

# SMW

Established in 1871

## Swiss Medical Weekly

Formerly: Schweizerische Medizinische Wochenschrift

**Supplementum 206**

ad Swiss Med Wkly

2014;144

August 28, 2014

**The European Journal of Medical Sciences**

**Annual meeting of the  
Swiss Society of Gastroenterology  
Swiss Society of Visceral Surgery  
Swiss Association of the Study of the Liver**

*Interlaken (Switzerland), September 11–12, 2014*

Suppl. 206  
ad Swiss Med Wkly  
2014;144  
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ISSN printed version: 1424-7860

ISSN online version: 1424-3997

### Alcohol consumption in Swiss IBD patients: prevalence and influence on disease course

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**Background:** Little is known about the influence of alcohol consumption on the disease course in IBD.

**Methods:** Frequency of alcohol consumption was screened at enrolment in the Swiss IBD cohort study. Socio-demographic variables, disease characteristics and course were compared among non-drinkers (ND), low-to-moderate (LMD) and heavy drinkers (HD). **Results:** 43% of 2019 patients reported regular alcohol consumption: 40.5% LMD and 2.6% HD. Drinkers were older, mostly males, with a higher body mass index and concomitant tobacco consumption ( $p < 0.001$ ). The proportion of ND was significantly higher in CD than UC (60% vs. 52%,  $p = 0.003$ ). In UC LMD seem to have less extended disease (59% vs. 48% in ND and 44% in HD;  $p = 0.028$ ). And drinkers had to be less hospitalized (16% vs. 22% in ND). However, this could be associated with the protective effect of smoking. HD received significantly less immunosuppressants. During follow-up (6925 patient-years) HD with CD seem to have a milder disease course with only 2.7 surgeries per 100 patient-years compared to 6.5 and 7.2 in LMD and ND, respectively. The incidences of abscesses and fistulas were also reduced compared to ND and LMD (0.9 vs. 2.8 and 3.3 per 100 patient-years). **Conclusions:** 43% of the Swiss IBD cohort patients drink alcohol, among them 6% heavily. Older age, Male gender and smoking are associated with increased alcohol consumption. Alcohol may favour a milder course of UC with a shorter extend, less immunosuppressant use and fewer hospitalisations. This might be confounded by smoking. Heavy drinking seemed to reduce the development of abscesses and fistulas and the need for surgery in CD during follow-up.

### Diagnostic value of fecal calprotectin to detect small bowel pathology in patients with previous negative endoscopy

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**Background:** Capsule endoscopy is laborious and costly. Therefore, we examined the diagnostic value of fecal calprotectin to increase diagnostic yield.

**Methods:** We performed a post-hoc analysis of a prospective cohort of 70 consecutive patients who had received capsule endoscopy (Pillcam, Given Imaging) after negative bidirectional endoscopy. Calprotectin (Bühlmann, Switzerland) was measured in stool samples collected within 24 hours before the investigation. Primary endpoint was the presence of mucosal breaks (erosion, ulcer, tumor). Investigators were blinded to calprotectin results.

**Results:** Indications for capsule endoscopy were anemia (51.4%), hematochezia (14.3%), suspected Crohn's disease (14.3%), abdominal pain (10%), suspected malignant disease (8.6%) and unexplained diarrhea (1.4%). The prevalence of mucosal breaks was 48.6% ( $n = 34$ ) but 4 patients had significant lesions strictly outside the small bowel and were not included in the analysis. Calprotectin testing was more often positive ( $> 50 \mu\text{g/g}$ ) in patients with mucosal findings (61.4% vs. 38.6%,  $P = 0.001$ ) and Receiver Operating Characteristics analysis showed an area under the curve of 0.760 (95% confidence interval 0.639-0.857) for fecal calprotectin to identify intestinal inflammation. At the optimal cut-off (63  $\mu\text{g/g}$ ), fecal calprotectin had 90.0% sensitivity and 63.9% specificity. This translated into a positive and negative likelihood ratio of 2.49 and 0.16, respectively, and resulted in a high negative predictive value (88.5%). The overall accuracy was 69.7%.

**Conclusion:** Fecal calprotectin is a valid marker of intestinal inflammation in the small bowel and might help to guide diagnostic investigations.

### Investigation of the Polyprotein Encoded by Hepatitis E Virus Open Reading Frame 1

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**Introduction:** Hepatitis E virus (HEV) is believed to be the most common cause of acute hepatitis and jaundice in the world. However, current knowledge of the molecular virology of hepatitis E is scarce. The HEV positive-strand RNA genome harbours 3 open reading frames (ORFs). ORF1 encodes the functional domains required for viral RNA replication. It is unclear whether these are processed into distinct proteins or act as a polyprotein with multiple functions.

**Methods:** Using specific antibodies directed against functional ORF1 domains, we investigated putative polyprotein processing i) in a wheat germ-based cell-free expression system, ii) in newly established human cell lines inducibly expressing HEV ORF1, and iii) in selectable subgenomic HEV replicons derived from the HEV genotype 3 Kernow-C1 strain. The latter system is currently also being exploited to evaluate novel antiviral approaches against hepatitis E.

**Results:** The product of HEV ORF1 was detected only as a polyprotein in the three experimental systems investigated, including in a context of genuine viral RNA replication. These results indicate that no or only very inefficient processing of the polyprotein encoded by ORF1 occurs during viral replication.

**Conclusion:** HEV may be unique among positive-strand RNA viruses in expressing a large polyprotein comprising all necessary functions to exert RNA replication. Efforts are ongoing to validate these findings in a fully infectious system. If confirmed, our findings yield a number of intriguing questions regarding the functional organization, structure and cell biology of the polyprotein encoded by HEV ORF1.

### Retrospective Analysis of the Effectiveness of the Surveillance-Program for Hepatocellular Carcinoma

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**Background:** Regular surveillance of patients at risk for hepatocellular carcinoma (cirrhotics) has been recommended by European, American and Asian guidelines and is practiced in many Swiss hepatology clinics. The effectiveness and costs of 6 monthly surveillance by ultrasonography (US) in Switzerland is not known.

**Methods:** In the two-year period 2011/2012, 693 US-examinations in 283 patients were performed at the Clinic for Gastroenterology and Hepatology of the University Hospital Basel. The clinical charts, US reports and reports of additional examinations (CT, MRI, liver biopsy) were reviewed. The tumour stage of HCCs detected in the surveillance program was compared to HCCs not detected in a surveillance program. The number needed to survey (NNS) to detect an HCC and the costs per detected HCC were calculated.

**Results:** No focal lesions were detected in 198 of the 283 patients. In 63 patients, focal lesions that were not HCCs were detected by the program or known already. In 12 patients no definitive assessment of a lesion was possible and 3 were lost to follow-up. In 7 patients, a new HCC was detected. All 7 newly diagnosed HCCs were at an early stage (BCLC 0 or A) and 5 were within the Milan-Criteria. In non-surveilled patients with a diagnosis of HCC during the same observation period, only 33% were diagnosed in an early HCC stage. NNS were 41 patients or 99 US-examinations. The estimated costs per detected HCC were 12'570 CHF.

**Conclusions:** In this retrospective analysis, HCC surveillance resulted in the detection of HCCs in an early stage in all surveillance patients. The number needed to survey and the costs of the surveillance are reasonably low. HCC surveillance should be recommended to all patients at risk for HCC in whom potentially curative treatments would be used.

## The effect of Hepatitis B virus infection on Steatosis in Hepatitis C virus co-infected patients: the BOSTIC study 5

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**Background:** We examined the influence of coinfection with HBV on prevalence and severity of different types of steatosis (i.e. viral vs metabolic) in chronic HCV.

**Methods:** We retrospectively assessed steatosis prevalence and severity in chronic HBV/HCV coinfecting patients with a liver biopsy at time of coinfection. Exclusion criteria were excessive alcohol consumption, type 2 diabetes and antiviral therapy at time of liver biopsy. HCV-monoinfected controls were matched according to BMI, HCV viremia and genotype.

**Results:** 78 HBV/HCV coinfecting patients and 115 HCV controls were included. Clinical characteristics of HBV/HCV coinfecting patients were: average age: 42 years, males: 68%, average BMI: 25.1 kg/m<sup>2</sup>, cirrhotic: 24%, genotype 3 HCV: 26%, undetectable HBV viremia: 31%. There was no significant difference in steatosis prevalence between the HBV/HCV coinfecting group and the HCV group (42% vs 44%, p=0.40). When including only HCV genotype 3 patients with BMI <25 kg/m<sup>2</sup> (n=12 coinfecting HBV/HCV) there was no difference in steatosis distribution and severity between coinfecting and HCV monoinfected patients (p=0.28).

**Conclusions:** Based on these preliminary findings it appears that HBV is not affecting prevalence and intensity of steatosis in HBV/HCV coinfecting patients vs HCV monoinfected patients, even in the subgroup of HCV genotype 3 patients with normal BMI.

## EUS-guided fine needle aspiration (EUS-FNA) in pancreatic masses: a prospective randomized study comparing the yield of 22G and 25G needle in the same patient 6

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**Introduction** EUS-FNA has become a standard in pancreatic masses diagnosis. It can be performed with a 22G or a 25G needle. It remains unclear if the 25G have the same diagnostic yield than the 22G. To evaluate it, we perform a prospective, randomized, double-blind, non-inferiority study

**Patients and methods** Patients presenting with pancreatic solid masses between July 2010 and June 2012 were included. They underwent EUS-FNA using a 22G needle and 25G needle during the same endoscopic session. Three passages without stylet were performed with each needle. The 25G and 22G needle sequence being randomized. Cytological preparations included smear cytology, ThinPrep and Cell Block. Specimens were analyzed for diagnosis, cellularity, amount of blood and digestive contamination. Final diagnosis was based on cytology report, surgical pathology if available, repeated diagnosis imaging and clinical follow-up.

**Results** 37 patients were included. For 34 malignant pancreatic neoplasms was the final diagnosis. Diagnostic yield of 25G and 22G needles were 85.3% (29 patients) and 88.2% (30 patients) respectively (p>0.05). The quality of specimens was comparable regarding cellularity, blood and digestive contamination. No complication occurred.

**Conclusion** Our study demonstrates the non-inferiority of the 25G needle's performance compared the 22G for the diagnosis of pancreatic masses.

## Intraoperative microperfusion patterns during colorectal resection: Preliminary results of 18 patients. 7

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### Background

Perfusion impairment at the anastomotic site is one of the most important risk factors for anastomotic leakage (AL). Visual assessment of intestinal microperfusion during surgery has been found to be inefficient to predict AL. Microperfusion patterns during surgery are unknown and reliable intraoperative assessment of intestinal microperfusion is not established yet.

