utility of Quantitative Endoscopic Ultrasound Elastography for the Diagnosis of Solid Pancreatic Masses

Muhammad F. Dawwas, Hatim Taha, John S. Leeds, Manu N. Nayar, Kofi W. Oppong

Introduction: Recent data suggests that endoscopic ultrasound (EUS) elastography, a novel technique that allows real-time quantification of tissue stiffness, can accurately differentiate benign from malignant solid pancreatic masses (1). External validation of the diagnostic utility of this technique has not been reported. Methods: We carried out quantitative EUS elastography on 31 consecutive patients with EUS-proven solid pancreatic masses using the linear Hitachi EUB-7500. Multiple quantitative elastographic measurements of the mass lesion (A) and soft tissue references areas (B) were undertaken in each patient and the corresponding strain ratios (B/A) were calculated. Final diagnosis was based on EUS-fine needle aspiration cytology and/or resection specimen histology. The diagnostic accuracy of EUS elastography in detecting malignancy was calculated using receiver operating curve analysis. Results: The mean lesion size was 27.6 (SD 9.8) mm. The final diagnoses were pancreatic adenocarcinoma (n=24), inflammatory mass (n=5) and neuroendocrine tumor (n=2). Both strain ratio and pancreatic mass elasticity were significantly higher among patients with pancreatic malignant tumors compared with those with inflammatory masses. However, the sensitivity, specificity, accuracy and area under the receiver operating curve of EUS elastography for correctly diagnosing pancreatic malignancy in our cohort (table 1) were less favorable than those reported recently, with lower mean strain ratio (4.62 vs. 6.04) and higher pancreatic mass elasticity cutoffs (0.28 vs. 0.05) providing the highest accuracy. Conclusion: Quantitative EUS elastography is a promising tool for the differential diagnosis of solid pancreatic masses although its accuracy in our experience has been less favorable than recently reported. Further assessment of the utility of this technique in other cohorts is warranted. References: 1. Iglesias-Garcia J, Larino-Noia J, Abdulkader I, Forteza J, Dominguez-Munoz JE. Quantitative endoscopic ultrasound elastography: an accurate method for the differentiation of solid pancreatic masses. Gastroenterology. 2010 Oct;139:1172-80.
Table 1

Parameter	Mean Strain Ratio	Mean Pancreatic Mass Elastography
Area under ROC	0.84 (95%CI 0.66-1.00)	0.83 (95%CI 0.65-1.00)
Sensitivity (%)*	100%	40%
Specificity (%)*	40%	100%
Accuracy (%)*	90.32%	90.32%

*Using strain ratio cutoff of 4.62 and pancreatic mass elastography cutoff of 0.28

Tu1206

Probes Pointing the Way; Fluorescent Molecules as Aides in Barrett's Endoscopy

Akueni L. Davelaar, Wytske Westra, Kausilia K. Krishnadath, Paul Fockens

Barrett's esophagus (BE) is a pathologic condition of the esophagus where chronic gastroesophageal reflux leads to transformation of squamous into an intestinal-type of epithelium. This intestinal-type metaplasia (IM) can consequently stepwise develop into severe dysplasia and ultimately esophageal adenocarcinoma (EAC). The number of BE patients that actually acquire EAC is very small, approximately 0.5 to 1%. Nonetheless, people with BE still have a risk of as much as a 100-fold higher of developing EAC compared to the general population. To ameliorate this risk, BE patients are entered into surveillance programs which are based on endoscopic surveillance with the concurrent taking of biopsies followed by histopathological staging. However, even upon following strict surveillance guidelines, dysplastic patches and early cancer lesions can be missed. Techniques for a more accurate detection of premalignant lesions are thus sorely needed. In this respect the protease activatable fluorescent probe MMPsense is of interest as its activating enzymes, the matrix metalloproteinases (MMPs), are considered important players in the process of neoplastic progression. In cancer they play a role in invasion and metastasis and also in general tumor progression and growth. The MMPs are often upregulated in cancer, a fact also seen in EAC. Upregulation has also been seen in pre-malignant BE lesions, making the probe an interesting candidate for the detection of dysplasia and early cancer in BE. Aim: To evaluate if MMPsense can identify dysplastic and cancerous lesions in BE. Method: MMPsense contains a peptide backbone bound and quenched fluorophore. Within the backbone lie cleavage sites for the MMPs. Upon cleavage the quenching is released and after excitation fluorescence is emitted revealing the tissue localization and quantity of the proteases of interest. The probe is excited by and emits fluorescence in the near infra-red spectrum which *In Vivo* leads to less signal loss. To test the activity of MMPsense we have incubated the probe on tissue sections of normal squamous epithelium and tissues which span the pathologic sequence of BE, including non dysplastic, dysplastic and cancerous lesions. The sections were then examined under a fluorescent microscope with near infrared filters. Probe activation could be seen as discrete fluorescent signals, which could be counted. Results: Comparing tissues from a total of 8 patients with IM and 11 patients with EAC with coupled normal squamous tissues, there was a higher probe activation signal count in the aberrant tissues (figure 1). Future directions: ex-vivo MMPsense discriminates between normal and aberrant tissues in BE. The next steps are to evaluate whether this probe is able to more accurately detect dysplasia and early cancer as these are the most difficult types to detect during regular endoscopy.

Tu1207

Three-Dimensional Optical Coherence Tomography Assessment During Radiofrequency Ablation in Barrett's Esophagus Reveals Depths of Tissue Destruction and Potential Areas of Residual Glands

Tsung-Han Tsai, Chao Zhou, Hsiang-Chieh Lee, Tejas Kirtane, Yuankai K. Tao, Osman O. Ahsen, Marisa Figueiredo, Desmond C. Adler, Joseph M. Schmitt, Qin Huang, James G. Fujimoto, Hiroshi Mashimo

BACKGROUND/AIMS: Three-dimensional (3D) endoscopic microscopy using optical coherence tomography (OCT) is a promising method to real-time evaluate areas before and after radiofrequency ablation (RFA) of Barrett's esophagus. Presently, patients routinely require follow up endoscopic examination six to eight weeks after their ablative therapy and often require repeat treatments to achieve complete treatment response. Present 3D-OCT allows near-microscopic surveillance including subsurface tissue structural changes over broad areas during ablation therapies through the biopsy channel of standard endoscopes and may be uniquely suited to assess treatment efficacy provide real-time feedback for treatment dosing,