Dansk Selskab for
Gastroenterologi og Hepatologi

2.-3. september 2022

Hotel Comwell Kolding

Indhold

Foredrag

1. ALPACA: Development and validation of a score to predict liver-related events in early alcohol-related liver disease

Authors:
Stine Johansen[1,2], Mads Israelsen[1,2], Ida Falk Villesen[3], Nikolaj Torp[1,2], Mette Juul Nielsen[3], Maria Kjærgaard[1,2], Katrine Prier Lindvig[1,2], Camilla Dalby Hansen[1,2], Peter Andersen[1], Ditlev Nytoft Rasmussen[1,2], Sönke Detlefsen[2,4], Diana J. Leeming[3], Maja Thiele[1,2], Morten Karsdal[3,5] and Aleksander Krag[1,2] on behalf of the GALAXY and MicrobLiver consortia.
Affiliations:
1: Fibrosis, fatty liver and steatohepatitis research center Odense (FLASH), Department of Gastroenterology and Hepatology, Odense University Hospital, Odense, Denmark.
2: Department of Clinical Research, Faculty of Health Sciences, University of Southern Denmark, Odense, Denmark
3: Nordic Bioscience A/S, Herlev Hovedgade, Herlev, Denmark.
4: Department of Pathology, Odense University Hospital, Odense, Denmark.
5: Department of Molecular Medicine, Faculty of Health Sciences, University of Southern Denmark, Odense, Denmark.
Præsenterende forfatter: Stine Johansen (stine.johansen@rsyd.dk)

Background & Aims: The individual risk of developing symptomatic alcohol-related liver disease (ALD) is highly variable. We aimed to develop and validate a model to predict liver-related events (LRE) in patients with excess drinking and compare its prognostic performance with the best non-invasive fibrosis tests.
Methods: Prospective cohort study of 462 patients with biopsy-proven early ALD, split into a derivation cohort of 221 secondary care patients and a validation cohort of 241 primary care patients. Baseline variables, including fibrogenesis marker PRO-C3, were used to develop a prediction model using multivariable regression. Prognostic accuracy was compared to enhanced liver fibrosis (ELF), fibrosis-4-index (FIB-4) and transient elastography (TE).
Results: In the derivation and validation cohorts, 67 (30%) and 19 (8%) experienced a LRE during a median follow-up of 5.2 years (IQR: 3.2-6.8) and 4.0 years (IQR: 2.7-5.6). We generated a model (ALPACA) of independent predictors of LREs (PRO-C3, AST/ALT, platelet count). ALPACA had high prognostic accuracy with a C-statistic of 0.85 in the derivation cohort, comparable to ELF (0.83) and TE (0.84) and significantly higher than FIB-4 (0.78). In the validation cohort, all tests had comparable C-statistics. Compared to low-risk patients (ALPACA≤11), patients high-risk (>11) had a subhazard ratio for LREs of 12.6 (95%CI 5.9-26.8, $p<0.001$) and higher cumulative incidence (57% vs 7%, $p<0.001$) (derivation cohort). We observed similar subhazard ratio in the validation cohort.
Conclusions: ALPACA score is a reliable tool to predict liver-related events in early ALD patients and seems suitable for risk stratification in primary and secondary care.

2. Time-trends in cholangiocarcinoma incidence – a Danish nationwide cohort study

Morten Daniel Jensen[1,2] (moje@clin.au.dk), Joe West[3,4], Frank Viborg Mortensen[2,5], Peter Jepsen[1,2]

1. Department of Hepatology and Gastroenterology, Aarhus University Hospital, Aarhus, Denmark
2. Department of Clinical Medicine, Aarhus University, Aarhus, Denmark
3. Lifespan and Population Health, School of Medicine, University of Nottingham, NG5 1Pb, UK
4. NIHR Nottingham Biomedical Research Centre (BRC), Nottingham University Hospitals NHS Trust and the University of Nottingham, Nottingham, United Kingdom
5. Department of Surgical Gastroenterology, Aarhus University Hospital, Aarhus, Denmark

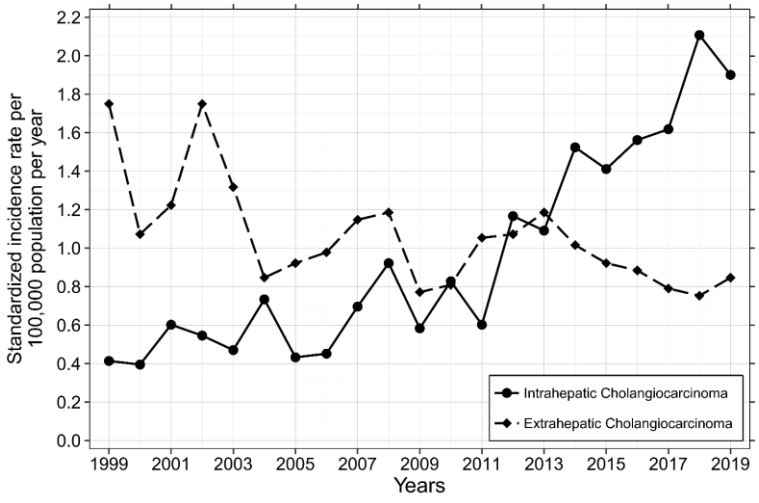
Background and Aims: Cholangiocarcinoma (CCA) is a usually fatal primary liver cancer originating from the biliary epithelium. Up-to-date data on incidence are crucial for our understanding of the disease and, therefore, we set out to examine incidence of CCA in a nationwide Danish cohort.

Methods: We included all Danish patients, N=2600, with an ICD-10 diagnosis code of CCA (intrahepatic [iCCA]: C221; extrahepatic [eCCA]: C240) in the Danish Cancer Registry, between 1999-2019. We computed the standardized annual incidence rates of CCA and standardized to the Danish population in 1999. We estimated annual change using a Poisson regression model.

Results: The standardized incidence rate (SIR) for iCCA increased from 0.41 (95% confidence interval [CI] 0.26-0.63) in 1999 to 1.90 (95% CI 1.55-2.31) in 2019 (Incidence rate ratio [IRR]: 4.59 [95% CI 2.89-7.28]). The SIR for eCCA decreased from 1.75 (95% CI 1.41-2.14) in 1999 to 0.85 (95% CI 0.62-1.13) in 2019 (IRR: 0.48 [95% CI 0.34-0.69]). For total CCA, the IRR was 1.29 (95% CI 1.01-1.64) and the annual increase was 2.51% (95% CI 1.81-3.22).

Conclusion: The incidence of CCA has increased since 1999, driven by a 4-fold increase in incidence of iCCA while incidence of eCCA has decreased by half. The reasons for this pattern are unclear but are likely due to changing environmental exposures over time.

Figure:



3. A randomized controlled family-focused nurse-driven post-discharge intervention for patients with decompensated liver cirrhosis

Malene Barfod O'Connell[1], Flemming Bendtsen[1], Lise Hobolth[1], Anne Brødsgaard[2], Nina Kimer[1]

1) Gastro Unit, Medical Division, Copenhagen University Hospital, Amager Hvidovre

2) Department of Paediatrics and Adolescent Medicine, Department of Gynaecology and Obstetrics, Copenhagen University Hospital, Amager Hvidovre & Research Unit for Nursing and Health Care, Institute for Public Health, Aarhus University

Corresponding author: malene.barfod,oconnell@regionh.dk

Background and aim: Structured outpatient care is essential for disease management for patients with liver cirrhosis and their families. In this study, we investigated whether a post-discharge intervention affects readmissions and outpatient attendance for patients with decompensated liver cirrhosis.
Method: The control group received standard care, and the intervention group received three monthly post-discharge home visits followed by three monthly follow-up telephone calls by a liver nurse for a total of six months follow-up.
Results: 111 participants were included. Twenty-five participants were excluded, leaving 42 in the intervention group and 44 in the control group. Fifty-three were male, the mean age was 60.7 years, and 81 had alcohol-related cirrhosis.

The results showed a 28.1% reduction in liver-related readmissions in the intervention group but did not reach statistical significance (p = 0.126). The mean length of the first readmission was 4.36 days in the control group and 2.86 in the intervention group, a highly significant decrease of 39.7% (p = 0.00001). Time from discharge to the first readmission was longer in the intervention group compared to the control group but did not reach statistical significance (p = 0.19).

Five participants in the intervention group did not appear for a total of six outpatient visits during the follow-up period, compared to 17 in the control group who did not appear for 29 visits, a highly significant decrease of 81.9% (0.00012).

Conclusion: A nurse-driven post-discharge program reduces the length of the first readmission and risk of non-attendance at follow-up visits in patients hospitalized for decompensated cirrhosis.

4. Diagnostic accuracy of pan-enteric capsule endoscopy and magnetic resonance enterocolonography in suspected Crohn's disease

Jacob Broder Brodersen[1,2], Torben Knudsen[1,2], Jens Kjeldsen[3,4], Mie Agerbæk Juel[5], Søren Rafael Rafaelsen[2,6], Michael Dam Jensen[5]
[1] Department of Internal Medicine, Section of Gastroenterology, Hospital of South West Jutland, Denmark [2] Department of Regional Health Research, University of Southern Denmark, Denmark [3] Department of Medical Gastroenterology, Odense University Hospital, Denmark [4] Research Unit of Medical Gastroenterology, Department of Clinical Research, University of Southern Denmark, Denmark. [5] Department of Internal Medicine, Section of Gastroenterology, Lillebaelt Hospital, Denmark [6] Department of Radiology, Lillebaelt Hospital, Denmark
Præsenterende forfatter: Jacob Brodersen – Jacob.broder.brodersen@rsyd.dk

Abstract

Background and aims: Minimal invasive modalities offers visualization of the entire gastrointestinal tract in a single examination. We examined the diagnostic accuracy of pan-enteric capsule endoscopy (CE) and Magnetic resonance enterocolonography (MREC) in patients with suspected Crohn's disease (CD).

Method: In a prospective, blinded, multicenter study, we included newly referred patients with clinically suspected CD. Patients were examined with CE, MREC, and ileocolonoscopy (IC) within 2 weeks. The primary outcome was per patient sensitivity, specificity, and diagnostic accuracy for ileocolonic CD. IC served as reference standard.

Results: 153 patients were included in the study and IC, MREC, and CE was performed in 152, 151, 133 patients, respectively. IC diagnosed 59 (39%) patients with CD (terminal ileum (TI) 22, colon 20, TI and colon 17). The sensitivity and specificity for diagnosing ileocolonic CD with CE was 87.5% (CI 73.2-95.8) and 87.8% (CI 78.2-94.3) (TI 96.6% and 87.5%; colon 75.0% and 93.0%) compared to 67.9% (CI 53.7-80.1) and 76.3% (CI 65.2-85.3) with MREC (TI 76.9% and 85.6%; colon 27% and 93%). The sensitivity of CE was superior to that of MREC (p = 0.02). The patient experienced discomfort was comparable with CE and MREC, but significantly less than with IC.

Conclusion: CE has a high sensitivity for diagnosing CD in the TI and colon, which in patients with suspected CD is superior to that of MREC. CE could be a minimal invasive and more patient-friendly alternative to IC as first-line exam in patients with suspected CD.

5. Efficacy and safety of colesevelam for the treatment of bile acid diarrhea

Authors
Christian Borup, MD (1, 2); Lars Vinter-Jensen, MD, DMSci (3); Søren Peter German Jørgensen, MD, PhD (4); Signe Wildt, MD, PhD (5); Jesper Graff, MD, DMSci (6); Tine Gregersen, MD, PhD (7); Anna Zaremba, MD, PhD (3); Camilla Nøjgaard, MD, PhD (6); Hans Bording Timm, MD (6); Trine Borup Andersen, MD, PhD (8); Dominique Rainteau, PhD (9); Svend Høime Hansen, MSc (10); Jüri Johannes Rumessen, MD, DMSci (1); L.K. Munck, MD, DMSci (1, 2).

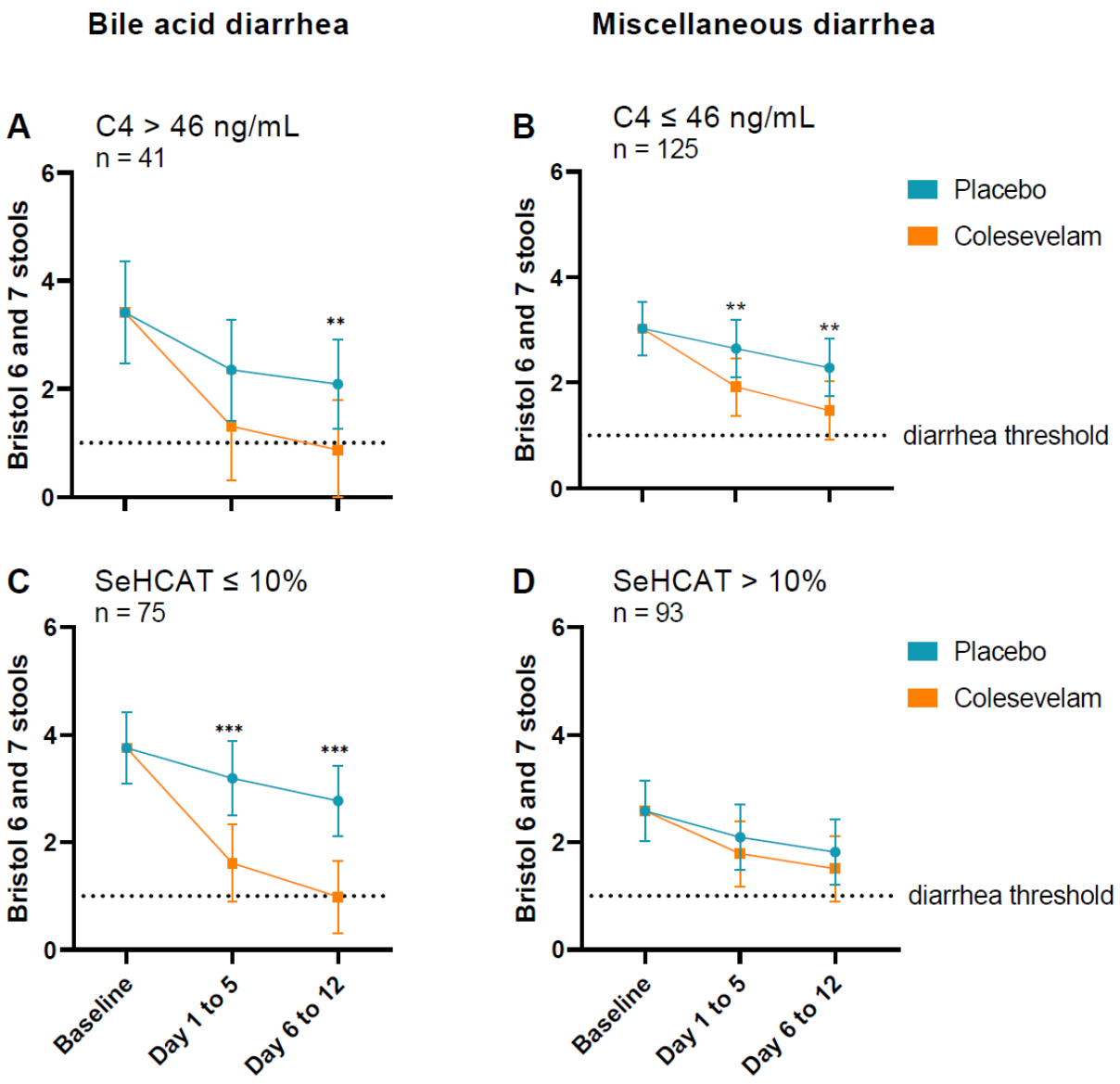
Author affiliations
1: Zealand University Hospital, Køge, Department of Internal Medicine, Køge, Denmark
2: Department of Clinical Medicine, University of Copenhagen, Copenhagen, Denmark
3: Aalborg University Hospital, Department of Medical Gastroenterology, Aalborg, Denmark
4: Aarhus University Hospital, Department of Gastroenterology and Hepatology, Aarhus, Denmark
5: Hvidovre University Hospital, Gastro Unit, Hvidovre, Denmark
6: Hvidovre University Hospital, Department of Clinical Physiology and Nuclear Medicine, Hvidovre, Denmark
7: Aarhus University Hospital, Department of Nuclear Medicine and PET, Aarhus, Denmark
8: Aalborg University Hospital, Department of Nuclear Medicine, Aalborg, Denmark
9: Hôpital Saint Antoine, Sorbonne University, Département de Métabolomique Clinique METOMICS, Paris, France
10: Copenhagen University Hospital, Rigshospitalet, Department of Clinical Biochemistry, Copenhagen, Denmark