### Methods

Patients undergoing colorectal resection between July 2013 and March 2014 were recruited. Measurements using a Visible Light Spectroscope (VLS) were conducted during colorectal resection. Reference: at the caecum (M1) and proximal to planned resection (M2). After mobilization: proximal (M3) and distal (M4) to the planned resection. After anastomosis: 1-2cm proximal (M5) and distal (M6) to the anastomosis.

### Results

18 patients with median age of 70y (IQR 56; 79) were included. Main operation was laparoscopic sigmoidectomy (n=9, 50%). Median duration of VLS measurement was 2:09 min (IQR 1:30; 5:45). The following median (IQR) serosal StO<sub>2</sub> were observed: M1: 67% (60; 70), M2: 66% (57; 68), M3: 71% (57; 76), M4: 68% (52; 74), M5: 70% (57; 75), M6: 69% (61; 76).

### Conclusions

Intraoperative microperfusion patterns during colorectal resection show individual differences with a trend of increasing variability of StO<sub>2</sub> following mobilization and anastomosis. However, more patients need to be included to correlate serosal StO<sub>2</sub> levels with patient outcome and complications.

## CD62L (L-Selectin) Shedding for Assessment of Functional Blockade of TNF-Alpha in Anti-TNF Treated Inflammatory Bowel Disease Patients: Clinical Feasibility & Perspectives 8

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**Background:** Tumor necrosis factor (TNF) inhibition is central to the therapy of inflammatory bowel diseases (IBD). However, the durability and efficacy of this blockade hasn't been well studied and a better understanding is crucial for the prognosis of long-term treatment and decision making in case of loss of response (LOR) to these costly drugs.

**Methods:** Consecutive IBD Patients receiving anti-TNF agents from Inselspital were identified and followed prospectively. Patient whole blood was stimulated with a dose-titration of either human TNF or the TLR agonist lipopolysaccharide (LPS) followed by flow cytometry. Median fluorescence intensity of CD62L on the surface of granulocytes. The change in EC50 (the concentration of TNF required to induce a 50% shedding of surface CD62L) following the anti-TNF agent, was used to predict the in vivo response, which was then correlated to the clinical evolution to analyze the ability of this test to identify LOR to Anti-TNFs.

**Results:** We collected prospective clinical data and 2 blood samples, before and after anti-TNF agent, on 33 IBD patients, 25 Crohn's disease and 8 ulcerative colitis patients (45% females) between mid-2012 and end 2013. The assay showed a functional blockade of TNF (PFR) for 22 patients (17 CD and 5 UC) whereas 11 (8 CD and 3 UC) had no functional response (NR) to TNF blockade. Clinical characteristics (e.g. diagnosis, disease location, smoking status and BMI) as well as # infusions were not significantly different between predicted PFR and NR. Among the 22 patients with PRF, only 1 patient was a clinical non responder (LOR to anti-TNF), based on clinical prospective evaluation by IBD gastroenterologists (PJ, FS and AM), and among the 11 predicted NR, 3 had no clinical LOR. Sensitivity of this test was 95% and specificity 73% and AUC adjusted for age and gender was 0.81. During follow up (median 10 months, range 3-15) 8 "hard" outcomes occurred (3 medic. flares, 4 resections and 1 new fistula) 2 in the PFR and 6 in the NR group (25% vs. 75%; p<0.01).

**Conclusions:** CD62L (L-Selectin) shedding is the first validated test of functional blockade of TNF alpha in anti-TNF treated IBD Patients and will be a useful tool to guide medical decision on the use of anti-TNF agents. Studies with ATI and trough level of the drugs are ongoing.



# “As if the brain had been turned off” Caregiver's Experiences of Overt Hepatic Encephalopathy

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**Background/Aims:** Hepatic encephalopathy is a common complication in patients with liver cirrhosis and is associated with decreased quality of life in both - patients and informal caregivers - and a major burden for caregivers. However, the role of caregivers in managing and preventing hepatic encephalopathy has not yet been studied. Therefore, we explored how caregivers experienced an event of overt hepatic encephalopathy.

**Methods:** Qualitative interviews were conducted and analyzed with an interpretative phenomenological approach. Twelve caregivers of patients that had had at least one episode of overt hepatic encephalopathy were recruited from a tertiary center in 2013/14 and enrolled in they study.

**Results:** The results are organized around four central themes: (1) An overt hepatic encephalopathy was experienced as an inexplicable event, like a *hammer blow*. The patients presented themselves as if the “brain had been turned off” and caregivers requested immediate professional help. In the aftermath of this challenging situation, (2) caregivers reflected previous observed signs and *felt sensitized*. They were alert to identify and recognize early changes in the patient. (3) All caregivers felt an increasing need to take on a *leading responsibility* for patient and thereby they described a change in relationship. (4) *“Who could have seen what else was coming”* represented caregiver's own difficulty in communicating with health care professionals as a possible problem for delayed diagnosis and next to observed difficulties in health care professionals to identify hepatic encephalopathy themselves.

**Conclusions:** Caregivers with experience of hepatic encephalopathy were becoming more attentive to the patients symptoms of deterioration and developed an expertise about important personalized signs. Thorough assessment of the patient and caregivers observations could generate important information for health care professionals to provide emotional and practical support to patients and caregivers. Reprocessing the event may prevent caregivers from additional burden.

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# Investigation of Hepatitis C Virus Adaptation to Host Genetic Polymorphisms

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**Background and aims:** Hepatitis C virus adapts to human immune responses by escape mutations in targeted epitopes. Although multiple interactions between virus and host proteins have been documented, studies of viral adaptation to polymorphic host genes are lacking. We performed a genome-wide screen for associations between human single nucleotide polymorphisms (SNPs) and variations across the HCV proteome to identify selection pressures exerted by host factors on the viral genome.

**Methods:** From 140 patients from the Swiss Hepatitis C Cohort Study and the Département d'Hépatologie, Groupe Hospitalier Cochin-Hôtel Dieu-Broca (Paris, France) chronically infected with HCV genotype 1b, viral sequences covering the full HCV proteome were generated and 370,000-1,000,000 human SNPs were genotyped on Illumina BeadChips. Associations between SNPs and HCV amino acid polymorphisms were calculated including phylogenetic correction for confounders through the infecting viral strain.

**Results and conclusions:** To improve the statistical power the analysis was first restricted to SNPs in proximity to a selection of 1000 genes with a putative role in HCV infection and a minimal allele frequency of >20%, and later broadened to 780,000 high quality SNPs. Applying a cutoff of  $p < 10^{-7}$  before correction for multiple comparisons, both analyses identified strong accumulation of a viral variant in patients sharing SNPs tagging a gene involved in viral entry ( $p = 1.7 \times 10^{-9}$ ), and additional associations for HLA-DQB2, the NK cell receptor ligand MICB, the HCV attachment factor CLEC4M/L-SIGN and other genes with so far unclear functional relationship with the viral life cycle. However, after correction for multiple comparisons none of these reached significance. Efforts are ongoing to confirm these results in larger cohorts.

# Secretion of IL-22 is modulated by CD39 and is required for liver regeneration post partial hepatectomy

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**Background:** The cytokine IL-22 exhibits specific hepatoprotective properties in various models of liver injury and repair. We have now explored the interaction between extracellular ATP and IL-22 secretion in a model of partial hepatectomy.

**Methods:** Secretion of IL-22 was assessed in cells extracted from wild type, IL-22 null and CD39 null mice using flow cytometry. In vivo the outcome post partial hepatectomy was assessed in wild type and IL-22 null mice using markers for liver injury and proliferation.

**Results:** In the liver, fractions that secrete IL-22 are mainly innate lymphoid cells such as conventional NK cells and minute levels of Rorγ<sup>+</sup> cells. Interestingly, fractions that secrete IL-22 express CD39 the major vascular ectonucleotidase that hydrolyses extracellular ATP to AMP. Administration of non-hydrolysable extracellular nucleotide such as ATPγS was associated with an increase of IL-22 secretion. Elevated hydrolysis of extracellular ATP by the soluble ectonucleotidase apyrase is associated with significant decreased secretion of IL-22 in response to stimulation with IL-23. In mice null for CD39, secretion of IL-22 was reduced compared to wild type controls in response to IL-23 ex vivo. Liver regeneration post partial hepatectomy was significantly decreased in IL-22 null and CD39 null mice compared to wild type mice.

**Conclusion:** Extracellular ATP levels that are elevated post partial hepatectomy modulate the secretion of IL-22 in specific subsets of innate lymphoid cells in the liver. The secretion of IL-22 is modulated by CD39 and is required for optimal liver regeneration post partial hepatectomy.

# Liver regeneration is not impacted in the absence of intestinal microbiota

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**Background:** Liver regeneration after partial hepatectomy is a very complex process that involves a variety of different liver cell types via cytokine- and growth-factor-mediated pathways. Bacterial products and LPS circulate in the portal blood stream directly through the hepatic sinusoids and have been proposed to initiate liver regeneration by activation of parenchymal and non-parenchymal cells in liver after partial hepatectomy. Our aim was to evaluate liver regeneration in the absence of microbes and microbial products.

**Methods:** Two third partial hepatectomy (PH) was performed in germ-free (axenic) mice and mice colonized with altered schaedler flora (ASF) were used as controls. Surgery was performed in axenic conditions to maintain sterility throughout the course of the experiment (Clean Mouse Facility; University of Bern). Liver regeneration, injury and hepatic fractions of immune cells were assessed in tissue and serum samples 48 hours post partial hepatectomy.

**Results:** Liver injury (ALT/AST) and survival were not significantly different between germ free and ASF colonized mice. Liver regeneration was measured by the number of Ki67 positive cells and there was no significant difference between germ-free and ASF mice ( $p = 0.84$ ). Absence of microbiota was proved by fluorescence microscopy and faecal cultures.

Fractions of CD4 T cells, NKT cells and B cells were altered at baseline between germ-free and ASF mice, but not after partial hepatectomy.

**Conclusion:** Liver regeneration after PH is not impaired in the absence of microbes and microbial products. These findings contrast previous studies and reveal that the gut microbiota is not an essential for the priming or maintenance of liver regeneration.

# Role of monocytes during the vaccine-induced *Helicobacter* clearance. 13

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**BACKGROUND:** Despite the proven ability of vaccination to reduce *Helicobacter* infection in mouse model, the precise mechanism of protection remained elusive. Monocytes are involved in defense mechanisms against many infectious diseases, by direct killing of pathogens and/or by priming a CD4<sup>+</sup> T-cell response.

**METHODS:** Monocytes were depleted in vaccinated mice by injecting anti-CCR2 depleting antibodies (MC-21). The impact of monocyte depletion in the vaccine-induced *Helicobacter* clearance was evaluated by performing Rapid Urease Test, quantitative polymerase chain reaction and flow cytometry (FACS).