Presenting author: Christian Borup, MD, PhD candidate
Department of Internal Medicine
Zealand University Hospital, Køge
Lykkebækvej 1, 4600 Køge, Denmark
chrbo@regionsjaelland.dk

Abstract@ Danish Society of Gastroenterology and Hepatology

Background. Bile acid diarrhea is a frequent cause of chronic watery diarrhea. The gold standard 75-Selenium tauroselcholic acid (SeHCAT) test has limited availability; plasma 7α-hydroxy-4-cholesten-3-one (C4) is an alternative. Low certainty evidence supports sequestrant treatment, including colesevelam.
Methods. This randomized double-blinded placebo-controlled investigator-initiated trial aimed to determine the efficacy and safety of colesevelam treatment, both in C4- and SeHCAT-defined bile acid diarrhea. Consecutive patients attending SeHCAT were screened for diarrhea: daily mean of ≥3.0 total bowel movements or ≥1.0 watery bowel movement (Bristol stool type 6 and 7). Absence of both criteria defined remission. The primary outcome was remission in bile acid diarrhea defined by C4 >46 ng/mL, secondarily by SeHCAT ≤10%.
Results. Of 168 patients randomized, 41 had C4 >46 ng/mL. Sixty-five percent achieved remission (95% confidence interval: 41–83%) on colesevelam; 17% (5–44%) on placebo (p=0.01). Seventy-five patients had SeHCAT ≤10% with remission in 66% (43–83%) and 15% (6–32%), respectively (p<0.001). Colesevelam improved the watery bowel movements in bile acid diarrhea (Figure 1A and C); in miscellaneous diarrhea, colesevelam and placebo differed less (Figure 1B) or not (Figure 1D). There were no serious adverse events.
Conclusions. Colesevelam treatment for bile acid diarrhea is safe and superior to placebo. C4- and SeHCAT-based diagnosis had similar remission rates. The effect was specific to bile acid diarrhea.
Abstract word count: 220.
ClinicalTrials.gov: NCT03876717. SINBAD trial

Figure 1.



Legend. ** p<0.01; *** p<0.001

6. Faecal microbiota transplantation for first or second *Clostridioides difficile* infection: A randomised, double-blinded, placebo-controlled study

Simon Mark Dahl Baunwall[1,2*], Sara Ellegaard Andreasen[1,2], Mette Mejlby Hansen[1], Jens Kelsen[1], Katrine Lundby Høyer[1,2], Nina Rågård[1], Lotte Lindgreen Eriksen[1,2], Sidsel Støy[1], Tone Rubak[2,3], Else Marie Skjøde Damsgaard[2,3], Susan Mikkelsen[4], Christian Erikstrup[2,4], Jens Frederik Dahlerup[1,2], Christian Lodberg Hvas[1,2]

[1]*Department of Hepatology and Gastroenterology, Aarhus University Hospital, Aarhus, Denmark*

[2]*Department of Clinical Medicine, Aarhus University, Aarhus, Denmark*

[3]*Department of Geriatrics, Aarhus University Hospital, Aarhus, Denmark*

[4]*Department of Clinical Immunology, Aarhus University Hospital, Aarhus, Denmark*

Introduction: *Clostridioides difficile* infection (CDI) is an urgent antibiotic-associated health threat with limited treatment options. Faecal microbiota transplantation (FMT) is an effective last-resort for patients with multiple, recurrent CDI. We investigated FMT versus standard-care vancomycin for the first or second CDI.

Methods: We conducted an investigator-initiated, double-blinded, placebo-controlled, randomized clinical trial at a Danish university hospital. We randomised patients with first or second CDI to two concealed encapsulated treatments with either FMT or placebo administered day 1 and day 3-7 after they had received standard-care oral vancomycin 125 mg four times daily for 10 days. The primary endpoint was cure of *Clostridioides difficile*-associated diarrhoea (CDAD) 8 week after treatment. We followed patients for 8 weeks or until recurrence. We planned to enrol 84 patients with a prespecified interim analysis after 42 patients.

Results: The trial was stopped at the interim analysis because of unethical high effect differences between the two groups. Among 42 patients randomised to FMT(n=21) or placebo(n=21), 19/21 patients (90.5%, 95%-CI 70–99%) in the FMT group, and 7/21 patients (33.3%, CI 15–57%) in the placebo group had CDAD cure at week 8 (P=0.0003). The absolute risk reduction was 57% (CI 33–81%). Adverse events (204 total) occurred equally frequent in both groups with diarrhoea(n=37) and abdominal pain(n=25) being predominant. No deaths or colectomies occurred during primary follow-up.

Conclusions: In patients with first or second CDI, first-line FMT is highly effective and markedly superior to the standard-care vancomycin alone in achieving sustained resolution from CDI. ClinicalTrials.gov NCT04885946.

***Correspondence:**

Simon Mark Dahl Baunwall, e-mail Simjor@rm.dk.

Word count: 250 words

OBS: The study is accepted for publication the Lancet Gastroenterology & Hepatology and the abstracts reflects a shortened version of the final accepted version.

7. Cognitive dysfunction is associated with systemic inflammation and neuroinflammation in a rodent model of NAFLD

Kjærgaard K[1*], Mikkelsen AC[1*], Bay-Richter C[2], Landau A[2,3], Eriksen PL[1], Jalan R[4], Hamilton-Dutoit S[5], Fenghua Chen[2], Vilstrup H[1], Magnusson NE[6], Mookerjee RP[1,4], Thomsen KL[1,4]

[1]Department of Hepatology and Gastroenterology, Aarhus University Hospital, Denmark; [2]Translational Neuropsychiatry Unit, Aarhus University, Denmark; [3]Department of Nuclear Medicine and PET-Centre, Aarhus University Hospital, Denmark; [4]Institute for Liver and Digestive Health, University College London; [5]Department of Pathology, Aarhus University Hospital, Denmark; [6]Medical Research Laboratory, Aarhus University Hospital, Denmark

***Shared first author*

Background: Impaired cognition is well recognized in non-alcoholic fatty liver disease (NAFLD) and may affect up to 70% of NAFLD patients. The aim of this study was to investigate the hypothesis that cognitive dysfunction results from systemic and neuroinflammation in experimental NAFLD.

Methods: Twenty male Sprague Dawley rats were fed a high-fat, high-cholesterol (HFHC) diet to induce NAFLD or a standard diet (n = 10 per group), for 16 weeks. The animals were studied for: neurocognitive changes (behavioural tests), systemic inflammation (plasma cytokines), neuroinflammation and neurodegeneration ([^{3}H]PK11195 and [^{3}H]UCB-J brain autoradiography).

Results: The HFHC diet induced NAFLD with extensive steatosis and lobular inflammation but no fibrosis. The HFHC rats demonstrated clear behavioural changes compared with standard diet: in Porsolt's Swim Test, they showed a depressive-like behaviour evidenced by increased immobility (p = 0.011) and reduced time swimming (p = 0.031); in the Novel Object Recognition test, they displayed impaired memory of previously encountered objects (p = 0.047). These changes were associated with elevated plasma pro-inflammatory cytokines (IFN-γ, GRO/KC, IL-1a, IL-2, IL-6, IL-10, IL-13, IL-17, MIP-1a, RANTES and MCP-1 (all $p < 0.05$)) and, importantly, with increased microglia activation and diminished synaptic density, demonstrated by specific-binding of [^{3}H]PK11195 and [^{3}H]UCB-J, respectively, in the prefrontal cortex ($p < 0.05$).

Conclusion: Our data affirms that cognitive changes are present in preclinical NAFLD, even before fibrosis progression, and this is accompanied by systemic and neuroinflammation, and neurodegeneration. The mechanistic pathways linking systemic and neuroinflammation require further elucidation, to highlight targets for therapy in patients.

Posters

8. A placebo-controlled trial of rifaximin-α in alcohol-related liver disease

Mads Israelsen[1], Bjørn Stæhr Madsen[1], Nikolaj Torp[1,2], Stine Johansen[1,2], Camilla Dalby Hansen[1,2], Sönke Detlefsen[2,3], Peter Andersen[1], Johanne Kragh Hansen[1,2], Katrine Prier Lindvig[1,2], Ditlev Nytoft Rasmussen[1], Katrine Thorhauge[1,2], Maria Kjærgaard [1,2], Morten Karsdal[4], Torben Hansen[5], Manimozhiyan Arumugam[1,5], Jonel Trebicka[1,6,7], Maja Thiele[1,2], Aleksander Krag[1,2], [+]*on behalf of the GALAXY and MicrobLiver consortia*

1: Department of Gastroenterology and Hepatology, Sdr. Boulevard 29, 5000 Odense C, Denmark.
2: Institute of Clinical Research, Faculty of Health Sciences, University of Southern Denmark, Winsløvsparken 19, 5000 Odense C, Denmark.
3: Department of Pathology, Odense University Hospital, J.B. Winsløws Vej 15, 5000 Odense C, Denmark.
4: Nordic Bioscience Biomarkers and Research A/S, 2730 Herlev, Denmark
5: Novo Nordisk Foundation Center for Basic Metabolic Research, University of Copenhagen, Blegdamsvej 3B, 2200 Copenhagen, Denmark
6: Department of Internal Medicine B, Münster University Hospital, WWU, Münster, Germany
7: European Foundation for Study of Chronic Liver Failure, Barcelona, Spain

Correspondence to:
Mads Israelsen, MD PhD**;** Odense Liver Research Centre; Department of Gastroenterology and Hepatology**;** Odense University Hospital, Denmark**;** Kloevervaenget 10, Entrance 112; 5000 Odense C, Denmark**;** Tele: + 45 20681060, Mail: mads.egerod.israelsen@rsyd.dk

Abstract (243 of 250 words)

Background and aims: Alcohol is the leading cause of liver-related mortality. The gut-liver axis is considered a key driver in alcohol-related liver disease (ALD). Rifaximin-α improves gut barrier function and reduces systemic inflammation in cirrhosis. Its efficacy and safety in patients with early ALD remain unknown.

Methods: We conducted an 18-month, randomized double-blind trial in patients with biopsy-proven ALD and no previous decompensation. We stratified patients according to fibrosis stage and alcohol abstinence. Patients were randomly allocated 1:1 to 550 mg rifaximin-α twice daily or placebo. The primary endpoint was a decrease of at least one fibrosis stage. Secondary outcomes included progression in fibrosis stage, lobular inflammation, and non-invasive fibrosis markers. Blinded outcome assessment was applied.
Results: We randomized 136 patients, of whom 108 (79%) completed the trial. In per-protocol analysis, 26% in the rifaximin-α group and 28% in the placebo group decreased in fibrosis stage (OR=1.10, P=0.828). Increase in fibrosis stage occurred in 24% in the rifaximin-α group, compared to 43% in the placebo group (OR=0.43, P=0.043). Rifaximin-α reduced lobular inflammation compared to placebo (OR=0.50, P=0.081). Fibrosis-4 index decreased by -0.19 in the rifaximin-α group and increased by +0.19 in the placebo group (P=0.003). Rate of adverse events (rifaximin-α 71%; placebo 78%) and serious adverse events (rifaximin-α 21%; placebo 21%) were comparable between groups.
Conclusions: In patients with biopsy-proven ALD, treatment with rifaximin-α did not reverse liver fibrosis, but significantly prevented fibrosis progression. This suggests that rifaximin-α may be beneficial in ALD.

Trial registration number: EudraCT, 2014–001856-51, Registered on August 16, 2014.

9. Birth outcomes and diagnostic delay of pregnancy-onset IBD

Thea Vestergaard[1,2], Julie Røsok[1], Mette Julsgaard[1,2], Rikke Bek Helmig[3], Sonia Friedman[4] and Jens Kelsen[1]
[1]Department of Hepatology and Gastroenterology, Aarhus University Hospital, Denmark
[2]Department of Clinical Medicine, Aarhus University, Denmark
[3]Department of Obstetrics and Gynecology, Aarhus University Hospital, Denmark
[4]Center for Crohn's and Colitis, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA

Corresponding author:
Thea Vestergaard, Department of Hepatology and Gastroenterology, Aarhus University Hospital, Palle Juul-Jensens Boulevard 99, entrance C, Level 1, fix-point C117, 8200 Aarhus N, Denmark, Email: theavest@rm.dk , Telephone:+ 45 78450000.