**RESULTS:** Flow cytometry analyses demonstrated that a CD11b<sup>+</sup>Ly6C<sup>low</sup> cell population accumulated in the stomach mucosa of vaccinated mice on day 5 post bacterial challenge (41.7% ± 7.3% versus 16.2% ± 5% of CD11b<sup>+</sup> cells, in vaccinated and control mice respectively, n=5 ; p<0.01). This population contains monocytes derived cells that express MHCII, CCR2 and anti-bacterial factors such as iNOS and TNFα. Remarkably, the MC-21 injection delayed vaccine-induced *Helicobacter* clearance. On day 5, most of the monocyte-depleted mice are still infected compared to mice injected with control antibody (13 of 17 versus 1 of 17 respectively, n=17, p<0.0001). This delay is associated with a dramatic reduction of recruitment and/or accumulation of inflammatory monocytes and CD11b<sup>+</sup>Ly6C<sup>low</sup> monocyte derived cells in the stomach of vaccinated mice.

**CONCLUSION:** Monocytes participate in the vaccine-induced clearance of *Helicobacter*, most likely by direct bacterial killing.

# Donor characteristics and the risk of hepatocellular carcinoma recurrence after liver transplantation 15

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**Background:** Hepatocellular carcinoma (HCC) recurrence after liver transplantation occurs in 8-15% of patients. To date, studies assessing the risk of post-transplant HCC recurrence have focused on recipients' characteristics. Here, we investigate the impact of donor characteristics and liver graft quality on the risk of post-liver transplantation HCC recurrence. **Methods:** Using the Scientific Registry of Transplant Recipients, we included adult patients with a diagnosis of HCC receiving liver transplantation between 2004 and 2011. Post-transplant HCC recurrence was determined on malignancy follow-up data and by scrutinizing causes-of-death files. A multivariate Cox regression was fitted, evaluating the role of donor characteristics on post-transplant HCC recurrence, after adjusting for confounders such as recipient gender, age, total tumor volume, alpha-feto protein, time on the waitlist, and transplant centre. 9724 recipients were included. **Results:** The 5-year cumulative recurrence rate was 7.8% (95%CI: 7.2-8.5). After adjusting for confounders, patients receiving a graft from a donor older than 60 years (hazard ratio (HR)= 1.38 (95%CI: 1.10-1.73, P=0.006), a donor with a history of diabetes (HR=1.43 (95%CI: 1.11-1.83, P=0.006)) and a donor with obesity class II (body mass index ≥ 35 kg/m<sup>2</sup>) or more (HR=1.36 (95%CI: 1.04-1.77, P=0.023)), had significantly higher post-transplant HCC recurrence rates. In patients with documented steatosis (n=3007), severe steatosis (>60%) was also linked to an increased risk of HCC recurrence (HR=1.65, 95%CI: 1.03-2.64, P=0.037). Among donation-after-cardiac-death donors, those with prolonged warm ischemia (>19 min, 75<sup>th</sup> percentile) had higher HCC recurrence rates (adjusted HR=4.26, 95%CI: 1.20-15.1, P=0.025).

**Conclusion:** In addition to tumor characteristics, donor-related factors such as elevated donor age, increasing body mass index, diabetes, and steatosis should be taken into account when predicting the risk of post-liver transplant HCC recurrence.

# A blood gene expression-based test for early detection of colorectal cancer: an international multi-center case-control study. 14

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**Background:** In a previous exploratory study we demonstrated the feasibility of detecting pre-cancerous lesions and colorectal cancer (CRC) from a blood sample. The aim of this study is to further develop and validate a test that differentiates subjects with CRC and adenomas from healthy controls.

**Methods:** 1333 patients older than 50 years were prospectively enrolled in 3 South Korean and 6 Swiss centers from June 2010 to December 2011. 680 samples of subjects referred for colonoscopy were allocated to the 3 main study groups: controls (Swiss n=124, Korean n=99), patients with adenomas ≥1cm (Swiss n=100, Korean n=154) and patients with CRC (Swiss n=74, Korean n=129). The remaining 653 subjects had other types of solid cancers or other diseases such as IBD or diverticulitis and were included to test algorithm's specificity. Upon blood collection, PBMC were isolated and analyzed for gene expression by RT-PCR with a panel of 29 biomarkers. Subjects belonging to the three main study groups were randomly assigned to training, validation and test set.

**Results:** Statistical analyses revealed gene expression differences between Korean and Swiss populations, therefore two separated predictive algorithms have been developed and applied on the independent test sets. The Swiss algorithm showed a specificity of 88% and a sensitivity of 71% for CRC stage I-II (76% CRC I-IV) and of 51% for adenoma detection. The Korean algorithm showed a specificity of 69% and a sensitivity of 63% for CRC stage I-II (70% CRC I-IV) and of 46% for adenoma detection.

**Conclusion:** We validated an efficient, non-invasive test for diagnosis of early CRC stages and adenomas.

# Swallowed topical corticosteroids reduce the risk for long-lasting bolus impactions in eosinophilic esophagitis 16

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**Background:** Long-lasting food impactions requiring endoscopic bolus removal occur frequently in patients with eosinophilic esophagitis (EoE) and harbour a risk for severe esophageal injuries. We evaluated whether treatment with swallowed topical corticosteroids is able to reduce the risk of occurrence of this complication. **Methods:** We analyzed data from the Swiss EoE Cohort Study. Patients with yearly clinic visits, during which standardized assessment of symptoms, endoscopic, histologic, and laboratory findings was carried out, were included. **Results:** A total of 206 patients (157 males) were analyzed. The median follow-up time was 5 years with a total of 703 visits (mean 3.41 visits/patient). During the follow-up period 33 patients (16% of the cohort) experienced 42 impactions requiring endoscopic bolus removal. We evaluated the following factors regarding the outcome "bolus impaction" by univariate logistic regression modeling: swallowed topical corticosteroid therapy (OR 0.503, p=0.048), presence of EoE-symptoms (OR 1.150, p=0.761), esophageal stricture (OR 2.832, p=0.001), peak eosinophil count > 10 eosinophils/HPF (OR 0.724, p=0.433), blood eosinophilia (OR 1.532, p=0.398), and esophageal dilation (OR 1.852, p = 0.017). In the multivariate model the following factors were significantly associated with bolus impaction: swallowed topical corticosteroid therapy (OR 0.411, p=0.014) and esophageal stricture (OR 2.666, p=0.01). Increasing frequency of use of swallowed topical steroids was associated with a lower risk for bolus impactions.

**Conclusions:** Treatment of EoE with swallowed topical corticosteroids significantly reduces the risk for long-lasting bolus impactions.

# Hydrosoluble vitamin E on erythrocyte membrane lipids (EML) in advanced cirrhosis and anemia. An open label pilot trial

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Gastroenterology/Hepatology, Internal Medicine, HUG, LaTour

**Background:** Structural abnormalities of the erythrocyte membrane participate to chronic hemolytic anemia in advanced cirrhosis.

Vitamin E deficiency leads to lipid peroxidation and affects EML. Absorption of standard fat-soluble vitamins is limited by cholestasis.

**Aim:** We studied safety/effects of a water soluble form of vitamin E (tocofersolan), on EML and anemia in advanced cirrhosis with hemolysis.

**Methods:** 20 patients (age 53 yrs, Child B/C: 8/12), low plasma vitamin E, chronic anemia with hemolysis, received oral tocofersolan 700 mg/d x 4 wks. Erythrocyte membrane cholesterol (Chol) and phospholipids (Phosph) were determined (colorimetric assays).

**Results:** Abdominal pain occurred in 1 patient. Transfusions were necessary in 5 patients due to severe anemia.

Table: results of 10 patients without transfusion.

Parameter	Baseline	4 weeks	P value
Vitamin E (umol/l)	15.2 ± 3.1	23 ± 2.2	<0.05
Chol (mg/dl)	44.4 ± 7.7	32.6 ± 4.4	0.06
Phosp (mg/dl)	122.5 ± 33	79.7 ± 14.9	0.06
Hemoglobin (gr/l)	93.4 ± 19	105 ± 14	<0.05
Total bilirubin (umol/l)	174 ± 35	118 ± 33	<0.05

**Conclusions:** In patients with advanced cirrhosis, low plasma vitamin E and chronic anemia with hemolysis, oral supplementation with tocofersolan was overall well tolerated, but didn't affect erythrocyte membrane lipid composition. (supported by FLAGS)

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# Systematic Analysis of Factors Associated with Progression and Regression of Ulcerative Colitis in the Swiss IBD Cohort

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**Background:** There is a lack of studies having systematically assessed in a large cohort of ulcerative colitis (UC) patients the change of disease location over time as well as risk factors associated with a change of disease extent. We aimed to assess disease location over time and to evaluate associated risk factors.

**Methods:** Data from the Swiss IBD Cohort were analyzed. Risk factor analysis for a change in disease location was performed using logistic regression modeling.

**Results:** A total of 918 UC patients (45.3% females) were included. At diagnosis, UC patients presented with the following disease locations: 199 (21.7%) proctitis, 338 (36.8%) left sided colitis, 381 (41.5%) extensive colitis/pancolitis. During a median of 9 [4-16] years disease duration, a disease progression was documented in 145/918 (15.8%) of patients, a regression in 149/918 (16.2%) of patients, whereas 624/918 (68.0%) of patients had a stable disease location over time. The following factors associated with disease progression were identified: treatment with steroids (OR 2.077, p = 0.001), immunomodulators (OR 1.647, p=0.011), TNF-antagonist(s) (OR 1.668, p = 0.022), and calcineurin-inhibitors (OR 3.159, p < 0.001).

**Conclusions:** Over a median of 9 years disease duration about two thirds of UC patients maintained the initial disease location whereas one third had either a progression or a regression of disease location.

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# A meta-analysis of colon cleansing with peg compared to other bowel preparations.

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**Background:** The objective is to evaluate the efficacy, safety and patient satisfaction of polyethylene glycol (PEG) versus other regimens of colon preparation: sodium phosphate, picosulfate (PICO), and oral sulfate solution. **Methods:** Systematic search querying MEDLINE, EMBASE, Scopus, CENTRAL and ISI Web of knowledge and meta-analysis of randomized controlled trials back from January 1980 up to August 2013 were completed.

Trials including pediatric, sole inpatients or sole IBD patients were excluded. Primary outcome was the efficacy of colon cleansing.

Secondary outcomes were side effects or complications, procedural outcomes and patient satisfaction. **Results:** 74 trials fulfilled the inclusion criteria (18'025 patients). PEG did not show a difference in efficacy when compared to all types of preparation: OR=1.11(0.93-1.33). Willingness to repeat was significantly lower with PEG:OR=0.39 (0.23-0.66) as well as fainting or dizziness: OR=0.75 (0.57- 0.98). Abdominal cramps, insomnia and perianal irritation where increased: OR= 1.42 (1.05-1.92), 2.41 (1.15-5.03) and, 2.57 (1.27-5.20) in the PEG group respectively. **Conclusion:** PEG provides similar bowel cleansing efficacy to different types of colon preparations but seems less tolerated.

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# Development of a Symptom-based Activity Index for Eosinophilic Esophagitis: the EEAI PRO Instrument

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**Background:** The international Eosinophilic Esophagitis Activity Index (EEAI) study group is developing instruments to assess clinical, endoscopic, and histologic activity of EoE. We aimed to develop a PRO instrument based on the items that best explain the variability in patient global assessment of EoE severity (PatGA) (on a Likert scale from 0 to 10). **Methods:** Development of the PRO instrument followed guidelines provided by the Food and Drug Administration. Patient input was used to generate items. The EEAI PRO instrument measures dysphagia according to 8 distinct food consistencies and takes into account behavioral adaptations (food avoidance, modification). A 24 hour-, 7 day-, and 30 day- symptom recall period were evaluated. Linear regression and analysis of variance was used to evaluate the extent to which variations in patient-reported disease characteristics explain the variability in PatGA. **Results:** The PRO instrument was evaluated in 153 adult EoE patients (72.5 % males, median age 38 years) in Switzerland and the United States. A recall period of 7 days was best suited to measure EoE severity. The following 7 PRO items explained 67 % of the total variability in PatGA: frequency of dysphagia, duration of dysphagia, swallowing-associated pain, the visual dysphagia questionnaire (VDQ®), food avoidance, modification and slow eating. The EEAI PRO score ranges from 0 to 100. Addition of endoscopic and histologic features into the model explained only an additional 4 % of the PatGA. **Conclusions:** Seven PRO items can be used to assess clinical EoE symptom severity over a 7-day recall period. Endoscopic and histologic features contributed negligibly over and above PRO items. The validity of the current PRO score is currently being tested in a second independent patient group.

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## Accuracy of contrast - enhanced ultrasound for tumor response after RFA / TACE in malignant focal liver lesions in comparison with CT / MRI in a tertiary Swiss GI center

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**Background:** Contrast-enhanced-ultrasound (CEUS) seems to be accurate for follow-up after radiofrequency ablation (RFA) in HCC or liver metastasis as well as after transarterial chemoembolization (TACE) in HCC (1,2,3). CEUS is easily available, safe and cost-effective without exposure to radiation, risk of renal insufficiency or thyrotoxicosis. Severe adverse effects are very uncommon (0.06 - 0.4%) (4, 5). Our aim was to assess the response/relapse of malignant focal liver lesions (FLL) after RFA or TACE by CEUS in comparison to CT/MRI.

**Methods:** We analysed all CEUS between 1/2011-11/2013 performed by three examiners (level II of training according to European Federation Society for Ultrasound) on two ultrasound devices (Acuson Sequoia 512<sup>R</sup>, Siemens and Preirus Hi Vision<sup>R</sup>, Hitachi) after RFA and/or TACE in comparison to CT/MRI (with iv contrast application). All patients were examined according to international guidelines and good clinical practice recommendations (6) with intravenous application of sulphur hexafluoride microbubbles (SonoVue<sup>R</sup>, Bracco). Postinterventional intratumoral arterial enhancement was interpreted as tumor vitality/relapse, wash out reinforced this finding (Figure 1). Standard of reference (SOR) were the convergent results of CEUS with CT or MRI with follow-up.

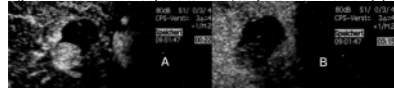
**Results:** In all 20 patients (17 HCC and one cholangio-carcinoma all with cirrhosis and 2 liver metastasis of colorectal carcinoma with median age of 43-86 years), no complications occurred after CEUS. CEUS could be compared with CT/MRI in 40 examinations after 30 interventions (RFA13/TACE17) with a median follow of 6.7 months. Controls were performed one month and then every three months after interventions. In four different cases CEUS and CT/MRI could not demonstrate tumor vitality after incomplete RFA/TACE. This is described as equal sensitivity with 75% and negative predictive value (npV) with 85-86% (table 1). CEUS could avoid one false positive MRI result after one month (specificity and positive predictive value (ppV) 100%), where this reactive peripheral hypervascularisation was confirmed by the following MRI's.

**Conclusions:** In our setting CEUS is practicable with no adverse effects and good accuracy of 90% to determine tumor response after RFA/TACE. CEUS is not inferior to CT/MRI. Combination of CEUS with CT/MRI could avoid 20% of false negative results (tumor vitality/relapse). Rapidity and cost-effectiveness could be an advantage of CEUS.

Table 1: n = 20 patients with 40 CEUS in comparison with CT/MRI (mean follow up 6.7 months)

	sensitivity	npV	specificity	ppV	accuracy
CEUS	75%	85,7%	100%	100%	90%
CT/MRI	75%	85,2%	95,8%	92,3%	87,5%

Figure 1: CEUS with HCC-relapse after TACE, early arterial enhancement (A) and wash out in the late phase (B).



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## Systematic Evaluation of Surgical Strategies in Perforated left Colonic Diverticulitis with Generalized Peritonitis (Hinchey III/IV)

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**Background:** Surgical strategy for perforated diverticulitis (Hinchey Stage III and IV) remains controversial. This study aims to compare the different surgical techniques.

**Methods:** A systematic literature search was conducted to identify randomized and non-randomized controlled trials, which compared 2 surgical procedures in perforated left-sided colonic diverticulitis. The primary endpoint was mortality.

**Results:** After screening 2887 titles and abstracts from 1958 to 01/2014, 123 were selected for full text assessment. 13 studies with 835 patients were finally included. 11 studies compared Hartmann's procedure (HP) vs. primary anastomosis (PA) while two studies evaluated laparoscopic lavage (one study vs. PA and another vs. HP). In general, the quality of studies was limited, with only 2 randomized controlled trials. A lower relative risk for mortality after PA as compared to HP was identified in metaanalysis of 2 RCTs (2.09 (0.66, 6.65; p=0.454)), and also in metaanalysis of 6 observational studies (1.53 (0.89, 2.65; p=0.987)). However, these differences were not statistically significant. Stoma reversal rates, reported in 7 out of 10 studies, were higher after PA (78%) compared to HP (67%)

**Conclusion:** PA appears not to be inferior to HP in perforated colonic diverticulitis with generalized peritonitis. Thus, PA is the preferred procedure, since restoration rates of the bowel are higher. There is a lack of published evidence regarding the outcome of laparoscopic lavage.

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## Endoscopic treatment (ET) of early malignant changes in Barrett's esophagus in more than 100 patients: Results of a Swiss single center cohort. Stefan Seewald<sup>1</sup>, Fridolin Bannwart<sup>2</sup>, Andreas Müller<sup>1</sup>, Bernhard Sauter<sup>1</sup>, Philipp Bertschinger<sup>1,3</sup> GastroZentrum Hirslanden & <sup>2</sup>Institut für Pathologie, Medica Zürich

**Background:** Studies have shown the efficacy of ET of early malignant changes in BE with complete remission (CR) rates of neoplasia of more than 90%. Compared to previously published studies with strict inclusion criteria the daily clinical practise is characterized by more complex cases such as pts with surgical or endoscopic pretreatment, older age, and LSBE. **Methods:** A prospective data collection has been started since X/2008 of pts who were referred for ET to our center. CR of neoplasia & intestinal metaplasia (IM) have been defined as treatment endpoints. In 101 pts(m90/f11)[60y(40-88)](SSBE: 32,LSBE:69) treatment has been performed. Initial histology was LGIN:14, HGIN:57 & IMC:30. Pretreatment had been performed in 18 pts (surgery,EMR,APC&RFA). **Results:** In 90 of 101 pts a diagnostic endoscopic resection (ER) was initially performed (EMR:87, ESD:3) followed by RFA in 55 pts. RFA was primarily performed in 11 of 101 pts. „Escape“ EMR after RFA was performed in 27 cases. There were no major complications of ET. Histology before & after diagnostic ER showed an upgrade in 20 (22%) and a downgrade in 6 cases (6%). In 9 of 90 cases diagnostic ER showed deep sm infiltration and surgery was recommended. In 77 pts CR of neoplasia and IM was achieved and FU started. 15 pts are still under treatment. During a FU of 21 mo (0-56.9) 73(94.8%) and 61(80%) pts showed a maintenance of CR of neoplasia and IM, respectively. In 2 pts neoplasia recurred (1xLGIN,1xIMC) successfully retreated by ER. 2 pts died (1xstroke, 1xARDS). The ARDS pt showed pulmonary & abdominal metastases of an adenocarcinoma of unknown origin on autopsy. Paraesophageal LN and the esophagus were Ca and BE free. **Conclusions:** ET has become the first line therapy of early malignant changes in BE with favorable outcome even in complex cases. A Swiss prospective registry for these patients is strongly recommended.

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## PLACEMENT OF A PERMANENT TUNNELED PERITONEAL DRAINAGE CATHETER FOR REFRACTORY MALIGNANT AND PORTAL-HYPERTENSIVE ASCITES: A MULTI-CENTER EXPERIENCE

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**Background:** Repeated paracentesis is the best established treatment option in malignant ascites and treatment refractory portal-hypertensive ascites with contraindications to TIPS. However, regular hospital visits and punctures are required in repeated paracentesis. The one-time implantation of a tunneled peritoneal catheter (PleurX<sup>®</sup>) as an easy to use home drainage system has rarely been studied in refractory ascites.

**Methods:** Retrospective multicenter study (KSSG, USZ, LUKS) of peritoneal PleurX<sup>®</sup> catheters implanted under conscious sedation (propofol) and antibiotic prophylaxis (ceftriaxone i.v. 30 min before procedure) by trained gastroenterologists in patients with refractory ascites.

**Results:** Between 03/2013 and 05/2014, 25 PleurX<sup>®</sup> catheters were implanted in 25 patients (age 29-77, mean age 56). Indications were malignant ascites (19 patients), portal-hypertensive ascites with (3 patients) and without (3 patients) advanced HCC. Success rate for catheter implantation was 96% (24/25) with 1 failure due to peritoneal cancer infiltration. No procedure-related deaths or major placement complications occurred. Two cases of bacterial peritonitis in HCC patients were successfully treated with antibiotics. Fifteen patients died during follow up due to disease progression (3-114 days after intervention, mean 32 days). Catheter survival ranged from 3 to 309 days (mean 60 days, 1'450 cumulative catheter-days).

**Conclusions:** Placement of a tunneled peritoneal drainage catheter is a useful alternative to serial paracentesis in selected patients with refractory ascites.