Abstract:

Background and aims: When pregnant, the distinction between pregnancy-related gastrointestinal symptoms and those that may turn out to be IBD is difficult.

Pregnancy-onset IBD (PO-IBD) may thus pose a clinical and diagnostic challenge, and we aimed to describe the clinical course of PO-IBD and the impact on birth outcomes, as well as investigate whether there is a diagnostic delay in pregnant women as compared to non-pregnant women.

Methods: Between 2008 and 2021, we identified all women debuting with IBD during pregnancy (n=34) at a tertiary IBD-center in Denmark. Data on women and their children was retrieved from medical records. Outcomes included subtype of IBD, disease location, medical treatment, as well as birth weight, intrauterine growth retardation (IUGR), gestational age at birth, caesarean section, still birth and malformations. Time elapsed from onset of symptoms to diagnosis was also noted. For comparison we employed a cohort of pregnant women with disease activity in prevalent IBD, and a cohort of women diagnosed with IBD when not pregnant, respectively.

Results: PO-IBD occurred in 34 women. UC (n=32) was more prevalent than CD (n=2).

Birth outcomes of women with PO-IBD was comparable to that of the controls.

Concerning diagnostic delay measured in months (median, [IQR]), there was no statistically significant difference between the 2 groups (PO-IBD, 2.5[2;6] versus Controls 2[1;4.5], p=0.27). Diagnosis was stated within 2 months in 44.1% vs 55.9%, within 3 to 6 months in 26.5% vs 29.4% and within >6 months in 29.5% vs 14.9%.

Conclusion: Birth outcomes in women with PO-IBD were comparable to those of women with flares in prevalent IBD during pregnancy. Women with PO-IBD tend to be subjects of diagnostic delay as compared to non-pregnant women.

10. Predictors of disease activity during pregnancy in women with inflammatory bowel disease – a Danish cohort study

Thea Vestergaard,[1] Mette Julsgaard,[1,3] Julie Folge Røsok[1], Søren Viborg Vestergaard,[2,3] Rikke Bek Helmig,[4] Sonia Friedman, [5] and Jens Kelsen,[1]
[1]Department of Hepatology and Gastroenterology, Aarhus University Hospital, Denmark
[2]Department of Clinical Epidemiology, Aarhus University Hospital, Denmark
[3]Department of Clinical Medicine, Aarhus University, Denmark
[4]Department of Obstetrics and Gynecology, Aarhus University Hospital, Denmark
[5]Center for Crohn's and Colitis, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA

Corresponding author:
Thea Vestergaard, Department of Hepatology and Gastroenterology, Aarhus University Hospital, Palle Juul-Jensens Boulevard 99, entrance C, Level 1, fix-point C117, 8200 Aarhus N, Denmark, Email: theavest@rm.dk , Telephone:+ 45 78450000.
Full ORCID id: 0000-0002-5373-8661

Abstract:
Background and aims: Inflammatory bowel disease (IBD) activity during pregnancy is associated with adverse pregnancy outcomes. We aimed to identify key clinical characteristics that predict disease activity during pregnancy.

Methods: Between January 2008 through 2021, we identified all singleton pregnancies among women with IBD recorded in patient and birth registries at a tertiary IBD center in Denmark. Maternal and infant data was retrieved from medical records. Demographics, Physicians Global Assessment (PGA) of disease activity in all three trimesters of pregnancy and pregnancy outcomes were recorded.

Results: In 609 pregnancies, we observed 603 (99.0%) live births. Disease activity in one or more trimesters was seen in 283 women (46.5%). UC phenotype was associated with a twofold increase in risk of disease activity (RR=1.7 95%; CI 1.4-2.0; P<0.0001)). Disease activity within 6 months prior to conceiving (169 women (27.7%)) was associated with a twofold increased risk of continuous disease activity during pregnancy (RR 2.1; 95% CI 1.8-2.4; P<0.0001). Disease activity during a previous pregnancy was associated with an increased risk of flares in subsequent pregnancies (RR=2.6; 95% CI 1.8-3.9; P<0.0001). Sustained clinical remission throughout pregnancy was associated with an increased probability of normal birth term, birthweight, and low risk of fetal growth restriction (FGR) and stillbirth.

Conclusion: Predictors for disease activity include disease activity in a previous pregnancy and/or prior to conception, as well as UC phenotype. Reassuringly, women with IBD in remission are not at increased risk of adverse pregnancy outcomes.

11. Alterations in the serum bile acid composition are associated with cardiac dysfunction in cirrhosis

Signe Wiese[1], Karen Danielsen[1], Troels Busk[1,2], Jens Dahlgaard Hove[1], Henriette Ytting[1], Svend Høime Hansen[3], Klaus Kaae Andersen[4], Andrei Voiosu[5], Søren Møller*[1], and Flemming Bendtsen*[1]
1 Hvidovre Hospital, 2 Herlev Hospital, 3 Rigshospitalet, 4 Omicron Aps, 5 Colentina Clinical Hospital, Bucharest, Romania
Correspondence: signeswiese@gmail.com

Objective: Elevated serum bile acids (BA) are harmful to the heart and alterations in the BA composition have been suggested to cause cardiovascular disturbances in cirrhosis. The study aim was therefore to investigate any associations between specific groups or individual serum BA and structural and functional cardiac abnormalities in patients with cirrhosis.

Design: 86 patients with cirrhosis underwent extensive cardiac assessment including cardiac MRI with quantification of myocardial extracellular volume (ECV), which is indicative of myocardial fibrosis. A panel of 15 individual serum BA and C4, a marker of *de novo* bile acid synthesis, were assessed.

Results: Patients with advanced cirrhosis had higher levels of total BA and conjugated BA, as well as lower C4 levels ($p<0.001$). Conjugated BA levels were higher in patients with a high cardiac index (CI) ($p<0.001$), increased left atrial volume index (LAVI) ($p < 0.001$), and in those with an abnormal myocardial ECV ($p<0.05$). We also found several strong correlations between conjugated BA and parameters of cardiac dysfunction and disease severity. In a model adjusted for sex, age and MELD, conjugated BA remained significantly associated with LAVI, left ventricular volumes, CI, and hepatic venous pressure gradient (HVPG), whereas the association with myocardial ECV did not hold.

Conclusion: Increased serum concentrations of conjugated BA are associated with several cardiac parameters, indicating a potential role in the development of hyperdynamic circulation and cardiac dysfunction in cirrhosis. Moreover, BA metabolism is markedly altered in advanced cirrhosis and related with portal hypertension.

12. Patient-reported outcomes and liver fibrosis in patients with Primary Sclerosing Cholangitis

Emilie Eifer Møller, Rasmus Hvidbjerg Gantzel, Anders Mellemkjær, Lars Bossen, Søren Peter Jørgensen, Henning Grønbæk.
Department of Hepatology and Gastroenterology, Aarhus University Hospital, Aarhus, Denmark.
Department of Clinical Medicine, Aarhus University, Aarhus, Denmark.

Background and aims: Primary sclerosing cholangitis (PSC) is a chronic liver disease associated with inflammation and biliary fibrosis leading to cholangitis and cirrhosis. Patients with PSC have impaired quality of life (QoL), but the association between the stage of liver fibrosis and QoL is unknown. We investigated this association in a newly established PSC cohort.

Methods: Inclusion data from patients with PSC, enrolled in an ongoing prospective cohort study, were used to assess associations between patient-reported QoL and stage of liver fibrosis. The PSC PRO instrument and the EQ-5D-5L questionnaire were used to quantify QoL. The stage of fibrosis was based on liver stiffness from FibroScan. We applied the non-parametric Kruskal-Wallis test.

Results: Thirty-nine PSC patients were included. The median age was 44.6, 24 (61.5%) were male, and 34 (87.1%) had concomitant inflammatory bowel disease. No differences in the PSC PRO module 2 scores, that reflect symptoms impact on QoL, were observed between different stages of fibrosis ($p = 0.586$). Comparing fibrosis stages to the median EQ-5D-5L visual analogue scale scores, a trend between fibrosis stage and QoL was apparent (F0-1 = 80, F2 = 82, F3 = 91, F4 = 54, $p = 0.177$).

Conclusions: Although no significant differences were found between fibrosis stages and QoL in this cohort of PSC patients, subjects with cirrhosis tended to report lower QoL. This was consistent in both QoL questionaries. The burden of fibrosis stage on QoL needs to be further evaluated in a larger cohort.

13. AI-ASSISTED ENDOSCOPIC VIDEO FRAME SELECTION FOR ULCERATIVE COLITIS CLASSIFICATION

Moeller, B[1]. L. & Lo, B[2,3] ; Bendtsen, F.[2,3] ; Burisch J. [2,3] ; Vind, I. [2,3] ; Igel, C.[1]

[1]Department of Computer Science, Copenhagen University

[2]Gastrounit, medical division, Copenhagen University Hospital - Amager and Hvidovre, Hvidovre, Denmark

[3]Copenhagen Center for Inflammatory Bowel Disease in Children, Adolescents and Adults, Copenhagen University Hospital - Amager and Hvidovre, Hvidovre, Denmark

Corresponding Author/Guarantor of the article:
Bobby Lo,
Gastrounit, Medical Section, Copenhagen University Hospital Hvidovre
Kettegård Alle 30
DK-2650 Hvidovre
Denmark
phone: +45 28580410
email: bobby.lo@regionh.dk

Introduction:
Endoscopic evaluation of ulcerative colitis (UC) patients is a cornerstone in guiding treatment and disease monitoring. The most applied scoring index is the Mayo endoscopic subscore (MES) despite high observer-variability. To overcome the observer-variability, artificial intelligence models have been developed, however only for still images. The challenge is to distinguish between suitable and unsuitable frames in videos. We, therefore, aim to build a deep learning (DL) model for video frame selection.

Methods:
The development was divided into 2 phases. Firstly, develop a classification model using 1,738 endoscopic images from UC patients, and secondly use the same model to differentiate between suitable and unsuitable video frames.
The model was developed to output a probability score for each level. If the score was <0.60 the frame was deemed unsuitable. Four endoscopic videos were segmented into useful and non-useful frames for validation

Results:
A DL model using ConVNext was developed to classify endoscopic images which achieved an accuracy of 0.878. Using the model to select video frames on the annotated videos we achieved the following results and demonstrated in this link (https://ibb.co/zZnm2Tk):

Video	Accuracy	Positive predictive value	Negative predictive value	Sensitivity	Specificity
1	0.92	0.92	0.93	0.98	0.78
2	0.90	0.80	0.94	0.82	0.94
3	0.82	0.73	0.88	0.84	0.80
4	0.60	0.48	1	0.35	1

Conclusion:

In conclusion, we have developed an endoscopic frame selection system demonstrating high accuracy. Our study demonstrates that a well-performing classifier can be highly accurate for selecting video frames in UC patients and reduce observer-variability.

14. Diagnostic accuracy of ultrasound and computed tomography for the diagnosis of liver cirrhosis compared to histopathology in a clinical setting

Liv Eline Hetland[1*], Thit Mynster Kronborg[1*], Mira Thing[1*], Mikkel Parsberg Werge[1], Elias Badal Rashu[1], Malene Barfoed O'Connell[1], Anne-Sofie Houlberg Jensen[1,] Beth Hærsted Olsen[3], Nicolai Wewer Albrechtsen[5.6.7.8], Søren Møller[4], Lise Hobolth[1,4], Christian Mortensen[1,4], Nina Kimer[1], Lise Lotte Gluud[1,2]

1) Gastro Unit, Copenhagen University Hospital – Hvidovre **2)** Dept Clin Med, University of Copenhagen **3)** Dept Radiology, Copenhagen University Hospital – Hvidovre**4)** Dept Functional and Diagnostic Imaging, Copenhagen University Hospital, Hvidovre **5)** Novo Nordisk Foundation Center for Protein Research, Faculty of Health Sciences, University of Copenhagen, Denmark **6)** Department of Proteomics and Signal Transduction, Max Planck Institute of Biochemistry, Martinsried, Germany **7)** Department of Biomedical Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark **8)** Department of Clinical Biochemistry, Rigshospitalet, University of Copenhagen, Copenhagen, Denmark

*These authors contributed equally to this work

Background and Aims: Abdominal ultrasound (US) and computed tomography (CT) are important tools in the initial evaluation of patients with liver disease. We evaluated the accuracy of US and CT in diagnosing liver cirrhosis using a prospective design with histological assessment as the gold standard.

Method: We included 422 patients in four prospective cohorts between March 2017 and January 2022. Radiological assessment and liver biopsy were conducted when clinically indicated. US and CT scans were performed by experienced radiologists and were re-evaluated by a second radiologist in case of inconclusive findings. Liver biopsies were collected percutaneously (n=227) or via transjugular access (n=222).

Results: Cirrhosis was histologically confirmed in 150 patients (35.5%). In total, 315 patients underwent an US and 145 a CT scan. Of patients who underwent a US, 82 were correctly diagnosed as having cirrhosis and 188 as correctly being non-cirrhotic; the sensitivity was 0.71, specificity 0.94, positive predictive value (PPV) 0.87 and negative predictive value (NPV) 0.85. Of patients who underwent a CT scan, 64 were correctly diagnosed with cirrhosis and 55 as non-cirrhotic (sensitivity: 0.74, specificity: 0.93, PPV: 0.94 and NPV: 0.71). Opioid requiring pain following the percutaneous biopsies was experienced by 35 patients (15%)—no patients presented with bleeding. One patient underwent a transjugular biopsy with minor bleeding, requiring no further interventions (0.5%).

Conclusion: This study highlights the importance of thoroughly assessing patients suspected of cirrhosis. Radiological imaging has a high accuracy for ruling in cirrhosis. However, diagnostic imaging overlooked more than one in five patients with cirrhosis.

Presenting author: Thit Mynster Kronborg (and Mira Thing will be present)

15. Endoscopic severity and classification of lesions in ileocolonic Crohn's disease: a prospective blinded comparison of pan-enteric capsule endoscopy and ileocolonoscopy

Jacob Broder Brodersen[1, 2], Jens Kjeldsen[3, 4], Torben Knudsen[1,2], Michael Dam Jensen[2, 5]

[1] *Department of Internal Medicine, Section of Gastroenterology, Hospital of South West Jutland, Esbjerg, Denmark*

[2] *Department of Regional Health Research, University of Southern Denmark, Denmark*

[3] *Department of Medical Gastroenterology, Odense University Hospital, Odense, Denmark*

[4] *Research Unit of Medical Gastroenterology, Department of Clinical Research, University of Southern Denmark, Odense, Denmark.*

[5] *Department of Internal Medicine, Section of Gastroenterology, Lillebaelt Hospital, Vejle, Denmark*

Præsenterende forfatter: Michael Dam Jensen – michael.dam.jensen@rsyd.dk

Abstract

Background and aims: Recent evidence supports the use of pan-enteric capsule endoscopy (CE) for the diagnosis and follow-up of Crohn's disease (CD). The aim of this study was to examine the agreement between CE and ileocolonoscopy (IC) for determining the severity and classification of lesions in ileocolonic CD.

Patients and methods: In a prospective blinded multicenter study, patients with suspected CD were examined with CE and IC within 2 weeks. 99 participants who completed a full IC and CE were included in the analysis. The ileocolonic disease severity was assessed with the Simple Endoscopic Score for Crohn's Disease (SES-CD).

Results: CD was diagnosed in 30 patients with IC and CE. The mean SES-CD was 9.8 (CI 7.9-11.8) and 10.6 (CI 8.2-13.1), respectively ($P = 0.69$). There was a substantial agreement (ICC 0.78, CI 0.68-0.92) and a strong correlation between SES-CD assessed with IC and CE ($r_s = 0.78$, $P < 0.001$). 55 bowel segments had ulcerations with both modalities (terminal ileum 24, right colon 12, transverse colon 8, left colon 8 and rectum 3). Mean sub-scores for ulcer size, area of ulcerated surface and area of affected surface did not differ between modalities. The inter-modality agreement (k) was 0.46, 0.34 and 0.43, respectively ($P < 0.001$).

Conclusions: There is a substantial agreement between IC and CE for determining the severity of lesions in ileocolonic CD. These results support the use of CE as a patient-friendly alternative to IC for the assessment of disease severity in selected patients with suspected CD.

16. ANALYSIS OF COAGULATION IN PATIENTS WITH HEREDITARY HAEMORRHAGIC TELANGIECTASIA (HHT).

Authors: Lyster, A, BS; Biørn, S, BS1; Vinholt, P, MD, PhD1; Kjeldsen, A, MD, PhD2; Nielsen, C, MS, PhD3; Fialla, A, MD, PhD4

Affiliations:

1. Department of blood samples and biochemistry, Odense University Hospital of Southern Denmark, Odense, Denmark

2. Department of ORL – Head and Neck Surgery, Odense University Hospital of Southern Denmark, Odense, Denmark

3. Department of Clinical Immunology, Odense University Hospital, Odense, Denmark

4. Department of Medical Gastrointestinal Diseases, Odense University Hospital, Odense, Denmark.

Objective: Numerous telangeictasia increase the risk of bleeding from mucosal surfaces among HHT-patients. The primary hemostasis with the platelet function plays a role in bleeding tendency. The aim is to investigate if the platelet function in HHT patients with epistaxis.

Method: A case-control study with 30 HHT-patients (epistaxis severity score≥4) and 20 healthy controls match by sex and age is planned. All will complete a questionnaire regarding bleeding (Self-bleeding assessment tool from ISTH). The platelet function will be assessed by; standard hemostasis parameters, *flow cytometry* (microaggregation), *ROTEM* (thromboelastogram), *Multiplate* (plateletaggregation) and *Platelet Function Analyzer 200* (realistic hemodynamic environment). T-test will provide information on differences between the two groups.

Results and conclusion:
The inclusion period is ongoing. We expect preliminary results for the conference.

***E-mail** til præsenterende forfatter: anne.lorup.lyster@rsyd.dk*

17. A calorie-unrestricted low carbohydrate high fat diet improves nonalcoholic fatty liver disease (NAFLD) activity score (NAS) and HbA1c in type 2 diabetes: a six-month randomised controlled trial

Camilla Dalby Hansen1,2; Eva-Marie Gram-Kampmann3; Johanne Kragh Hansen1; Mie Balle Hugger1,2; Bjørn Stæhr
Madsen, MD1; Jane Møller Jensen1; Sara Olesen1; Nikolaj Torp1,2; Ditlev Nytoft Rasmussen1; Maria Kjærgaard1,2; Stine
Johansen1,2; Katrine Prier Lindvig1,2; Peter Andersen1; Katrine Holtz Thorhauge1,2, Jan Christian Brønd4; Pernille
Hermann5; Henning Beck-Nielsen3; Sönke Detlefsen2,6; Torben Hansen7; Kurt Højlund3; Maja Sofie Thiele1,2; Mads
Israelsen1; Aleksander Krag1,2

1) Department of Gastroenterology and Hepatology, Odense University Hospital, Denmark 2) Institute of Clinical Research, University
of Southern Denmark, Denmark 3) Steno Diabetes Center Odense, Odense University Hospital, Denmark, 4) Department of
Department of Sport Science and Clinical Biomechanics, University of Southern Denmark, Denmark 5) Department of Medical
Endocrinology, Odense University Hospital, Denmark , 6) Dept. of Pathology, Odense University Hospital, Denmark, 7) Novo Nordisk Foundation, Center for Basic Metabolic Research, University of Copenhagen, Denmark

Presenting author: Camilla Dalby Hansen; Liver Research Centre, Kløvervænget 10, Entrance 112, 11th floor, 5000
Odense, DK-Denmark; Phone: 0045 20646430; Mail: camilla.dalby.hansen@rsyd.dk
(248/250 words)

Background: The effect of a low carbohydrate high fat (LCHF) diet on NAFLD is unknown. We aimed to investigate the effect of a six-month LCHF diet on NAFLD assessed by ≥2 points improvement in the NAFLD Activity Score (NAS) and on glycaemic control in people with type 2 diabetes mellitus (T2DM).

Methods: We conducted a six-month randomised controlled trial in 185 people with T2DM. Participants were randomised 2:1 to LCHF or a low-fat diet. Both diets were calorie-unrestricted. We performed liver biopsies and measured HbA1c (mmol/mol) at baseline and after six months.

Results: Out of 185 randomised participants, 165 commenced the allocated intervention and were included in the analysis. At baseline the mean age was 56 (SD, 10) years, 58% were female, 88% had NAFLD, median NAS was 3 (1-5) and mean HbA1c was 56 (SD, 10) mmol/mol. After intervention we saw no significant difference between groups in relation to improvement of ≥2 points in NAS (P=0.587). However, more participants in the LCHF group improved NAS with ≥ 1 point compared to the low-fat group (70% versus 49%; P=0.028), and fewer in the LCHF group experienced worsening of NAS compared to the low-fat group (1% versus 23%; P<0.001). Participants in the LCHF group improved HbA1c with -9.5mmol/mol versus -3.4mmol/mol in the low-fat group (P<0.001) and lost significantly more weight than in the low-fat group (-5.7kg vs. -1.8kg; P<0.001).

Conclusion: A six-month calorie-unrestricted LCHF diet improves NAS and HbA1c significantly more than a low-fat diet in people with T2DM.

18. Effects of statins and aspirin on hepatocellular carcinoma risk in alcohol-related cirrhosis: nationwide emulated trials

Frederik Kraglund[1,2] (frekra@clin.au.dk), Diana Hedevang Christensen[3], Andreas Halgreen Eiset[2,4], Gerda Elisabeth Villadsen[1], Joe West[2,5,6], Peter Jepsen[1]

1 Department of Hepatology and Gastroenterology, Aarhus University Hospital, Aarhus, Denmar

2 Department of Clinical Medicine, Aarhus University, Aarhus, Denmark

3 Department of Clinical Epidemiology, Aarhus University Hospital, Aarhus, Denmark

4 Department of Affective Disorders, Aarhus University Hospital, Aarhus, Denmark

5 Lifespan and Population Health, School of Medicine, University of Nottingham, Nottingham, UK

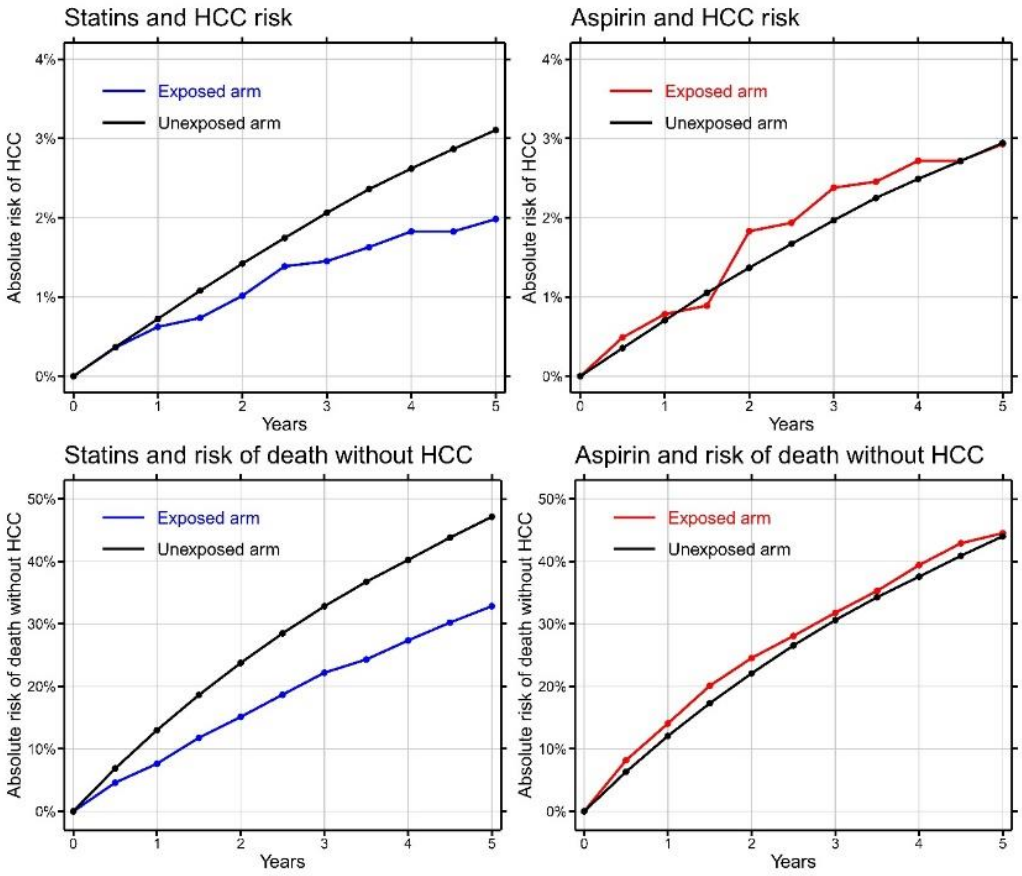
6 NIHR Biomedical Research Unit, Nottingham University Hospitals NHS Trust and University of Nottingham, Nottingham, UK

Background: Observational studies have shown an association between statin or aspirin use and decreased risk of hepatocellular carcinoma (HCC), but the effects of a well-defined treatment strategy remain unknown. We aimed to study the effects of statin or aspirin use on HCC risk in patients with cirrhosis due to alcohol-related liver disease (ALD cirrhosis).

Methods: We emulated target trials for statins and, separately, aspirin using Danish healthcare registries. All eligible patients with ALD cirrhosis diagnosed in 2000-2018 were included in either an exposed or an unexposed arm. Patients were followed until HCC or death. The 5-year risk of HCC was estimated using marginal structural models with inverse probability weighting.

Results: Using statins continuously for five years compared to not using statins resulted in relative risk (RR) of 0.67 (95% CI 0.47−0.94). The RR of death without HCC was 0.69 (95% CI 0.67−0.78). For aspirin, the RR was 1.04 (95% CI: 0.51−1.43) for HCC and 1.01 (95% CI: 0.91−1.05) for death without HCC.

Conclusions: In patients with ALD cirrhosis, five years of statin use resulted in a 33% relative risk reduction of HCC (number needed to treat = 94) and a 31% relative risk reduction of death without HCC (number needed to treat = 7). Aspirin use does not affect the risk of HCC or death without HCC.


Statins and HCC risk
Exposed arm
Unexposed arm
Absolute risk of HCC
Years
Aspirin and HCC risk
Exposed arm
Unexposed arm
Absolute risk of HCC
Years
Statins and risk of death without HCC
Exposed arm
Unexposed arm
Absolute risk of death without HCC
Years
Aspirin and risk of death without HCC
Exposed arm
Unexposed arm
Absolute risk of death without HCC
Years

19. Gastrointestinal transit times in patients with nausea and vomiting, baseline and during 5-Hydroxytryptamine-4 receptor agonist

Mette Winther Klinge[1,2], Anders Lødrup[3], Klaus Krogh[2], Anne-Mette Haase[2]

1. Diagnostic Center, Regional Hospitalet Silkeborg
2. Department of Hepatology and Gastroenterology, Aarhus University Hospital
3. Department of Hepatology and Gastroenterology, Regional Hospital Gødstrup

Presenting author; Anne-Mette Haase, annehaas@rm.dk

Introduction

Idiopathic gastroparesis (IGP), characterized by symptoms associated to delayed gastric emptying such as nausea, abdominal pain and bloating may be accompanied by altered transit times in the small intestine and in the colon.

Aim

To describe total- and segmental transit times in patients with suspected IGP using a wireless motility capsule (3D-Transit) before and during treatment with a 5-Hydroxytryptamine-4 receptor agonist, Prucalopride. Prucalopride has been shown to increase gut motility and secretion.

Method

Patients with nausea or moderate/severe IGP symptoms according to validated questionnaires were recruited from our out-patient clinic. All patients were treated with Prucalopride 2 mg daily for 28 days. 3D-Transit capsule examination was performed baseline and repeated after a minimum 10 days treatment.

Results

We included 20 patients (8 males), mean age 28.7 (SD 12.6) and mean BMI 21.8 (SD 3.4). Gut transit times at baseline and follow-up are presented in table 1.

Conclusion

Gastric emptying was reduced significantly during treatment. No other significant reduction in segmental or total transit times measured with 3D-Transit were detected. We found, however, a trend toward a reduction in total transit times. The latter seems to be driven by a reduction in colonic transit times. Because of the heterogeneity and physiological variability in gastrointestinal transit times, future studies should include more participants.

Capsule	**Gastric emptying (hours)**	**Small Bowel transit time (hours)**	**Colorectal transit time (hours)**	**Total gastrointestinal transit time (hours)**
1 (Baseline)	3,15 (2.17-4.18)	3.85 (2.57-5.2)	33,45 (16.33-60.93)	39,37 (23.08-66.4)
2 (Prucalopride)	1,6 (1,27-2,43)	3,67 (2.37-5)	19,38 (16.92-32.6)	25 (23.77-36.08)
Difference given in *p*-value	0.0003	0.605	0.347	0.144

Table 1. Data is presented as median and interquartile range. Differences are calculated with non-parametric test.