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# The impact of time on a scenario to minimize HCV

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**Background:** In Switzerland, chronic infection with hepatitis C virus (HCV) peaked in 2003 and by 2013 there were approximately 82,700 infected patients. Despite decreasing prevalence, the burden of advanced stage disease, including hepatocellular carcinoma (HCC) continues to increase as the population ages. Access to higher sustained viral response (SVR) therapies may mitigate the burden of HCV by curing patients before they reach advanced stage disease. **Methods:** The modeled impact of direct acting antiviral therapies (DAAs) with 90-95% SVR; combined with increased yearly treatment rate (from 1,100 to 5,360 by 2018), medical eligibility (from 60% to 85% by 2016) and annual diagnosis (from 1,050 to 3,490 by 2018), was recently described in the Journal of Viral Hepatitis (JVH). Here we explore the impact of delaying the JVH scenario by two and five years. **Results:** The JVH scenario showed reductions in total HCV cases (85%), liver related deaths (69%) and HCC (72%) by 2030. Delaying this scenario by two or five years showed a 74% or 57% reduction in total HCV cases by 2030, respectively. Additionally, liver related deaths were projected to decrease by 57% (2-year delay) or 37% (5-year delay), and HCC by 60% (2-year delay) or 41% (5-year delay) by 2030. **Conclusions:** These findings suggest that time is a driving factor in developing scenarios to reduce the burden of HCV. A two year delay can reduce the impact of efforts by 10%, while a five year delay could reduce the impact by 30%.

Outcome	2013	2030			
		Base	JVH	2-yr delay	5-yr delay
HCC	405	745	205	295	440
Liver-related deaths	380	650	200	280	410
Viremic Cases	82,700	63,200	10,200	16,300	27,100

# The Phase 3 randomised, double-blind study of simeprevir (SMV) vs telaprevir (TVR) plus PR in HCV GT1: ATAIN

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**Background:** ATAIN evaluated non-inferiority of SMV vs TVR both in combination with peginterferon/ribavirin (PR) in prior non-responders. **Methods:** Adults (N=763; 21.4% with cirrhosis) infected with HCV GT1 who were partial (N=291) or null responders (N=472) to prior PR received SMV 150mg QD+PR or TVR 750mg TID+PR for 12 wks each, followed by 36 wks PR. Primary objective: non-inferiority regarding SVR12. **Results:** SMV/PR proved non-inferior to TVR/PR overall (SVR12: 53.6% vs 54.7%) and in partial (SVR12: 69.7% vs 68.5%) and null responders (SVR12: 43.6% vs 46.2%). Similar SVR12 rates were seen in GT1a subtypes (GT1a: 40.2% vs 38.4%, GT1b: 63.7% vs 66.8%, SMV/PR vs TVR/PR). Treatment discontinuations due to AEs: 1.8% SMV/PR; 8.3% TVR/PR. Grade 3/4 AEs at least possibly related to SMV or TVR: 6.6% SMV/PR; 15.4% TVR/PR. Anaemia incidence: 12.9% SMV/PR; 36.7% TVR/PR. Fewer patients required blood transfusions or administration of erythropoietin- $\alpha$  with SMV/PR (0.8% and 3.7%, respectively) vs TVR/PR (9.1% and 6.5%, respectively). **Conclusions:** The efficacy of SVR/PR in prior non-responders was non-inferior to TVR/PR. SVR12 rates were similar with SMV/PR and TVR/PR across various subgroups. Overall, SMV was better tolerated with fewer treatment discontinuations and a lower incidence of anaemia.

# Prospective evaluation of discharge after colorectal surgery within an ERAS® pathway

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**Introduction:** Enhanced recovery after surgery (ERAS®) pathways proved to reduce complications and hospital stay after colorectal surgery. Criteria for discharge after colorectal surgery have been established, with fulfillment of all discharge criteria reflecting medical recovery. This study aimed to investigate medical recovery and hospital stay in colorectal ERAS® patients, and to analyze reasons for delayed discharge. **Methods:** One hundred fourteen consecutive ERAS® patients were included in this prospective analysis. Based on our own previous ERAS® data, hospital stay was targeted at 3 days after loop stoma closure and 4 and 5 days after colectomy and rectal resection respectively. Fulfillment of discharge criteria were assessed daily and reasons for prolonged hospital stay were documented.

**Results:** All mandatory discharge criteria were fulfilled in 56% of patients of the target discharge day. 42% of patients left the hospital "on time" or before. Actual hospital stay was about 2 days longer than fulfillment of all discharge criteria. Principal reasons for prolonged hospital stay were postoperative complications (29%), slow recovery (26%), logistic reasons (6%), and refusal of the patient (3%).

**Conclusion:** 42% of colorectal surgical patients were discharged at or before the aimed date. Interestingly, the reason for increased stay was the patient's desire in 3% of cases only and logistic in 6%. An improved coordinated approach should allow to discharge patients when medical recovery is achieved and not two days later.

# EUS-guided Intervention In Walled-off Pancreatic Necrosis (WOPN): Single-center Experience With Long-term Follow-up

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**Background:** Compared to the traditional surgical pancreatic necrosectomy, the endoscopic treatment shows significant advantages. We aim to evaluate the short- and long term outcome of patients with walled-off pancreatic necrosis (WOPN) after endoscopic treatment.

**Methods:** This single center retrospective, observational study included all patients with necrotising pancreatitis complicated by WOPN who underwent endoscopic treatment (two experienced interventionalists) from 2002 until 2013 in Switzerland. Clinical short term success (<30 days) was defined as resolution of patient's symptoms requiring no further interventions. Radiologic success was graduated as complete (= no cyst/fluid collection) and partial (= some cystic cavity remaining (<3cm), but not requiring further interventional treatment).

**Results:** 35 Caucasian patients with WOPN (median age 64.1 y, range 40-85 y; 73.1% males) underwent endoscopic treatment (5 sessions median, range 2-10). The median time of follow-up was 30.5 months [range 1-180]. The median duration of pigtailed was 52 days (range 8-552 days), the median duration of transpapillary stents was 82.5 days (range 5-563 days). The short term complete clinical success was 62.3%, the short term mortality (<30d) 11.5 %. The long term clinical well-being was reached in 76.9%. 23.8 % of patients needed elective surgery at some time after endoscopic treatment.

**Conclusions:** Our short term and long term follow-up data confirm that endoscopic interventions in WOPN are effective and safe. Future randomized prospective multicenter trials are needed to increase the generalizability.

### Identification of OCIAD1 as Cellular Substrate of the HCV NS3-4A Protease

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The NS3-4A protease plays a central role not only in the viral life cycle but also in the persistence and pathogenesis of HCV. It has been reported to cleave several host factors, including MAVS, TRIF, TC-PTP, DDB1, as well as GPx8, and to thereby modulate cellular signaling pathways. Here, we describe OCIAD1 (ovarian cancer immunoreactive antigen domain containing 1) as novel cellular substrate of the HCV NS3-4A protease.

OCIAD1 was identified as substrate of the NS3-4A protease by a quantitative proteomics approach involving SILAC coupled with mass spectrometry. OCIAD1 is a poorly characterized membrane protein potentially involved in cancer development. It is cleaved by NS3-4A at Cys 38, close to a predicted transmembrane segment. Cleavage was observed in heterologous overexpression systems, the replicon and HCVcc systems, as well as in liver biopsies from patients with chronic hepatitis C. In addition, NS3-4A-mediated cleavage of OCIAD1 was found in a wheat germ-based cell-free expression system. The subcellular localization of OCIAD1 on mitochondria was not altered by NS3-4A-mediated cleavage. Interestingly, OCIAD2, a homolog of OCIAD1 with a Cys residue in a similar position and identical subcellular localization, was not cleaved by NS3-4A. Domain swapping experiments revealed that the sequence surrounding the potential cleavage sites as well as the predicted transmembrane segment contribute to substrate selectivity. Overexpression as well as knock down and rescue experiments with siRNA-resistant versions of OCIAD1 did not reveal any effect on the viral life cycle in the HCVcc system *in vitro*, raising the possibility that OCIAD1 may be involved in the pathogenesis of hepatitis C.

In conclusion, OCIAD1 represents a novel cellular substrate of the HCV NS3-4A protease. It does not appear to be involved in the viral life cycle but may play a role in the pathogenesis of hepatitis C, which shall be explored in further studies.

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### Treatment of complicated diverticulitis in Switzerland

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**Background:** Recently new strategies in the treatment of complicated diverticulitis have been introduced. E.g. abscess drainage rather than resection for covered perforation has become a new standard of care. Therefore, this investigation aims to analyse current surgical practice in the treatment of acute complicated diverticulitis in Switzerland. **Methods:** A retrospective analysis of all hospital admissions in Switzerland provided by the Swiss federal statistical office of the years 2004/2005 and 2010/2011 was performed. Diverticulitis with perforation and/or abscess formation and/or bleeding was classified as complicated. Incidence of hospital admissions and the treatment options (operative vs. conservative) in the two periods were compared. Patient baseline characteristics and regional distribution of treatment strategies were analysed. **Results:** During the two time periods, a total of 8'225 (2004/2005: 3'509; 2010/2011: 4'716) patients were admitted to Swiss hospitals, yielding in an incidence of 27 admissions per 10<sup>5</sup> inhabitants per year for acute complicated diverticulitis (2004/2005: 24/10<sup>5</sup>; 2010/2011 30/10<sup>5</sup>). Median age of patients was 66 (IQR 54-77) years. 18.4% (n=1'515) of admitted patients were 50 years or younger. 53% of the patients were female. All cause mortality was 4.9% (2004/2005: 5.5% (n=192); 2010/2011: 4.4% (n=207)). Operative treatment for complicated diverticulitis was performed in 42.0% of all cases (n=3'456) with a significant relative decline of almost 10% from 47.7% (n=1'673) in 2004/2005 to 37.8% (n=1'783) in 2010/2011 (p=0.001). This relative decline of resections was higher in the French and Italian-speaking part of Switzerland (46.2% to 33.9%) than in the German-speaking part (48.2% to 39.1%). **Conclusions:** Complicated diverticulitis is diagnosed more frequently in Switzerland. Conservative options in the treatment of complicated diverticulitis have lead to a relative decline in colonic resections for this diagnosis.

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### Posters Gastroenterology

#### Diagnostic Delay in Pediatric Inflammatory Bowel Disease

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**Background:** The diagnosis of pediatric Crohn's disease (CD) and ulcerative colitis (UC) may be delayed given the presence of unspecific symptoms. We aimed to determine the diagnostic delay (time from first symptoms to IBD diagnosis) in pediatric CD and UC patients and to identify associated risk factors. **Methods:** Data from the Swiss IBD Cohort were analyzed. Data on diagnostic delay was provided by parents and physician questionnaires.