20. THE DESCRIPTION OF THE EOE COPENHAGEN COHORT OF PATIENTS WITH EOSINOPHILIC OESOPHAGITIS [ALK1] REFERRED TO A TERTIARY FACILITY IN DENMARK COMPARED TO THE POPULATION BASED DANEOE COHORT

C.O. Mortensen , I.B. Andersen , D. Melgaard , L.T. Frandsen , A.L. Krarup
Hvidovre University Hospital, Gastro-Unit, Copenhagen, Denmark, North Denmark Regional Hospital, Center for Clinical Research, Hjørring, Denmark, Aalborg University Hospital, Department of Gastroenterology and Hepatology, Aalborg, Denmark, Aalborg University Hospital, Department of Emergency Medicine and Trauma Care, and Department of Gastroenterology and Hepatology, Aalborg, Denmark

Introduction: The population-based DanEoE cohort in the North Denmark Region is well described. Little is known of difference in EoE complications in the general population compared to patients at tertiary centres.
Aims & Methods: The aims of the study were to describe the EoE patient phenotypes and complications in a new cohort of adult EoE at an academic Hospital in the capital of Denmark. Secondly, to compare them to the population-based DanEoE cohort.
The EoE Copenhagen cohort included dysphagia patients with eosinophilia starting May 1st, 2013. Exclusion criteria were other causes of eosinophilia in oesophagus than EoE. From May 2013 to 20th of October 2017, strictly clinical data limited to the direct handling were recorded: Allergic disease, histological responses to treatment, pH and manometry results and complications. From 20th of October 2017 to 31st of December 2020 detailed information were entered in the same database as the population-based DanEoE cohort. Two experienced gastroenterologists and EoE experts (IBA, CM) evaluated and entered all data. The index endoscopy was defined as the first endoscopy with biopsies showing oesophageal eosinophilia. In both cohorts the EoE diagnose folloewed the AGREE consensus.
Results: The 245 EoE patients in the Copenhagen cohort were 1) less likely to have comorbid GORD, 2) be of male gender, 3 younger both at symptom debut, and at the EoE diagnose (all $p<0.05$). At the index endoscopy less endoscopists had suspected EoE as a diagnose (EoE Copenhagen: 11 % versus DanEoE: 78 %, $p<0.001$). The findings at the endoscopy were very similar expect for edema being described more often in the EoE Copenhagen cohort ($p=0.01$). Dilations were rarely necessary in both cohorts. However, dilations after the diagnose was more frequently done in patients from the Copenhagen cohort (EoE Copenhagen cohort 9.5 % versus DanEoE cohort 7.1 %, $p=0.5$).
Conclusion: The results indicated that patients referred to the Danish academic centre had earlier symptom debut, were diagnosed earlier, had more fibrotic disease, and less comorbid GORD. This indicate that studies based on patients from Academic centres are not comparable to studies based on the general population.

21. The phenotype of patients with complicated eosinophilic oesophagitis – a population based study of the DanEoE cohort

Stine Dam Henriksen[1], Stine Kjærsgård Hansen,[2] Isabella Kozon,[3] Martin Eriksen,[3] Christoffer Harboe Nielsen, [3] Mia Heinesen, [3] Dorthe Melgaard,[4] Anne Lund Krarup,[2,3,5]

1) Department of Surgery, Aalborg University Hospital

2) Department of Gastroenterology and Hepatology, Aalborg University Hospital

3) Department of Emergency Medicine and Trauma Care, Aalborg University Hospital, Aalborg, Denmark

4) Center of Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark

5) Department of Clinical Medicine, Aalborg University, Aalborg, Denmark

Corresponding author: Anne Lund Krarup, Department of Emergency Medicine and Trauma Care, Hobrovej 18-20, DK-9000 Aalborg, Denmark. Telephone: +45 9764 0770, E-mail: apslk@rn.dk

Background: The DanEoE is a previously described population- and register-based cohort of 236 adult patients with eosinophilic oesophagitis (EoE) in a well-defined Danish region.

Aims: To compare the phenotype and treatment response between EoE patients with complications to patients without complications at diagnosis.

Methods: This is a retrospective cross sectional study of the DanEoE cohort's 236 adult EoE patients diagnosed in 2007-2017 in the North Denmark Region. Patients were divided into a group who had had complications before or at the diagnose, and a group without.

Results: At the diagnostic endoscopy 61 % had never had a complication, and 39 % had had either FBO (n 77) or been dilated (n 15). The Complicated group had the same mean age at symptom debut (37(16) versus 37(17) years, p = 1.0), but were diagnosed significantly later (age: 49(15) versus 45(15) years, p = 0.04) with a resulting longer diagnostic delay (13(13) versus 7.9(11) years, p = 0.01). The complicated group were more often on a proton pump inhibitor at the time of diagnosis, complained more often of dysphagia, had rings or stenosis more frequent, but less often erosive oesophagitis (all p<0.05). Almost half of all patients were never treated to symptomatic remission (uncomplicated 40 %, complicated 49 %). The histological remission were not secured in the majority (uncomplicated 68 %, complicated 70 %).

Conclusions: Results indicated that the complicated EoE phenotype at time of diagnosis was a patient with a five year longer diagnostic delay, and rings or stenosis already present.

22. Population-based incidence and prevalence of eosinophilic oesophagitis in Denmark: A nationwide study 2008 – 2018

Kristine Højgaard Allin[1,2], Gry Poulsen[1], Dorte Melgaard[3,4], Line Tegtmeier Frandsen[2], Tine Jess[1,2], Anne Lund Krarup[2,4,5]

1) Center for Molecular Prediction of Inflammatory Bowel Disease (PREDICT), Department of Clinical Medicine, Aalborg University, Copenhagen, Denmark

2) Department of Gastroenterology and Hepatology, Aalborg University Hospital, Aalborg, Denmark

3) Center of Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark

4) Faculty of Clinical Medicine, Aalborg University, Aalborg, Denmark

5) Department of Emergency Medicine and Trauma Care, Aalborg University Hospital, Aalborg, Denmark

Corresponding & presenting author: Anne Lund Krarup, Department of Emergency Medicine and Trauma Care, Aalborg University Hospital, Hobrovej 18-20, DK-9000 Aalborg, Denmark. Telephone: +45 97 66 01 08, E-mail: apslk@rn.dk

Background: Eosinophilic oesophagitis (EoE) is a chronic, immune-mediated, or antigen-mediated oesophageal disease characterized by symptoms related to oesophageal dysfunction and eosinophil-predominant inflammation.

Objective: To estimate the incidence and prevalence of EoE in Denmark during the period 2008-2018.

Methods: Based on data from nationwide registers we identified cases of EoE using two definitions: a broad definition based solely on oesophageal biopsies registered in the Danish Pathology Register and a narrow definition also including symptoms of oesophageal dysfunction registered in the Danish National Patient Registry. The annual incidence and prevalence were standardized by sex and age in 5-year intervals to the 2013 study population.

Results: From 2008 to 2011, the standardized incidence of EoE (using the broad definition) was stable, but from 2011 to 2018 it increased from 3.9 (95% CI 3.3-4.4) to 11.7 (95% CI 10.8-12.6) per 100,000 person-years. Similar temporal trends were observed when using the narrow EoE definition. The increase in incidence was most pronounced in men and in individuals above 40 years of age. In children, the EoE incidence was a fourth of the incidence in adults aged 40-64 years: 4.4 (95% CI 3.2-5.6) vs 17.6 (95% CI 15.7-19.5) per 100,000 person-years. Overall, the biopsy rate as well as the proportion of oesophageal biopsies with detected eosinophilia increased during the study period.

Conclusion: This study of the entire population of Denmark during the period 2008 to 2018

shows that the incidence and prevalence of EoE is not yet plateauing and that EoE could be severely underdiagnosed in children.

23. No gender differences in EoE disease presentation, treatment, and complications in the Danish DanEoE cohort – a population-based study

Isabella Kozon[1,] Line Tegtmeier Frandsen[2], Bensu Izgi[1], Michael Sloth Trabjerg[1], Line Elise Møller Hansen[3], Dorte Melgaard[3,4], Anne Lund Krarup,[1,3,4]

1) Department of Acute Medicine and Trauma Care, Aalborg University Hospital, Aalborg, Denmark

2) Department of Gastroenterology and Hepatology, Aalborg University Hospital

3) Center of Clinical Research, North Denmark Regional Hospital, Hjørring, Denmark

4) Faculty of Clinical Medicine, Aalborg University, Aalborg, Denmark

Running title: No gender differences in Danish EoE patients.

Corresponding and presenting author: Anne Lund Krarup, Department of Acute Medicine and Trauma Care, Aalborg University Hospital, Hobrovej 18-20, DK-9000 Aalborg, Denmark. Telephone: +45 97660108, E-mail: apslk@rn.dk.

Abstract

Background: It is well known that there is a gender difference in the incidence eosinophilic oesophagitis (EoE) with more men affected. However, there is a lack of knowledge of gender difference in most other aspects of the disease.

Objective: To measure on a population-based adult EoE group if gender differences exist in 1) the clinical phenotype, 2) the treatment response, and 3) complications.

Methods: This is a retrospective, registry-based, DanEoE cohort study of 236 adult EoE patients, (178 adult men and 58 adult women) diagnosed in 2007-2017 in the North Denmark Region. Medical registries were searched for patient files and pathology reports.

Results: There were no statistical or clinical significant differences in the phenotype regarding symptoms reported, macroscopic or histological findings at the diagnose (all $p>0.3$). However, a trend was observed towards 14% more men reporting allergy or asthma compared to women (61% men versus 47% women, $p=0.06$). A comparable number of men and women were followed up symptomatically and histologically (all $p>0.3$). More men reported “no symptoms” on PPI (men 56% versus 39% women, $p=0.04$) although the histological response was not different between genders ($p=0.4$). The proportion of food bolus obstructions and dilations were comparable (all $p>0.4$).

Conclusions: In this study very few gender differences were found. Results suggests that men and women with EoE can be managed equally clinically. We did not find the expected gender differences as described in other gastrointestinal diseases.

24. Metabolic Disturbances in Autoimmune Hepatitis, Primary Biliary Cholangitis and Non-Alcoholic Fatty Liver Disease Compared with Healthy Individuals

Anne-Sofie H. Jensen[1,2], Henriette Ytting[1,3], Josephine Grandt[1,2], Andreas Møller[1], Mikkel P. Werge[1], Elias B. Rashu[1], Liv Eline Hetland[1], Marie Winther-Sørensen[2], Johan Burisch[1], Anders E. Junker[1], Lise Hobolth[1], Christian Mortensen[1], Flemming Tofteng[1], Søren Møller[4], Mogens Vyberg[5,6], Reza R. Serizawa[5], Lise Lotte Gluud[1,7], Nicolai J. Wewer Albrechtsen[2,8,9,10]

Presenting author: Anne-Sofie H. Jensen, anne-sofie.houlberg.jensen@regionh.dk

[1]Gastro Unit, Copenhagen University Hospital Hvidovre, Denmark.

[2]Novo Nordisk Foundation Center for Protein Research, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark

[3]Rigshospitalet, Copenhagen, Denmark; European Reference Network on Hepatological Diseases (ERN RARE-LIVER)

[4]Department of Clinical Physiology and Nuclear Medicine, Center for Functional and Diagnostic Imaging and Research, Copenhagen University Hospital Hvidovre, Denmark

[5]Department of Pathology, Copenhagen University Hospital Hvidovre, Denmark.

[6]Center for RNA Medicine, Department of Clinical Medicine, Aalborg University, Copenhagen

[7]Faculty of Health Science, University of Copenhagen, Copenhagen, Denmark

[8]Department of Clinical Biochemistry, Rigshospitalet, Copenhagen, Denmark
Gastrounit

[9]Department of Biomedical Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark

[10]Department of Clinical Biochemistry, Bispebjerg and Frederiksberg Hospital, Copenhagen, Denmark

BACKGROUND

Metabolic disturbances such as prediabetes are observed in patients with non-alcoholic fatty liver disease (NAFLD). Whether metabolic disturbances are common in patients with autoimmune hepatitis (AIH) and primary biliary cholangitis (PBC) is yet unknown.

AIM

To investigate metabolic disturbances in patients with AIH and PBC compared with NAFLD and healthy controls.

METHODS

We designed a prospective cohort study FALL (NCT055335603) including incident patients with biopsy-verified AIH (n = 10), PBC (n = 10), NAFLD (n = 12) and healthy controls (n = 12). None of the included participants had type 2 diabetes (T2D) and none were treated with steroids at inclusion. An oral glucose tolerance test measuring blood glucose and hormonal responses was performed in a subset of participants.

Secondly, using available data from >450,000 individuals we also calculated the prevalence and odds ratio of T2D for AIH and PBC.

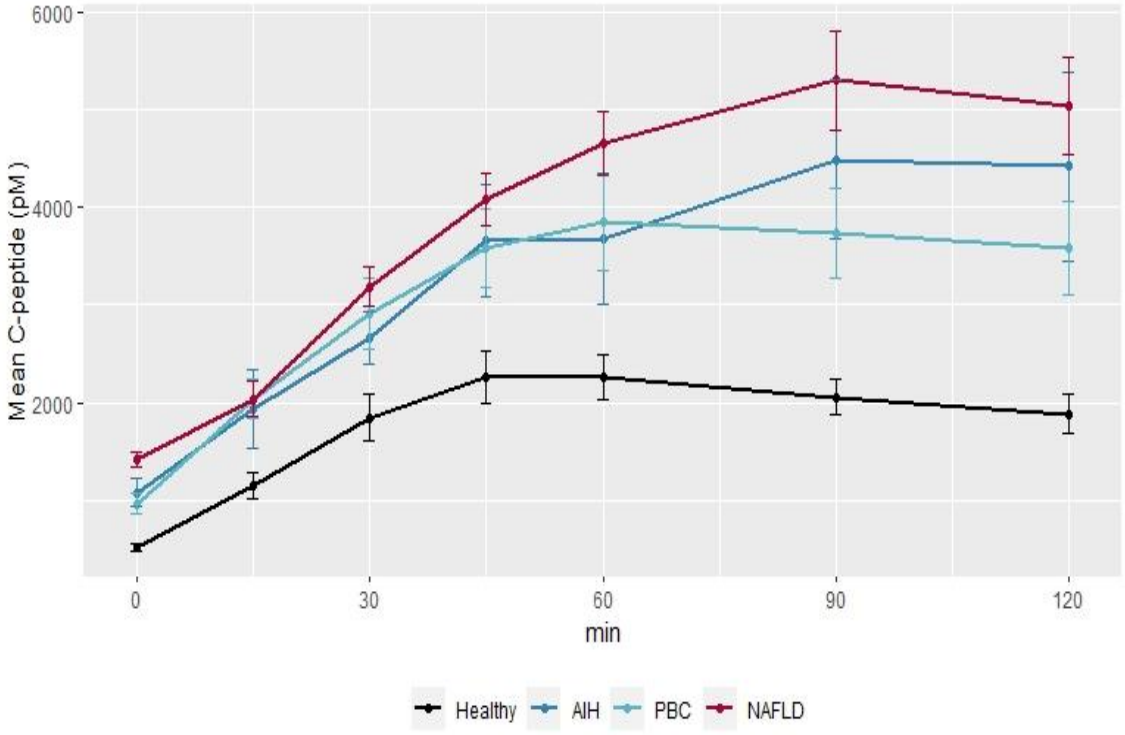
RESULTS

AIH, PBC and NAFLD patients had increased fasting glucose and were hyperinsulinemic, had increased hepatic insulin resistance and peripheral insulin resistance compared with healthy individuals.