**Results:** A total of 190 pediatric IBD patients were included (100 with CD, 75 with UC, and 15 with indeterminate colitis [IC]). Age at disease onset was 12 [10-14] years in CD and 11 [7-13] years in UC patients. Diagnostic delay in CD patients was 4 [2-8] (range 0-82) months compared with 2 [1-7] (range 0-52) months in UC patients (p = 0.011). The time interval from first physician visit to IBD diagnosis was longer in CD patients and UC patients than the time interval from symptom onset to first physician visit (CD: median 3 vs. 1 months, p < 0.001; UC: median 2 vs. 0 months, p < 0.001). No specific risk factors were identified for "long diagnostic delay" which was defined as period >8 months in CD and >7 months in UC patients.

**Conclusions:** The median diagnostic delay in pediatric CD and UC patients in Switzerland is 4 and 2 months, respectively. However, one fourth of pediatric CD patients needs >8 months and one fourth of pediatric UC patients needs >7 months from first symptom onset to IBD diagnosis.

G1

#### Serum Ficolin-2 correlates worse than fecal calprotectin and CRP with endoscopic Crohn's disease activity

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**Background:** Ficolin-2 is an acute phase reactant produced by the liver and targeted to recognize N-acetyl-glucosamine which is present in bacterial and fungal cell walls. We recently showed that ficolin-2 serum levels were significantly higher in CD patients compared to healthy controls. We aimed to evaluate serum ficolin-2 concentrations in CD patients regarding their correlation with endoscopic severity and to compare them with clinical activity, fecal calprotectin, and CRP. **Methods:** Patients provided fecal and blood samples before undergoing ileo-colonoscopy. Disease activity was scored clinically according to the Harvey Bradshaw Index (HBI) and endoscopically according to the simplified endoscopic score for CD (SES-CD). Ficolin-2 serum levels and fecal calprotectin levels were measured by ELISA.

**Results:** A total of 136 CD patients were prospectively included (mean age at inclusion 41.5 ± 15.4 years, 37.5% females). Median HBI was 3 [2-6] points, median SES-CD was 5 [2-8], median fecal calprotectin was 301 [120-703] µg/g, and median serum ficolin-2 was 2.69 [2.02-3.83] µg/mL. SES-CD correlated significantly with calprotectin (r = 0.676, p < 0.001), CRP (r = 0.458, p < 0.001), HBI (r = 0.385, p < 0.001), and serum ficolin-2 levels (r = 0.171, p = 0.047). Ficolin-2 levels were higher in CD patients with mild endoscopic disease compared to patients in endoscopic remission (p = 0.015) but no difference was found between patients with mild, moderate, and severe endoscopic disease.

**Conclusions:** ficolin-2 serum levels correlate worse with endoscopic CD activity when compared to fecal calprotectin or CRP.

G2

### Development of a Symptom-based Activity Index for Eosinophilic Esophagitis: the EEsAI PRO Instrument

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**Background:** The international Eosinophilic Esophagitis Activity Index (EEsAI) study group is developing instruments to assess clinical, endoscopic, and histologic activity of EoE. We aimed to develop a PRO instrument based on the items that best explain the variability in patient global assessment of EoE severity (PatGA) (on a Likert scale from 0 to 10). **Methods:** Development of the PRO instrument followed guidelines provided by the Food and Drug Administration. Patient input was used to generate items. The EEsAI PRO instrument measures dysphagia according to 8 distinct food consistencies and takes into account behavioral adaptations (food avoidance, modification). A 24 hour-, 7 day-, and 30 day- symptom recall period were evaluated. Linear regression and analysis of variance was used to evaluate the extent to which variations in patient-reported disease characteristics explain the variability in PatGA. **Results:** The PRO instrument was evaluated in 153 adult EoE patients (72.5 % males, median age 38 years) in Switzerland and the United States. A recall period of 7 days was best suited to measure EoE severity. The following 7 PRO items explained 67 % of the total variability in PatGA: frequency of dysphagia, duration of dysphagia, swallowing-associated pain, the visual dysphagia questionnaire (VDQ®), food avoidance, modification and slow eating. The EEsAI PRO score ranges from 0 to 100. Addition of endoscopic and histologic features into the model explained only an additional 4 % of the PatGA. **Conclusions:** Seven PRO items can be used to assess clinical EoE symptom severity over a 7-day recall period. Endoscopic and histologic features contributed negligibly over and above PRO items. The validity of the current PRO score is currently being tested in a second independent patient group.

G3

### The Eosinophilic Esophagitis Symptom Score (EEsAI PRO Instrument) is easy to complete for Patients and shows good Content Validity

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**Background:** The international Eosinophilic Esophagitis Activity Index (EEsAI) study group is developing an instrument to assess clinical activity of EoE. We aimed to evaluate the feasibility of completion of the questionnaire and to assess if the questionnaire measures indeed EoE-related complaints (content validity).

**Methods:** Psychologist-guided focus group interviews were performed to provide patient feedback. The EEsAI PRO instrument consists of 5 items and can be applied either for a 7-day or for a 24-hour symptom recall period.

**Results:** A total of 27 adult EoE patients (19 males, mean age 42 years, 85.2% with apprenticeship, 14.8% with university degree) were interviewed. Median time needed to complete the EEsAI PRO instrument was 10 minutes (IQR 9-10, range 5-15). When being asked "how difficult was it for you to complete the questionnaire?" patients ranked their answer on a 11-point Likert scale with a median of 1 (IQR 0-2, range 0-6; 0 represents "no difficulties at all" and 10 stands for "very difficult"). When being asked "does the questionnaire measure the complaints you have had / you currently have due to EoE" patients answered with 8 (IQR 7-9, range 4-10; 10 stands for "perfectly" and 0 stands for "not at all").

**Conclusions:** the EEsAI PRO instrument takes about 10 minutes for completion, it is easy to complete for patients, and it shows good content validity.

G5

### Gap between evidence and clinical practice: 5-aminosalicylates are frequently used for Crohn's Disease treatment

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**Background:** There is uncertain evidence of effectiveness of 5-aminosalicylates (5-ASA) to induce and maintain response and remission of active CD and weak evidence to support their use in postoperative Crohn's disease (CD). We aimed to assess the frequency and determinants of 5-ASA use in CD patients and to evaluate the physicians's perception of clinical response and side effects to 5-ASA.

**Methods:** Data from the Swiss Inflammatory Bowel Disease Cohort, which collects data since 2006 on a large sample of IBD patients, were analyzed. Information from questionnaires regarding utilization of treatments and perception of response to 5-ASA were evaluated. Logistic regression modeling was performed to identify factors associated with 5-ASA use.

**Results:** Out of 1,420 CD patients 835 (59%) were ever treated with 5-ASA from diagnosis to latest follow-up. Disease duration >10 years and colonic location were both significantly associated with 5-ASA use. 5-ASA treatment was judged to be successful in 46% (378/825) of treatment episodes. Side effects necessitating stopping treatment were found in 12% (98/825) episodes in which 5-ASA had been stopped.

**Conclusions:** Despite weak literature evidence of effectiveness, 5-ASA are frequently prescribed in CD patients.

G4

### ENDOSCOPIC ULTRASOUND-GUIDED COILING AND CYANOACRYLATE INJECTION AS TREATMENT OPTION FOR LARGE RECTAL VARICES

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**Background:** Rectal varices are mainly caused by portal hypertension due to liver cirrhosis. We present the case of a 73-year-old man with ethyl toxic liver cirrhosis and massive rectal varical bleeding. Treatment by TIPS (transjugular intrahepatic portosystemic shunt) was not possible due to complete portal vein thrombosis.

**Methods:** As described in two case reports, we treated this patient by endoscopic ultrasound-guided coiling and cyanoacrylate injection. A therapeutic EUS-Endoscope (Olympus® GF Type UCT140-AL5) was used. A large (10mm) feeding extramural varix was punctuated with a 19G EchoTip® Ultra Needle. Four coils (Nester®, 12mm, 12mm, 8mm and 6mm) were applied under endosonographic and radiologic control followed by 1ml cyanoacrylate injection.

**Results:** The intervention was performed without complications, no bleeding occurred during or after the procedure. Obliteration of flow was confirmed by colour doppler. No re-bleeding occurred in the following 6 weeks. A follow-up endoscopy and EUS is planned in 12 weeks.

**Conclusions:** Endoscopic ultrasound-guided coiling with subsequent cyanoacrylate injection seems to be a safe and successful treatment strategy for large rectal varices – especially when application of a TIPS is not possible.

G6



## A meta-analysis of split versus non-split colon preparations

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**Background:** The objective is to evaluate the efficacy, safety and patient satisfaction of split versus day before or same day regimens (non-split) for all contemporary colon preparations: polyethylene glycol (PEG), sodium phosphate (NaP), picosulfate (PICO), and oral sulfate solution (OSS). **Methods:** Systematic search querying MEDLINE, EMBASE, Scopus, CENTRAL and ISI Web of knowledge and meta-analysis of randomized controlled trials back from January 1980 up to August 2013 were completed. Trials including pediatric, sole inpatients or sole IBD patients were excluded. Primary outcome was the efficacy of colon cleansing. Secondary outcomes were side effects or complications, procedural outcomes and patient satisfaction. **Results:** 40 trials fulfilled the inclusion criteria for split dosing (10'373 patients). Split-dosages -regardless of the preparation type or adjuvants- are significantly more effective than non-split regimens: OR = 2.34 (1.75-3.12). Split-dosage were significantly more effective compared to day before or same day regimens for PEG: OR = 2.21 (1.26-3.87) as well as for NaP: OR = 2.35 (1.27-4.34) or PICO: OR = 3.54 (1.95-6.45). Willingness to repeat was significantly higher in the group of patients who received split-dose for all types of preparation: OR = 2.75 (1.74-4.35). The rate of nausea was higher in split dose group for NaP: OR = 2.03 (1.15-3.58) only. **Conclusion:** Split dosage regimens increase the quality of colon cleansing across all types of preparations and are the preferred method of administration.

G7

## Title: Multipurpose use of the Over-the-Scope-Clip system: Swiss experience in a tertiary center

G9

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### Abstract

**Background:** Over-the-scope-clip system (OTSC) for endoscopic treatments are used for various indications in daily clinical practice in Switzerland.

**Methods:** This prospective, consecutive case series was conducted at a tertiary care hospital from 2010 to 2014. Indications for application, technical and clinical success as well as complications were registered.

**Results:** A total of 28 OTSC system applications were carried out in 21 patients. The main indications were fistulae (52%) and anastomotic leakage after GI surgery (29%). Further indications were unroofed submucosal lesions after biopsy, upper gastrointestinal bleeding, or esophageal stent fixation. Primary technical success and clinical success rates were 85% and 67%, respectively. No endoscopy-related or OTSC-related complications were observed.

**Conclusions:** OTSC is a useful tool for endoscopic closure of various GI lesions, including fistulae and leakages. Future randomized prospective multicenter trials are warranted.