AIH, PBC and NAFLD patients had a significantly increased odds ratio (1.83 (95% CI 1.28–2.61), 1.88 (1.32–2.68) and 3.17 (2.96–3.39), respectively) of prevalent T2D, suggesting an association between AIH and T2D, and PBC and T2D.

CONCLUSION

Metabolic dysfunction such as prediabetes may be underestimated in patients with autoimmune liver diseases.



25. Combined biochemical test compares with SeHCAT for the diagnosis of bile acid diarrhoea

Authors
Christian Borup, MD (1, 2); Lars Vinter-Jensen, MD, DMSci (3); Søren Peter German Jørgensen, MD, PhD (4); Signe Wildt, MD, PhD (5); Jesper Graff, MD, DMSci (6); Tine Gregersen, MD, PhD (7); Anna Zaremba, MD, PhD (3); Camilla Nøjgaard, MD, PhD (6); Hans Bording Timm, MD (6); Trine Borup Andersen, MD, PhD (8); Dominique Rainteau, PhD (9); Svend Høime Hansen, MSc (10); Jüri Johannes Rumessen, MD, DMSci (1); L.K. Munck, MD, DMSci (1, 2).

Author affiliations
1: Zealand University Hospital, Køge, Department of Internal Medicine, Køge, Denmark
2: Department of Clinical Medicine, University of Copenhagen, Copenhagen, Denmark
3: Aalborg University Hospital, Department of Medical Gastroenterology, Aalborg, Denmark
4: Aarhus University Hospital, Department of Gastroenterology and Hepatology, Aarhus, Denmark
5: Hvidovre University Hospital, Gastro Unit, Hvidovre, Denmark
6: Hvidovre University Hospital, Department of Clinical Physiology and Nuclear Medicine, Hvidovre, Denmark
7: Aarhus University Hospital, Department of Nuclear Medicine and PET, Aarhus, Denmark
8: Aalborg University Hospital, Department of Nuclear Medicine, Aalborg, Denmark
9: Hôpital Saint Antoine, Sorbonne University, Département de Métabolomique Clinique METOMICS, Paris, France
10: Copenhagen University Hospital, Rigshospitalet, Department of Clinical Biochemistry, Copenhagen, Denmark

Presenting author: Christian Borup, MD, PhD candidate
Department of Internal Medicine
Zealand University Hospital Køge
Lykkebækvej 1, 4600 Køge, Denmark
chrbo@regionsjaelland.dk

Background. Bile acid diarrhoea is underdiagnosed partly because the 75-Selenium tauroselcholic acid (SeHCAT) test is cumbersome. Empirical treatment effect has uncertain diagnostic performance. Emerging diagnostics are plasma 7α-hydroxy-4-cholesten-3-one (C4) and stool bile acids.

Aim & methods. This diagnostic part of an investigator-initiated randomized placebo-controlled trial of colesevelam aimed to improve diagnosis of bile acid diarrhoea. Consecutive patients attending SeHCAT had fasting blood and spot stool sampled. SeHCAT results were double-blinded. A questionnaire item: “was your diarrhoea cured?” assessed the subjective treatment effect. Exploratory machine learning applied logistic regression in 60% of the database and validated the performance in the remaining 40%. We did diagnostic cross-tabulation and receiver operating characteristics (ROC) analysis.

Results. Ninety-six patients with SeHCAT ≤ 10% had median 2.5 daily watery stools (Bristol type 6 and 7) versus 1.2 in 155 patients with SeHCAT > 10% ($p<0.001$). C4 and faeces total bile acids had high positive likelihood ratios but low sensitivity. The exploratory model combined C4, faeces total bile acids and percentage primary bile acids, and the number of watery stools. This achieved 0.95 (0.91–0.99) area under the ROC curve. Empirical treatment effect had poor diagnostic characteristics (Table 1).

Conclusions. The explorative model had diagnostic performance similar to SeHCAT. This could narrow the diagnostic gap in bile acid diarrhoea. Using empirical treatment effect diagnostically is not recommendable.

Abstract word count: 220
ClinicalTrials.gov: NCT03876717. SINBAD trial

Table 1. Bile acid diarrhoea diagnostics versus SeHCAT ≤ 10%

Receiver operating characteristics (ROC) analysis	Area under the ROC curve	Thres-hold	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)	Positive likelihood ratio	Negative likelihood ratio
C4 (ng/mL) n=230	0.83 (0.78–0.89)	> 20	87 (80–93)	64 (56–72)	60 (54–66)	88 (83–94)	2.4 (1.9–3.0)	0.2 (0.1–0.4)
		> 46	47 (37–57)	92 (87–96)	78 (67–87)	74 (70–78)	5.7 (3.2–10.2)	0.6 (0.5–0.7)
		> 60	32 (22–43)	97 (94–99)	88 (76–97)	70 (67–73)	11.7 (4.2–32)	0.7 (0.6–0.8)
Faeces total bile acids (µmol/g), n=179	0.89 (0.84–0.93)	> 7.0	93 (87–99)	63 (53–71)	64 (59–70)	93 (87–98)	2.5 (1.3–3.2)	0.1 (0.05–0.3)
		> 16.1	55 (42–65)	94 (89–98)	88 (79–95)	74 (69–79)	9.5 (4.2–21)	0.5 (0.4–0.6)
Faeces primary bile acids (%), n=179	0.71 (0.63–0.79)	> 10.6	73 (63–83)	62 (52–71)	58 (51–65)	76 (69–84)	1.9 (1.4–2.5)	0.4 (0.3–0.7)
Bristol 6 and 7 stools per day, n=234	0.69 (0.62–0.76)	≥ 1.0	84 (75–91)	47 (39–56)	50 (46–54)	83 (74–89)	1.6 (1.3–1.9)	0.3 (0.2–0.6)
Explorative model combining the four above diagnostics * n=179	0.95 (0.91–0.99)	Index > 0.30	90 (73–98)	85 (70–94)	82 (68–90)	92 (79–97)	6.0 (2.8–13)	0.1 (0.04–0.4)
		index > 0.50	80 (61–92)	93 (80–98)	89 (72–96)	86 (75–93)	10.9 (3.6–33)	0.2 (0.1–0.4)
Diagnostic cross-tabulation								
Subjective remission to colesevelam #, n/total patients	SeHCAT ≤ 10%: 20/32 SeHCAT > 10%: 12/34		63 (44–79)	65 (47–80)	63 (50–74)	65 (52–75)	1.8 (1.0–3.0)	0.6 (0.4–1.0)
Cholecystectomy, n/total patients	SeHCAT ≤ 10%: 24/96 SeHCAT > 10%: 19/155		25 (17–35)	88 (82–93)	56 (42–69)	65 (62–68)	2.0 (1.1–3.5)	0.9 (0.8–1.0)

Legend. Diagnostic characteristics. Mean (95% confidence intervals). * The model used the percentage of primary bile acids in stool, while C4, feces total bile acids, and the daily number of Bristol 6 and 7 stools were log-transformed. # The treatment part of this trial included 84 patients on placebo and 84 on colesevelam. Of the 84 on colesevelam, 66 answered the questionnaire item regarding subjective effect of treatment.

26. Visualizing and characterizing of the faeces used in faecal microbiota transplantation (FMT)

Nina Rågård1 (ninraa@rm.dk), Simon Mark Dahl Baunwall1, Mette Mejlby Hansen1, Johan Palmfeldt2, Anna Lorentzen3, Jens Frederik Dahlerup, Lise Erikstrup4, Christian Lodberg Hvas1
1Department of Hepatology and Gastroenterology, Aarhus University Hospital
2Research Unit for Molecular Medicine, Aarhus University
3Department of Biomedicine, Aarhus University
4Department of Clinical Microbiology, Aarhus University Hospital

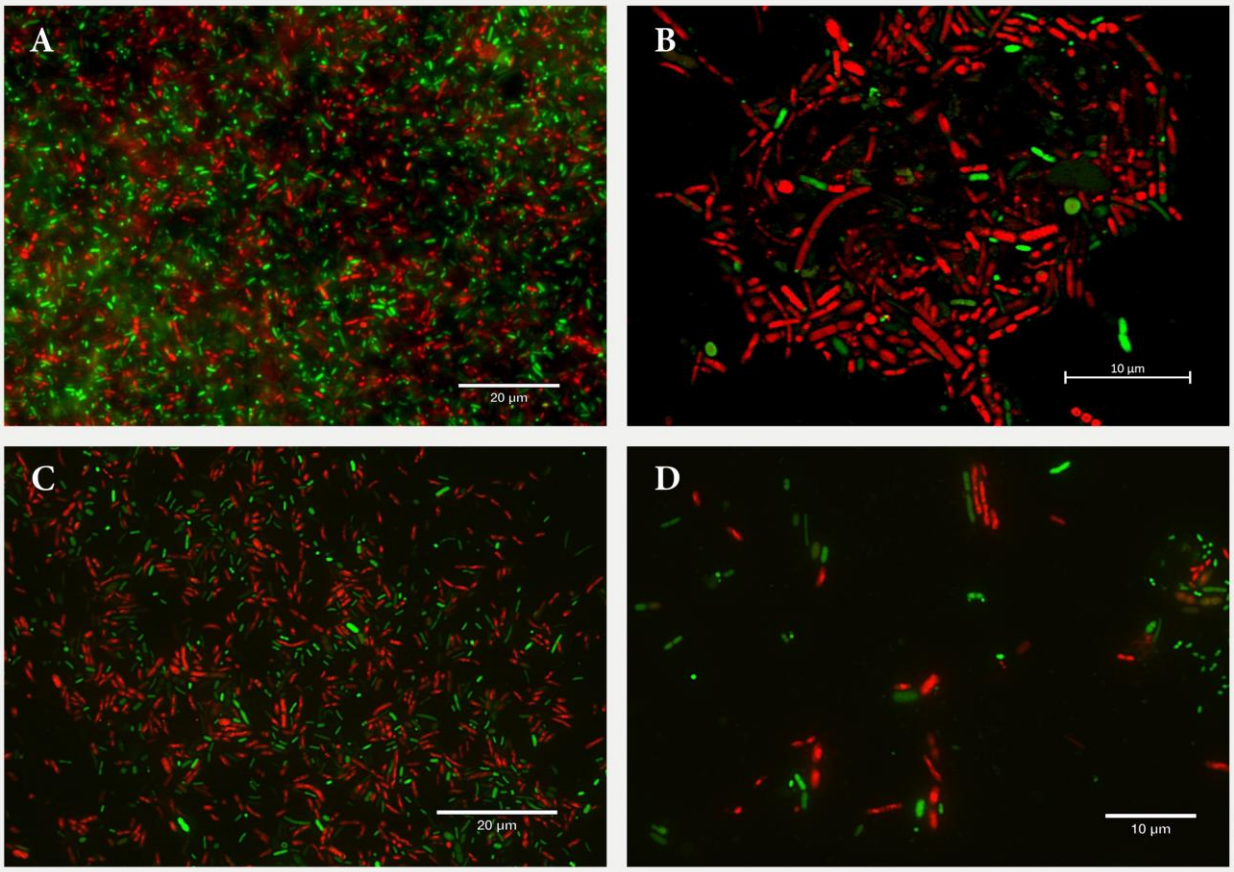
Introduction: Faecal microbiota transplantation (FMT) is a life-saving treatment for *Clostridioides difficile* infection (CDI), but we lack insights into its mechanism of action. Donor faeces in FMT contains many constituents with potential activity against CDI, e.g., bacteria, endospores, bacteriophages, fungi, and various metabolites. Our aim was to visualize the donor faeces content to gain insights into its mechanism of action.

Methods: As a novel approach, we established a setup for visualizing the FMT content. Crude faeces, glycerol-capsule, cryobag, and lyophilized donor faeces preparations were stained with *LIVE/DEAD™ Bac-Light™ Bacterial ViabilityKit* and immobilized on agarose gel-pads. We used an *ECHO Revolve* microscope for phase-contrast and fluorescence microscopy, and supplemented findings with cultivation and metabolome analyses with liquid chromatography-mass spectrometry (LC-MS).

Results: Microscopy revealed a relative high fraction of dead bacteria in the preparations (Figure 1). Anaerobically cultivated preparations showed a high number of Colony Forming Units (CFU)/ml with median 325.000 CFU/ml (range 200.000-560.000) while aerobe cultivation had 0 CFU/ml (0-10.000). CFU/ml and colony morphology varied with the donor. LC-MS revealed precence of more than 2.500 unique metabolites including bile acids.

Conclusion: We present a novel approach for visualizing and analysing donor faeces preparations. In the preparations, we found few live bacteria that were dominated by viable anaerobes. This suggest bacteria might not be the sole cause of FMT efficiency in CDI.