## The use of Hemospray in the treatment of upper- and lower gastrointestinal bleedings: a single center experience.

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**Background:** Hemospray has been recently approved as an effective treatment for the management of nonvariceal upper gastrointestinal bleeding (UGIB). Its use in the lower gastrointestinal tract still remains "off-label". Experience with this device although limited is promising, both on studies concerning UGIB and lower gastrointestinal bleeding (LGIB). We here present a retrospective case series regarding our experience with this novel haemostatic inorganic powder in a tertiary endoscopy center. **Methods:** From June 2013 to May 2014 all patients with gastrointestinal bleeding treated with Hemospray were identified. Data on sex, age, clinical presentation, efficacy and intention of the therapy (first-line or rescue therapy) were retrospectively collected. **Results:** 10 patients were treated, 8 men and 2 women with an average age of 72.4 years. One case of post polypectomy bleeding of the transverse colon; two cases of bleeding ulcers (Forrest 1A and 1B) of the duodenal bulb; one case of severe hemorrhagic portal hypertension gastropathy with a concomitant bleeding ulcer (Forrest 1B) of the superior duodenal flexure; one case of bleeding of an adenocarcinoma (AdC) of the lower esophagus; one case of bleeding of a metastatic to the sigmoid colon adenocarcinoma of the stomach; one case of bleeding from a severe radiation proctitis; one case of bleeding from a poorly differentiated carcinoma of the distal esophagus; one case of Mallory-Weiss tear, and one case of bleeding ischemic mucosa of the distal esophagus and stomach were treated. Of all the cases, 7 (63.63%) were treated with Hemospray as a first-line treatment and 4 (36.36%) as a rescue therapy (considering 10 patients and 11 different haemostatic treatments). 10 out of 11 therapeutic haemostasis were immediately and completely successful (90.9% success rate). **Conclusions:** Hemospray has a high success rate in the immediate treatment of both UGIB and LGIB, as a first option treatment and as a rescue treatment.

G8

## Azathioprine and 6-Mercaptopurine use in the Swiss IBD cohort: adverse effects, causes of discontinuation and risk of "flares" according to 6-TG levels.

G10

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**Background & aims:** To characterize and analyze in the Swiss IBD Cohort: **a)** reported Azathioprine (AZA) and 6-Mercaptopurine (6-MP) adverse effects (AE), **b)** causes of discontinuation and **c)** response to therapy according to gastroenterologists' clinical judgment, **d)** whether level of 6-TGN <235pmol/8x10<sup>8</sup> E is associated with a higher risk of "flare" occurrence. **Method:** Retrospective statistical description, Cox model and Kaplan-Meier. **Results:** 1499 patients with CD and 1066 with UC. **a)** Of 1670 patients ever treated with AZA/6-MP, they were 614 reported AE, 154 intolerances (9.2%), 80 pancreatitis (4.8%), 62 hepatitis (3.7%), 35 hematologic side effects (2.1%), 20 hypersensitivities (1.2%), 4 lymphoma (0.2%), 202 not further specified AE (12.1%). **b)** Of 572 observations of discontinuation, 207 "treatment no longer needed" (36.2%), 204 "breakthrough / loss of response" (35.7%), 93 "patient wish" (16.3%), 44 "primary non response" (7.7%), 21 "conception/pregnancy or wish of it" (3.7%) were reported. **c)** Of 1187 gastroenterologists' clinical judgment of AZA/6-MP responses, 417 (35%) were judged as "successful", 639 (54%) as "failure", 131 (11%) "unknown". **d)** Of 311 CD patients under AZA/6-MP, 157 (50.5%) developed a "flare" during the observation period (median 13months, IQR 12-23). Of 187 patients with UC under AZA/6-MP, 90 (48.1%) developed a "flare" during the observation period (median 13mo, IQR 12-24). 6-TGN levels ≥ 235 showed a not statistically significant tendency to improve "flare"-free survival time in CD+UC (OR=1.183, 95CI: 0.68-2.04, p=0.547). **Conclusions:** In the SIBDC, AZA/6-MP are frequently used, AE and failure are frequently reported, 6-TGN levels ≥ 235 showed a tendency to improve "flare"-free survival.

**Computer-assisted image analysis of fibrosis on liver biopsy : relationship with portal pressure, histology and clinical data.**

H1

N.Goossens, S. Restellini, S. Clément, L. Rubbia-Brandt, L. Spahr. Gastroenterology/Hepatology, Clinical Pathology, HUG **Background** : Liver fibrosis (Fib) participates to the development of portal hypertension (PHT). Hepatic venous pressure gradient (HVPG) evaluates PHT. We quantified liver fibrosis in transjugular biopsies and determined the relationship with HVPG, elastometry (FS) and other parameters in chronic liver disease. **Methods** : 86 patients (cirrhosis 67%, MELD 15, alcoholics (ALD)=61, HCV=25, HVPG 19 mmHg, ascites 45%) and 9 healthy subjects were included. We used a computer-assisted method to assess fibrosis (% fibrosis/total biopsy specimen) on picroSirius red stained liver sections. **Results** : Fibrosis was higher in patients vs controls (7.8% vs 1%,  $p<0.001$ ), and in ALD vs HCV (9 vs 4.9%,  $p<0.01$ ). **Table: correlation of fibrosis with variables**

Variable	Low Fib (<4.8%)	High Fib (≥4.8%)	P value
HVPG (mmHg)	13.2	17.8	0.01
FS (kPa)	18	40	0.04
MELD	13	18	0.01
Ascites	37%	63%	0.04
Histo cholestasis	23%	61%	0.01
Histo ballooned hepatocytes	26%	54%	0.02

**Conclusion** : In patients with advanced chronic liver disease, density of fibrosis on liver biopsy correlates with PHT, elastometry, and features of liver injury. Diagnostic tools used in clinical practice seem to reliably estimate liver fibrosis

**Terlipressin for hepatorenal syndrome : a retrospective single-center cohort study.**

H2

S.Restellini ; S. de Seigneux, L.Spahr. Gastroenterology/Hepatology, Nephrology, HUG **Background** : Hepatorenal syndrome (HRS) is a severe complication of advanced cirrhosis with ascites. The vasoconstrictor terlipressin (Terli) in association with IV albumin is recommended in the rapidly progressive renal failure ( type 1 HRS) and to a lesser extent in type 2 HRS (gradual renal failure). We aim to investigate our local experience with Terli. **Methods** : Patients' records with the code « HRS » were retrieved over 12 months. MELD score, serum creatinine, HRS criteria, dose/duration of Terli, IV albumin, response to treatment, and in-hospital mortality were determined. **Results** : 37/42 patients met the diagnostic criteria for HRS, and 23 (age 58 yrs, alcoholic cirrhosis 52%, MELD 26, Child C 78%) received Terli + IV albumin for type I (n=13) or type II (n= 10) HRS. Terli daily dose ( $3 \pm 1.2$  mg) was given for  $8 \pm 9.7$  days (mean hospital stay 22.6 days). Side effects included transient tachycardia (n=2) and diarrhea (n=1). In hospital mortality was 43%. Responders to Terli (< 25% serum creatinine at 48h as compared to baseline) tend to have a better in-hospital survival as compared to non responders (81% vs 19%,  $p=0.054$ ). **Conclusion** : Most patients with HRS are treated with terlipressin according to european guidelines. Non response to terlipressin seems to be associated with a poor short term survival.

**Non-surgical management of hepatic adenomas: a single centre experience.**

H3

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**Background** : Management of hepatic adenomas currently relies predominantly on surgical resection. We aimed to collect our centre's experience in interventional non-surgical management of hepatic adenomas.

**Methods** : We retrospectively included patients with biopsy-proven hepatic adenomas between 2010-2014. We excluded all patients who were surgically managed.

**Results** : 4 patients had non-surgical interventional management of their adenomas. All were female, median age was 26 y (21-34y). Adenoma characteristics were the following: median size of treated adenoma 22.5mm (16-40mm), 2/4 were situated in the right lobe, 1/4 in the left lobe and 1/4 were bilateral. 3/4 patients had transarterial embolisation (1/3 had treatment of multiple adenomas in the same session) and 1/4 had radiofrequency ablation. Indication for therapy was adenoma size and/or risk of haemorrhage in all patients. All adenomas were proven by histology and characterised by immunohistochemical analysis: 2/4 adenomas were HNF-1 $\alpha$  mutated adenomas, 1/4 was an inflammatory adenoma and 1/4 was of undetermined category. After a median follow-up of 6.4 months (6-13) 3/4 adenomas did not recur and 1/4 adenoma recurred requiring surgical resection. At surgical resection we noted the appearance of a small 8mm HCC not visualised on imaging.

**Conclusion** : Non-surgical interventional management of hepatic adenomas seems feasible and effective in selected patients. Recurrence is possible and patients should be monitored after initial therapy. Although our case series is small it adds to a slowly emerging literature base validating the efficacy of interventional radiology for this indication.

**30 days global mortality in patients undergoing endoscopy or liver biopsy in an academic center : A 3 years survey ; 2011 preliminary results.**

H4

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**Background** : Global mortality associated with endoscopic and invasive procedures in a gastroenterologic unit has never been described. Over 4000 gastrointestinal endoscopies and liver biopsy are performed each year in our division. The aim of this study was to describe the 30 days mortality following an invasive procedure in our division between 2011 and 2013. The preliminary results for the first year are presented here. **Methods** : All patients > 18 years old who had either a gastroscopy, colonoscopy, endoscopic ultrasound (EUS), endoscopic retrograde cholangiopancreatography (ERCP), percutaneous endoscopic gastrostomy (PEG) or liver biopsy (transjugular or percutaneous) were included. Gastroscopy was taken as the reference procedure for mortality comparison. Senior physicians were defined as having an experience of more than 10'000 procedures performed. **Results** : 3388 patients had a total of 4867 procedures. 103 (3%) patients died within 30 days and had a total of 125 (2.5%) procedures. In univariate analysis, age was significantly higher in the 30 days mortality group (72.1 vs 61,  $p<0.001$ ) and PEG (OR 4.9,  $p=0.001$ ) was the strongest procedure positively associated with 30 days mortality. In multivariate analysis, age (OR 1.05,  $p<0.001$ ) male sex (OR 1.55,  $p=0.02$ ) and PEG (OR 3.3,  $p=0.005$ ) were positively associated with mortality. Colonoscopy (OR 0.39,  $p<0.001$ ) and physician experience (OR 0.4,  $p<0.001$ ) were not associated with 30 days mortality. **Conclusions** : Age, sex, physician experience and the type of procedure seems to play a key role on the outcome of the cohort observed. Further analysis using a control group matched for age, sex and physician experience is under way.

## Ausgeprägte Reduktion des Zystenvolumens unter Therapie mit Lanreotid bei einer Patientin mit polyzystischer Nieren- und Lebererkrankung

H5

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**Background:** Die polyzystische Lebererkrankung (polycystic liver disease, PLD) ist durch multiple, meist grössenprogrediente Zysten der Leber charakterisiert. Die Therapiemöglichkeiten sind begrenzt und beinhalten v.a. chirurgische Resektionen zur Reduktion des Zystenvolumens. In schwer verlaufenden Fällen kann auch eine Lebertransplantation erwogen werden. Nachdem zunächst für polyzystische Nierenerkrankungen gezeigt werden konnte, dass mittels Somatostatinanaloga das Zystenvolumen reduziert werden konnte, wurde dies schliesslich auch für Leberzysten in randomisierten Studien nachgewiesen. Eine Volumenreduktion um 4.5 - 5.9% wird beschrieben.

**Methods:** Wir präsentieren den Fall einer Patientin mit PLD und einem sehr guten Ansprechen auf die Therapie mit dem Sandostatinanalogon Lanreotid.

**Results:** Eine 48-jährige Patientin mit polyzystischer Nieren- und Lebererkrankung (PLCD) klagte seit 2008 über progrediente Leistungsschwäche und ein abdominelles Druckgefühl mit sonographisch nachweisbarer Zunahme der Leberzysten. Eine Volumetrie der Leber zeigte ein Zystenvolumen von 5.490cm<sup>3</sup>. Es wurde mit einer Therapie mit Lanreotid 120mg alle 28 Tage begonnen, worunter sich das Zystenvolumen nach 6 Monaten um knapp 20% auf 4.465cm<sup>3</sup> reduzierte. Nach dokumentierter Volumenzunahme nach zwischenzeitlicher Therapiepause, wurde die Lanreotid-Therapie wieder begonnen mit seither stabilem Zystenvolumen. Nebenwirkungen traten unter der Therapie mit Lanreotid nicht auf.

**Conclusion:** Eine Therapie mit Lanreotid kann das Zystenvolumen bei PLCD deutlich und auch über die in der Literatur beschriebenen Zahlen reduzieren. Dieser Fall deckt sich mit den Resultaten einer aktuellen Publikation, die v.a. bei Frauen ≤ 48 Jahre den grössten Therapieerfolg beschreibt (Gevers et al., Gastroenterology. 2013 Aug;145(2):357-65.e1-2.)

## Posters Surgery

### Therapy for Rectal Cancer of the Upper Third: Neoadjuvant Radiochemotherapy or Surgery?

S1

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**Background:** Neoadjuvant radiochemotherapy (RCT) is the standard for mid and lower rectal cancer stage II or III. There is a controversy if patients with rectal cancer of the upper third will benefit from RCT.

**Methods:** We included in this single center study patients from 1/2004 to 12/2012. Data from patients with neoadjuvant RCT came from our prospective database, data from patients without RCT were analyzed retrospectively. Cancer of the upper third was defined as a tumor ≥10cm and ≤15cm from the anal verge, measured by rectoscopy. Patients with neoadjuvant RCT received 50.4 Gy and Capecitabine followed by surgery. The follow-up was documented in our tumor data base.

**Results:** Neoadjuvant RCT received 35 patients, 77 patients had primary surgery. There was a significant difference concerning age (63 years vs. 71 years) but no significant difference concerning length of surgery and length of stay. Major complications occurred in 6% and 5% (p=ns). There was one anastomotic leakage in each group. 3- and 5-year overall survival was better for the neoadjuvant group (3 year 97% vs. 80%; 5 year 66% vs. 59%), p=0.22. 3-year disease-free survival was 84% in the neoadjuvant group compared to 70% in the non-neoadjuvant group (p=ns). In the follow-up metastasis were observed in 14% in the neoadjuvant group and in 19% in the other group. No local recurrence was seen in the neoadjuvant group, three in the other group (p=0.55).

**Conclusion:** Patients with locally advanced rectal cancer of the upper third have the same perioperative morbidity with or without neoadjuvant RCT. Long-time follow-up might be probably better for the neoadjuvant group. In particular no local recurrence was seen in the RCT-group. A prospective randomized study should be done to answer this question.

### Rectal Resection in 3D-Technology

S2

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**Background:** Laparoscopy in 3D-technique gets more and more important, especially in narrow anatomic conditions. We report our first experiences with this new technology in laparoscopic resection of mid-rectal cancer.

**Methods:** Since January 2014 we have the possibility to use the new 3D-laparoscop with flexible tip (Olympus ENDOEYE FLEX®) for laparoscopic interventions. After testing the new tool on routine laparoscopic operations we started to use it for rectal resection on patients with mid-rectal cancer with or without neoadjuvant therapy.

**Results:** The carcinomas were located 9 cm ab ano (8-10). Duration of surgery was 271 min (229-335). Mean hospital stay was 13 days. No major complication was observed. In the specimen 19 lymph nodes were found (14-22). A great advantage was the excellent quality of the image and a secure resection in the narrow pelvis due to the 100 degree angulation.

**Conclusion:** 3-D laparoscopy with the new ENDOEYE FLEX® is an excellent new technology. It is very suitable especially for laparoscopic resection of mid-rectal cancer in a narrow pelvis.



### Impact of tutorial assistance in laparoscopic sigmoidectomy for acute recurrent diverticulitis

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<sup>3</sup>Viszeral Expert Team AG, 3012 Bern, Switzerland

#### Background

Adequate training and tight supervision is crucial to assure patient safety in laparoscopic surgery. This study evaluates the impact of tutorial assistance on laparoscopic sigmoidectomy.

#### Methods

Data of 235 patients were collected. Operating surgeons were classified as residents (group A) or consultants (group B). Groups were compared concerning duration of surgery and in-hospital-complications.

#### Results

Median operation time in group A (n=75) was 221 min and in group B (n=160) 189 min (p<0.001). The risk of developing any in-hospital-complication (Clavien-Dindo classification I-V) was 36.0% in Group A and 32.5% in group B (95% CI: -16.6%, 9.6%). The risk to develop moderate to severe surgical complications (Clavien-Dindo classification II-V) was 16.0% in group A and 12.5% in group B (95% CI -13.3%, 6.3%).

#### Conclusion

We were unable to demonstrate a clear impact of tutorial assistance on postoperative complications. Although associated with a longer duration of surgery, laparoscopic sigmoidectomy in acute recurrent sigmoid diverticulitis conducted by a supervised junior surgeon seems to be safe.

S3

### The application of ERAS® pathway in ileostomy closure: a case-control trial with surprising results

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**Introduction:** Enhanced recovery after surgery (ERAS®) has proven to reduce overall morbidity rates and shorten the length of hospital stay after colorectal resections. The aim of the current study was to investigate whether ERAS® has similar beneficial effects for loop ileostomy closure.

**Methods:** From July 2012 on, all patients undergoing ileostomy closure were included in our ERAS® program. In this retrospective analysis, we compared 46 ERAS® patients with 48 control patients operated before the introduction of ERAS. Outcome measures were day of first stool, vomiting, ileus, overall complications, and length of hospitalization.

**Results:** Baseline characteristics were comparable in both groups. Median day of first stool was 2 (IQR 2-3) before vs. 2 (IQR 1-2) after ERAS® implementation (p=0.082). The rate of vomiting was 26% vs. 45% (p=0.066), rate of ileus was 17% vs. 24% (p=0.410), and rate of overall complications was 27% vs. 41% (p=0.146) before vs. after ERAS® implementation. Median length of stay was 5 days in both groups (p=0.221).

**Conclusion:** The application of ERAS® protocol for loop ileostomy closure did not reduce the length of stay, nor the complication rate and resumption of bowel function. Our results raise the question if closure of loop ileostomy might be related to a slower resumption of oral intake. These preliminary results deserve further investigations on a larger number of patients.

S5

### Surgical site infections of laparoscopic appendiceal stump closure with polymeric clips versus endoloop ligation versus endostapler

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#### Abstract

**Background:** Polymeric clips (hem-o-lok ligation system) are a novel alternative for securing the base of the appendix during laparoscopic appendectomy. There is a lack of systematic evaluation of different tools to close the appendiceal stump with regard to surgical site infections. The aim of this study was to compare the hem-o-lok ligation system with conventional devices for appendiceal stump closure in laparoscopic appendectomy.

**Methods:** The outcome of 1086 consecutive patients operated laparoscopically between 2009 and 2013 for suspected appendicitis were analysed. The risk of intra-abdominal surgical site infections by three different techniques to close the appendiceal stump involving hemo-o-lok clips, endoloop ligatures and titanium staples were investigated by univariate and multivariate analysis.

**Results:** Hem-o-lok clips were used in 41% (n=444); endoloop sutures in 36% (n=396) and staples were applied in 23% (n=246) of the patients. On multivariate analysis, the postoperative use of antibiotics and the resection technique were the only independent predictive factors for the development of postoperative intra-abdominal surgical site infections. Comparing the hem-o-lok clips with the endoloop ligation the Odds ratio (OR) was 0.28 (95% CI: 0.01-0.81), and the hem-o-lok clips with the endostapler the OR was 0.42 (95% CI: 0.14-1.26) for postoperative intra-abdominal surgical site infections.

**Conclusion:** Closure of the appendiceal stump using the non-absorbable hem-o-lok ligation system did not result in an increased rate of intra-abdominal surgical site infections compared to the application of staples.

S4

### Oral Nutrition Replacing Long-Chain Triglycerides by Medium-Chain Triglycerides – A Simple Therapeutic Approach to Chyle Leaks.

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**Objectives:** To investigate the impact of conservative management of chylothorax and chylous ascites by oral nutrition avoiding long-chain triglycerides and additional supplementation with medium-chain triglycerides (MCT).

**Methods:** Retrospective database analysis of patients with chylothorax or chylous ascites from 01/2008 to 12/2013. Diagnostic criteria were fluid triglyceride levels higher than 1.24 mmol/l or clinical features after having excluded a pancreatic fistula. An individual diet regimen without long chain triglycerides was established. Long-chain triglycerides were replaced by oral short- and medium-chain triglycerides. Our diet regimen contained a physiological composition of 65% carbohydrates, 15% proteins and 20% lipids (90% MCT).

**Results:** Three cases of chylothorax and 7 cases of chylous ascites were identified: Seven postsurgical cases, one injury after trauma, one malignancy and one case of unknown origin. Demographic and clinical characteristics are outlined in Table 1. In all patients, the diet led to a considerable reduction of fluid drainage. Chyle leakage stopped in all 10 patients within a mean time of 10.6 days (range 2 - 33), 70% of them within one week. No patient required operative treatment.

**Conclusion:** Optimal treatment strategy of chyle leakage is still a matter of debate. Low-lipid diet has been reported in literature with success rates of 50-84% preserving the advantage of enteral nutrition when compared to total parenteral nutrition. Our therapeutic concept suggests that a majority of these patients may be managed conservatively by oral nutrition when long-chain triglycerides are replaced by short- and medium-chain triglycerides.

S6



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