Figure 1



Vizualization of faecal preparations used in FMT by fluorescence microscopy. Faeces preparations were stained with *LIVE/DEAD™ Bac-Light™ Bacterial ViabilityKit* (L34856) that contains SYTO9 (stains all bacteria green) and Propidium Iodide (stains dead bacteria with impermeable membran red with higher affinity). Bacteria were immobilized on an agarose pad, covered with a coverslip and microscoped with oil. **(A)** Crude faeces < 2 hours after delivery. Green: live, red: dead, ratio approx. 1:1. Microscope: *ECHO Revolve*, 60X Apo. **(B)** Glycerol-based capsule content stored for -80°C for 2 years. Green: live, red: dead, ratio approx. 1:10. Microscope: *Zeiss LSM 800 Airyscan*, 60X Apo. **(C)** Faeces with trehalose (lyoprotectant), stored at -80°C for 12 weeks. Green: live, red: dead, ratio approx. 3:4. Microscope: *ECHO Revolve*, 100X Apo. **(D)** Content from cryobag with glycerol (cryoprotectant), stored at -80°C for 10 weeks. Green: live, red: dead, ratio approx. 4:3. Microscope: *ECHO Revolve*, 100X Apo.

27. Changes in gastrointestinal symptoms following Prucalopride treatment in patients with idiopathic gastroparesis: Data from the 3D-GAP study.

Anders Bergh Lødrup[1], Anne-Mette Haase[2], Klaus Krogh[2], Mette Winther Klinge[2,3]

1. Department of Hepatology and gastroenterology, Regional Hospital Gødstrup
2. Department of Hepatology and gastroenterology, Aarhus University Hospital
3. Diagnostic Center, Regional Hospital Silkeborg

Corresponding author: Andes Bergh Lødrup, anloed@rm.dk

Introduction

Patients with idiopathic gastroparesis (IGP) suffer from nausea, vomiting, abdominal pain. Prucalopride, a 5-Hydroxytryptamine-4 (5-HT4) receptor agonist, has been shown to increase gut motility and secretion, and may be suited for treating IGP.

Aim

To evaluate changes in gastrointestinal symptoms following Prucalopride treatment using validated questionnaires baseline and after treatment.

Method

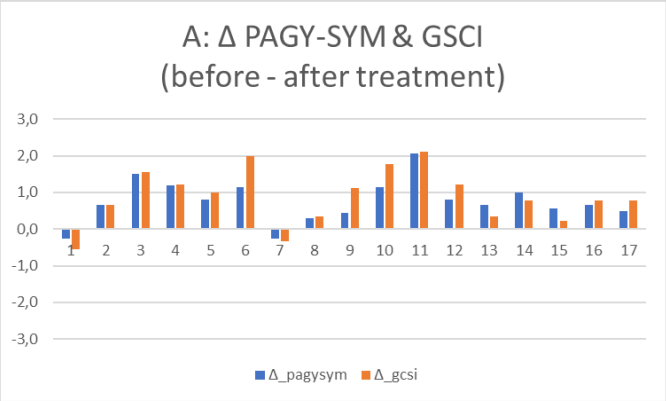
We recruited patients with moderate/severe IGP symptoms from our out-patient clinic. All patients were treated with Prucalopride 2 mg daily for 28 days. Before and after treatment patients answered questionnaires, including Gastrointestinal Symptoms Rating Scale (GSRS), Patient Assessment of Upper Gastrointestinal Symptom Severity Index (PAGI-SYM) and Gastroparesis Cardinal Symptom Index (GCSI).

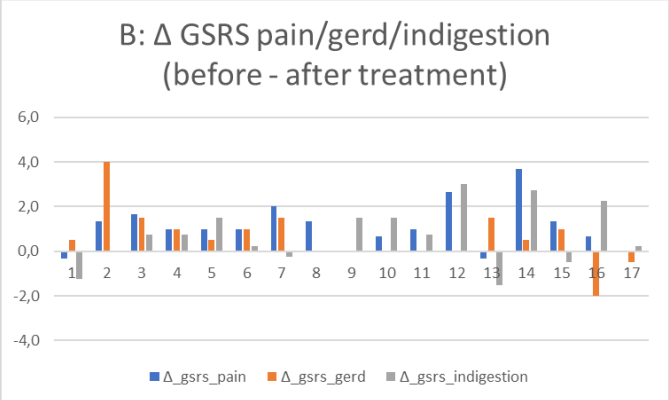
Results

We included 17 patients (7 males), median age 25.0 years and mean BMI 20.6 kg/m^2. Median (IQR) GSCI was 3.11 (2.67 – 3.67) at baseline and 1.89 (1.33 – 3.22) following Prucalopride treatment. For GSRS it was 3.5 (2.7 – 4.5) and 2.9 (2.1 – 3.7). Individual differences are showed in figure 1.

Conclusion

In general patients reported symptom relief after treatment. GSCI, scoring cardinal gastroparetic symptoms, decreased in 15 out of 17 patients. This may be related to changes in gut motility powered by Prucalopride, which may be a future treatment for IGP.





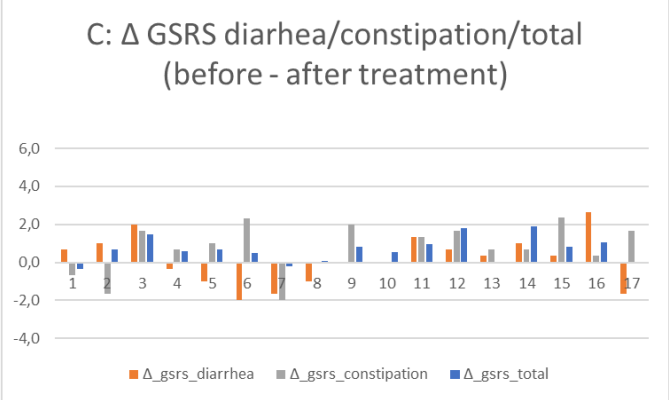


Figure 1

Panel A. Difference in PAGY-SYM and GCSI before and after prucalopride treatment. Both scores are calculated means ranging 0 – 5. A higher score equals more severe symptoms and positive difference between baseline and after treatment equals reduction of symptoms.

Panel B. Difference in GSRS sub-scores for pain, GERD and indigestion before and after prucalopride treatment. All scores are calculated means ranging 1 – 7. A higher score equals more severe symptoms and positive difference between baseline and after treatment equals reduction of symptoms.

Panel C. Difference in GSRS sub-score for diarrhea and constipation and for total GSRS score before and after prucalopride treatment. All scores are calculated means ranging 1 – 7. A higher score equals more severe symptoms and positive difference between baseline and after treatment equals reduction of symptoms.

28. High ascites polymorphonuclear neutrophil cells count in liver cirrhosis: causes and prognosis

Atheer Adel Abdulameer Al-Omran (1*), Mette Kongstad (2), and Frank Vinholt Schiødt (1)

Department of Gastroenterology, Digestive Disease Center K (1), and Department of Biochemistry (2), both Bispebjerg Hospital, *presenter

Introduction: Patients hospitalized with liver cirrhosis often present with ascites. Ascites polymorphonuclear neutrophil count (APMNC) > 250 /µL is diagnostic for spontaneous bacterial peritonitis. Some patients may have an APMNC that is very high, defined as more than 1000 / µL, the high cell count group (HCG). We aimed to investigate the frequency, causes and prognosis in HCG vs non-HCG patients.

Patients and methods: Retrospectively, a list of all ascites cell counts at Bispebjerg Hospital from the 2 years January 2018 through December 2019, was drawn. Cause of ascites was recorded, and biochemistry, radiology (especially CT scans), and prognosis was recorded. For patients with more than one cell count we used the highest APMNC.

Results: A total of 137 patients had an ascites cell count, over a total of 372 ascites cell counts (1-12 cell counts per patient). 109 Patients had cirrhosis, the rest had malignant disease or right-sided heart failure. Twelve cirrhotic patients (11%) were HCG patients.

A positive cell culture was found in 50% of HCG patients vs 6.2% in non-HCG patients ($p < 0.001$).

In HCG patients abdominal abscess (n= 1), portal vein thrombosis with ischemic colitis (n=1) or bowel perforation (n= 1) were significant CT findings.

30-day mortality was 5/12 (42%) in HCG patients vs 18/97 (19%) in non-HCG patients ($p = 0.06$)

Conclusions: A high APMNC was associated with 'abdominal catastrophe' in a quarter of the patients and an increased short-term mortality.

29. Circulating TREM2 as a noninvasive diagnostic biomarker for NASH in patients with elevated liver stiffness

Vineesh Indira Chandran*, **Charlotte Wilhelmina Wernberg***, Mette Munk Lauridsen, Maria Kløjgaard Skytthe, Sofie Marchsteiner Bendixen, Frederik Tibert Larsen, Camilla Dalby Hansen, Lea Ladegaard Grønkjær, Majken Storm Siersbæk, Tina Di Caterino, Sönke Detlefsen, Holger Jon Møller, Lars Grøntved, Kim Ravnskjaer, Søren Kragh Moestrup, Maja Sofie Thiele, Aleksander Krag, Jonas Heilskov Graversen

First published: 16 June 2022 https://doi.org/10.1002/hep.32620
*Contributed equally.
Corresponding author: Charlotte Wernberg, charlotte.wilhelmina.wernberg@rsyd.dk

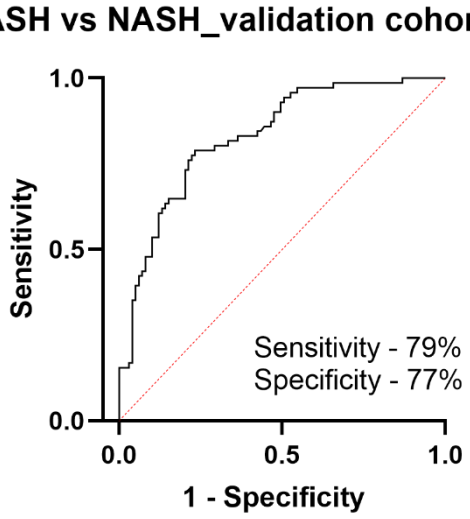
Background and Aims: Non-invasive markers of non-alcoholic steatohepatitis (NASH) is still an unmet clinical need, but also represent a key barrier in NASH clinical trials. Here we investigate the diagnostic accuracy of plasma Triggering Receptor Expressed on Myeloid cells 2 (TREM2) as a circulating biomarker for NASH in patients with elevated liver stiffness.

Method: A cross-sectional deign with a derivation (n=48) and a validation cohort (n=170) among patient with NAFLD, a valid liver biopsy and liver stiffness (LSM) >7.9 kPa, was applied. Soluble TREM2 in plasma was measured by ELISA. Since patients with low fibrosis score are not eligible for clinical trials, we excluded patients with LSM <7.9. NASH was defined as patients with non-alcoholic fatty liver disease (NAFLD) activity score (NAS) ≥4.

Results: Plasma TREM2 level was 2.1-fold increased in at-risk NASH patients and showed a strong diagnostic accuracy in the validation cohort with an AUROC 0.83 (95% CI: 0.77–0.89, p <0.0001). TREM2 level was associated with histologic features i.e., steatosis, lobular inflammation, and ballooning (p < 0.0001) but not fibrosis. Clinical cut-offs for rule-in and rule-out (90% sensitivity and 90 specificity) were settled and TREM2 values <38 ng/ml was found to be the optimal rule-out cut-off (sensitivity 90%, specificity 51%) whereas TREM2 level >65 ng/ml was the optimal rule-in cut off for at-risk NASH (sensitivity 89.9% and specificity 52%).

Conclusion: Plasma TREM2 is a promising novel blood-based single biomarker that can rule out or rule in presence of NASH with high accuracy.

Figure:



Area	0.8306
Std. Error	0.03105
95% confidence interval	0.7698 to 0.8915
P value	<0.0001

30. Probiotic Treatment of Ulcerative Colitis with *Trichuris suis* ova: A randomized double-blind placebo-controlled clinical trial (the PROCTO Trial)

Michelle V. Prosberg1, Sofie I. Halkjær1, Bobby Lo1, Christina Bremerskov-Köser1, Johan F.K.F. Ilvemark2, Jakob B. Seidelin2, Malene F. Kristiansen3, Anja Kort3, Thomas Kallemose4, Peter Bager5, Flemming Bendtsen1, Inge Nordgaard-Lassen1, Hanne S. Kapel6, Helene Kringel6, Christian M.O. Kapel6,7, Andreas Munk Petersen1,8*
1Gastro Unit, Medical Division and Copenhagen IBD center, Copenhagen University Hospital Amager and Hvidovre, Hvidovre, Denmark
2Department of Gastroenterology and Hepatology, Copenhagen University Hospital - Gentofte and Herlev, Denmark
3Digestive Disease Center, Bispebjerg Hospital, University of Copenhagen, Copenhagen, Denmark
4Clinical Research Center, Copenhagen University Hospital Amager and Hvidovre, Hvidovre, Denmark
5Division of Infectious Disease Preparedness, Statens Serum Institut, Copenhagen, Denmark
6ParaTech A/S, Hoersholm, Denmark
7Department of Plant and Environmental Sciences, University of Copenhagen, Frederiksberg, Denmark
8Department of Clinical Microbiology, Copenhagen University Hospital Amager and Hvidovre, Hvidovre, Denmark

* Corresponding author
Contact information
Gastro Unit, Medical Division, Copenhagen University Hospital Amager and Hvidovre, Hvidovre, Denmark.
E-mail: michelle.vernstroem.prosberg@regionh.dk
Telephone: +45 60 13 32 92
The PROCTO trial has been registered at www.clinicaltrials.gov ID: NCT03565939; May 22, 2018.

Introduction: In the search for new treatment options for ulcerative colitis (UC), exposure to eggs from the porcine whipworm *Trichuris suis* ova (TSO) has previously shown a favorable immune response that may improve UC with few side effects. Still, large phase-2 studies on UC patients treated with TSO are needed.

Aim and methods: to demonstrate the efficacy, safety, and clinical response of TSO as a probiotic treatment in moderately active UC patients. A single-center, randomized double-blind placebo-controlled, phase-2b clinical trial with 7500 TSO compared to placebo (ratio 1:1), initiated in 2018 and completed in 2022 at Hvidovre Hospital, Copenhagen, Denmark.

Results: The PROCTO trial contributed to the largest RCT of TSO with the inclusion of 119 moderately active UC patients. The PROCTO trial could not significantly demonstrate that TSO was superior to placebo regarding the efficacy and clinical response after 24 weeks of treatment. However, subgroup analyses implied that a transient clinical response could be achieved during the treatment with a significant difference between the two groups but only in the TSO subgroup of UC patients not receiving steroids and not at 24 weeks. The treatment revealed no new adverse events and no serious adverse events related to TSO, thus showing an overall tolerable safety profile.

Conclusion: The PROCTO trial was not able to demonstrate that TSO is beneficial over placebo for the treatment of UC.

31. Fatty liver disease severity may be a determinant of Quality of Life in obese patients: A cross-sectional study

Mads Fallesen Kjer, Lea Ladegaard Grønkjær, Birgitte Gade Jacobsen, Tina Di Caterino, Charlotte Wilhelmina Wernberg, Mette Munk Lauridsen

Department for Gastroenterology and Hepatology, University Hospital of South Denmark, Finsensgade 35, 6700 Esbjerg, Denmark

Email: madskjer@gmail.com

Abstract

Background: Patients with liver cirrhosis have a poor quality of life (QoL) but the literature regarding QoL in patients with pre-cirrhosis, non-alcoholic fatty liver disease (NAFLD) is insufficient.

Aim: Explore QoL in obese patients and examine what determines QoL — specifically if there is a correlation between QoL and NAFLD severity quantified by liver biopsy.

Methods: We included 200 obese patients with BMI ≥35 kg/m^2 from the University Hospital of Southern Denmark. Patients answered online questionnaires about QoL and mental health using Sickness Impact Profile and Major Depression Inventory (MDI). Sociodemographics, biometrics and liver biopsies were obtained from all participants at baseline.

Results: SIP score was 14.29 (SD 11.22) indicating a severely impaired QoL worse than seen in patients with liver cirrhosis. The most frequently reported QoL problems were expressing concern over what might be happening to their health, impaired ability to exercise, more inactive pastimes and doing fewer social activities. Depressive symptoms as measured by MDI (p=0.001), the use of antidepressants or antipsychotic drugs (p=0.032) short education (p=0.030), extended sick leave (p=0.00) or disability benefits (p=0.011) were the strongest determinants of poor SIP score. NAS score also correlated to SIP (p=0.019). Patients with more severe NAFLD stood out by having reduced QoL in the alertness behavior, emotional behavior and 'sleep and rest' categories of the SIP.

Conclusion: Obese patients are struggling in various ways and attention should be given to improve both their mental health and liver health as these seems to be the major impactors on QoL.

32. Infections ARE COMMON IN PATIENTS WITH EARLY ALCOHOL-RELATED liver disease and INCREASE THE RISK OF decompensation and DEATH

Authors:
Stine Johansen[1,2]*, Simon Langkjær[1,2]*, Ditlev Nytoft Rasmussen[1,2], Mads Israelsen[1,2], Nikolaj Torp[1,2], Katrine Lindvig[1,2], Maria Kjærgaard[1,2], Johanne Kragh Hansen[1,2], Camilla Dalby Hansen[1,2], Katrine Thorhauge[1,2], Peter Andersen[1], Sönke Detlefsen[2,5], Helene Bæk Juel[6], Torben Hansen[6], Aleksander Krag[1,2], Maja Thiele[1,2] on behalf of the GALAXY and MicrobLiver consortia
*Shared co-first authorship

Affiliations:
1: Fibrosis, fatty liver and steatohepatitis research center Odense (FLASH), Department of Gastroenterology and hepatology, Odense University Hospital, Odense, Denmark.
2: Department of Clinical Research, Faculty of Health Sciences, University of Southern Denmark, Odense, Denmark
3: Department of Clinical Microbiology, Odense University Hospital, Odense, Denmark
4: Research Unit of Clinical Microbiology, Department of Clinical Research, University of Southern Denmark, Odense, Denmark
5: Department of Pathology, Odense University Hospital, Odense, Denmark.
6: Novo Nordisk Foundation Center for Basic Metabolic Research, University of Copenhagen, Denmark

Præsenterende forfatter: Stine Johansen (stine.johansen@rsyd.dk)

Background and Aims: Infections are frequent in patients with cirrhosis and worsen prognosis. We hypothesized that this also applies in earlier stages of alcohol-related liver disease (ALD). We therefore aimed to examine 1) the incidence of infections in patients with early ALD and 2) the impact of infections on the risk of decompensation and mortality.

Method: Prospective cohort study of patients with a history of excess alcohol intake, and no known liver disease. At baseline, we performed liver biopsies along with clinical investigations. During follow up, we reviewed patients' electronic healthcare records for cases of infections, decompensations, and all-cause mortality.

Results: We included 461 patients with a mean age of 57±10 years, 76% males, with fibrosis stage F0-1/F2/F3-4 = 259/107/96. During a median follow-up of 54 months (IQR 35-76), 134 patients (29%) developed a total of 312 infections. The most frequent infections were pneumonia (106/312, 34%) and urinary tract infections (57/312, 18%). Excessive alcohol intake during follow-up and liver stiffness were independent predictors of infections (hazard ratio (HR) 2.08; 95%CI 1.33-3.27, and HR 1.87; 1.54-2.28). Patients who developed at least one infection had a significantly increased risk of death (HR 4.12, 95% CI 2.56-6.62, p <0.001), and decompensation (HR 1.91, 95% CI 1.11-3.26, p = 0.019). Infections increased the risk of death independent of baseline fibrosis stage and liver stiffness.

Conclusion: In patients with early alcohol-related liver disease, infections are frequent and worsen prognosis. Risk of infections increases with liver disease severity and ongoing harmful use of alcohol.

33. Soluble CD163 as marker of liver fibrosis in liver transplant recipients

Emilie Høegholm Ernst Lauridsen1,2,*, Rasmus Hvidbjerg Gantzel1,2, Moisés Alberto Suárez Zdunek3,4, Mette Mejlby Hansen1, Henning Grønbæk1,2, Allan Rasmussen4,5, Susanne Dam Poulsen3,4, Gerda Elisabeth Villadsen1,2

1 Department of Hepatology and Gastroenterology, Aarhus University Hospital, Denmark

2 Department of Clinical Medicine, Aarhus University, Denmark

3 Department of Infectious Diseases 8632, Rigshospitalet, Denmark

4 Department of Clinical Medicine, University of Copenhagen, Denmark

5 Department of Surgical of Gastroenterology, Rigshospitalet, Denmark

** Corresponding author: e-mail: EMLLUR@rm.dk*

Background: Soluble CD163 (sCD163) is a marker of liver inflammation and fibrosis in various liver diseases. However, it remains unknown whether the plasma sCD163 level reflects liver inflammation and fibrosis in patients who have undergone liver transplantation. This study aims to investigate the associations between the non-invasive fibrosis measures; plasma sCD163, the FIB-4 score, and FibroScan liver stiffness results in liver transplant recipients.

Methods: This project is a sub-study of the Danish Comorbidity in Liver Transplant Recipients (DACOLT) study and consists of 104 liver transplant recipients recruited from Aarhus University Hospital. Associations between variables were examined using Spearman's rank correlation.

Results: Plasma sCD163 correlated well with the liver stiffness (r =0.40, 95% CI [0.22; 0.57], p < 0.001]) and modestly with the FIB-4 score (r =0.18, 95% CI [-0.02; 0.37], p = 0.053) independent of age, sex, and time since transplantation. No association was found between the FIB-4 score and the liver stiffness (r = 0.12, 95% CI [-0.77; 0.31], p = 0.237). Patients with a FIB-4 score >2.67, indicating high risk of advanced fibrosis, had a median liver stiffness of 6.7 kPa (range 3.0-10.2).

Conclusions: Plasma sCD163 levels correlate with liver stiffness in liver transplant recipients independent of age, sex, and time since transplantation. The missing correlation between FIB-4 score and liver stiffness questions the accuracy of the FIB-4 score as fibrosis assessment tool in liver transplant recipients in favor of FibroScan and sCD163.

34. Acute impact of binge drinking on the development of fatty liver in healthy individuals

Jeppe Yeoman[1], Kristoffer Kjærgaard[1], Anne Catrine Daugaard Mikkelsen[1], Emilie Møller[1], Ann-Sophie Frees Wietz[1], Lars Christian Gormsen[2], Sara Heebøll[3], Karen Louise Thomsen[1]

[1]Department of Hepatology and Gastroenterology, Aarhus University Hospital, Denmark; [2]Department of Nuclear Medicine and PET, Aarhus University Hospital, Denmark; [3]Department of Endocrinology and Internal Medicine, Aarhus University Hospital, Denmark

Background:
Excessive alcohol consumption is the most frequent cause of chronic liver disease in the Western world. Emerging evidence suggests that binge drinking increases the risk of chronic liver disease compared with chronic use, but data on how binge drinking affects the liver in the short term are limited.

Methods
We performed an observational follow-up study of healthy, lean subjects aged 30 or above, who attended a 3-day music festival with the intention to binge drink. The subjects were examined three times: The week before the festival, the day after the festival, and again 10 days after. The subjects did not binge drink for one week before the first visit or between the two last visits. Each visit included an MRI scan with measurement of liver fat content (PDFF) and liver stiffness (elastography), and blood samples.

Results
Fifteen participants completed the study (9 male, 6 females) with a mean age of 35 $\pm$ 5 years and a BMI of 23,4 $\pm$ 2,7 kg/m^2, respectively. Three days of binge drinking induced a significant increase in liver fat content from a mean of 2.3 $\pm$ 1.2% to 4.6 $\pm$ 2.2% (p<0.0001) with definitive hepatic steatosis (>5%) in 6 subjects, which were normalized completely 10 days after (mean 2.4 $\pm$ 1.2%). No change in liver stiffness was observed (p>0.3). Binge drinking also increased plasma levels of gamma-glutamyl transferase (GGT), triglycerides, and blood leukocytes. Interestingly, plasma low-density-lipoprotein (LDL) cholesterol was significantly decreased.

Conclusion
In healthy people, three days of binge drinking induced acute changes in liver fat content and markers of liver injury, lipid homeostasis, and inflammation, which were all normalized after 10 days of alcohol abstinence.

35. Clinical determinants for successful faecal microbiota transplantation (FMT) for recurrent *Clostridioides difficile* infection.

Simon Mark Dahl Baunwall[1,2*], Marcel Kjærsgaard Eriksen[1], Sara Ellegaard Andreasen[1,2], Mette Mejlby Hansen, M.Sc.[1], Nina Rågård[1], Susan Mikkelsen[3], Anne Karmisholt Grosen[2,3], Christian Erikstrup[2,3], Jens Frederik Dahlerup[2], Christian Lodberg Hvas[1,2]

[1]Department of Hepatology and Gastroenterology, Aarhus University Hospital, Aarhus, Denmark

[2]Department of Clinical Medicine, Aarhus University, Aarhus, Denmark
[3]Department of Clinical Immunology, Aarhus University Hospital, Aarhus, Denmark

Introduction: Faecal microbiota transplantation (FMT) is effective for recurrent *Clostridioides difficile* infection (rCDI), but the treatment effect varies inexplicably. We aimed to optimise the use of FMT for rCDI and explore clinical determinants for effect.

Methods: Between October 2018 to June 2020, we consecutively included all patients treated with FMT for rCDI. We used quality improvement strategies to monitor the effect of incremental optimisation changes made in blocks of 10-11 patients receiving their first FMT. The optimisation included changes to processing procedures, preparation, and clinical application benchmarked to 80% treatment success. The primary outcome was cure of *Clostiridoides difficile*-associated diarrhoea (CDAD) at week 8. If CDI recurred, FMT was repeated. We constructed a mixed-effect model anticipating the repeat FMT procedures to adjust for between changes covariance. All patients were followed for 8 weeks after their latest FMT.

Results: In total, 190 patients with rCDI had 306 FMT procedures. Overall, 130/190 patients (68%, 95%-CI: 61-75%) achieved CDAD cure week 8 from single FMT and 173/190 patients (91%, CI: 86-95%) from repeated FMT. The single FMT effect varied with each patient block from 45%-100%. Neither processing protocol nor faeces dosage changes influenced the FMT outcome. Several factors influenced the FMT effect independently, but only age above 60 years (p=0.001), antibiotics within a week of FMT (p=0.002), and donor (p=0.01) remained explanatory in the adjusted, mixed-effect model, including all 306 procedures.

Conclusion: Our findings suggest successful FMT for rCDI depends on patient age, antibiotics, and the donor, but not processing method or dosage.

Word count: 250 words

***Correspondence:**

Simon Mark Dahl Baunwall, e-mail Simjor@rm.dk.

36. Optimised osmolality in oral supplements for patients with ileostomies: A quasi-randomized crossover study

Josephine Quist, BSc[1], Charlotte Lock Rud, RD, MSc[1], Karen Frumer, RD, MSc[1], Mette Julsgaard, MD, PhD[1], Simon Mark Dahl Baunwall, MD[1], Christian Lodberg Hvas, MD, PhD[1]

[1]*Department of Hepatology and Gastroenterology, Aarhus University Hospital, Denmark*

Running title: Optimised osmolality in oral supplements

Corresponding author
Ms. Josephine Quist, Department of Hepatology and Gastroenterology, Aarhus University Hospital, Palle Juul-Jensens Boulevard 99, DK-8200 Aarhus N, Denmark. Email: HELGMO@rm.dk. Telephone: +45 40259690

BACKGROUND: Patients with ileostomies often have impaired quality-of-life, sodium depletion, secondary hyperaldosteronism, and other organ-specific pathologies. The osmolality of oral supplements influences ileostomy output and sodium loss. We aimed to quantify the association between osmolality in liquid oral supplements and ileostomy output to identify the optimal treatment interval, termed the Goldilocks zone.

METHODS: Eligible patients with ileostomies were included in a quasi-randomized, crossover intervention study. Each patient ingested 500 mL of between 3-18 different supplements during separate 6-hours intervention periods, with collection of ileostomy and urine outputs. The primary outcome was 6-hour ileostomy output.

RESULTS: A total of 14 adult patients with ileostomies (median age 69 years (range 22 - 77)) were included. In a mixed-effect model with the patients as a random effect, we observed a linear association between osmolality of oral supplement in the range 250-600 mOsm/kg and ileostomy output, which increased 0.87 g/(mOsm/kg)/day ($p<0.0001$). The association between osmolality 5-1352 mOsm/kg and ileostomy output forecasted a S-curve (Figure 1). Natriureses decreased 0.16

mmol/(mOsm/kg)/day following the intake of supplements (ranged osmolality 5-700 mOsm/kg) ($p < 0.05$).

CONCLUSION: Patients with ileostomies may benefit from increasing their ingestion of supplements with osmolalities in the range 100-290 mOsm/kg. We suggest this range to be called the Goldilocks zone, indicating an optimal absorption of macronutrients and sodium, as well as minimal fluid losses.

Figure 1. Association between supplement osmolality and ileostomy output during 6 hours after the ingestion of 500 mL of supplement, presented as an average output (red line) and 95% confidence intervals (black lines). The association indicates the existence of a "Goldilocks zone" around 100-300 mOsm /kg.