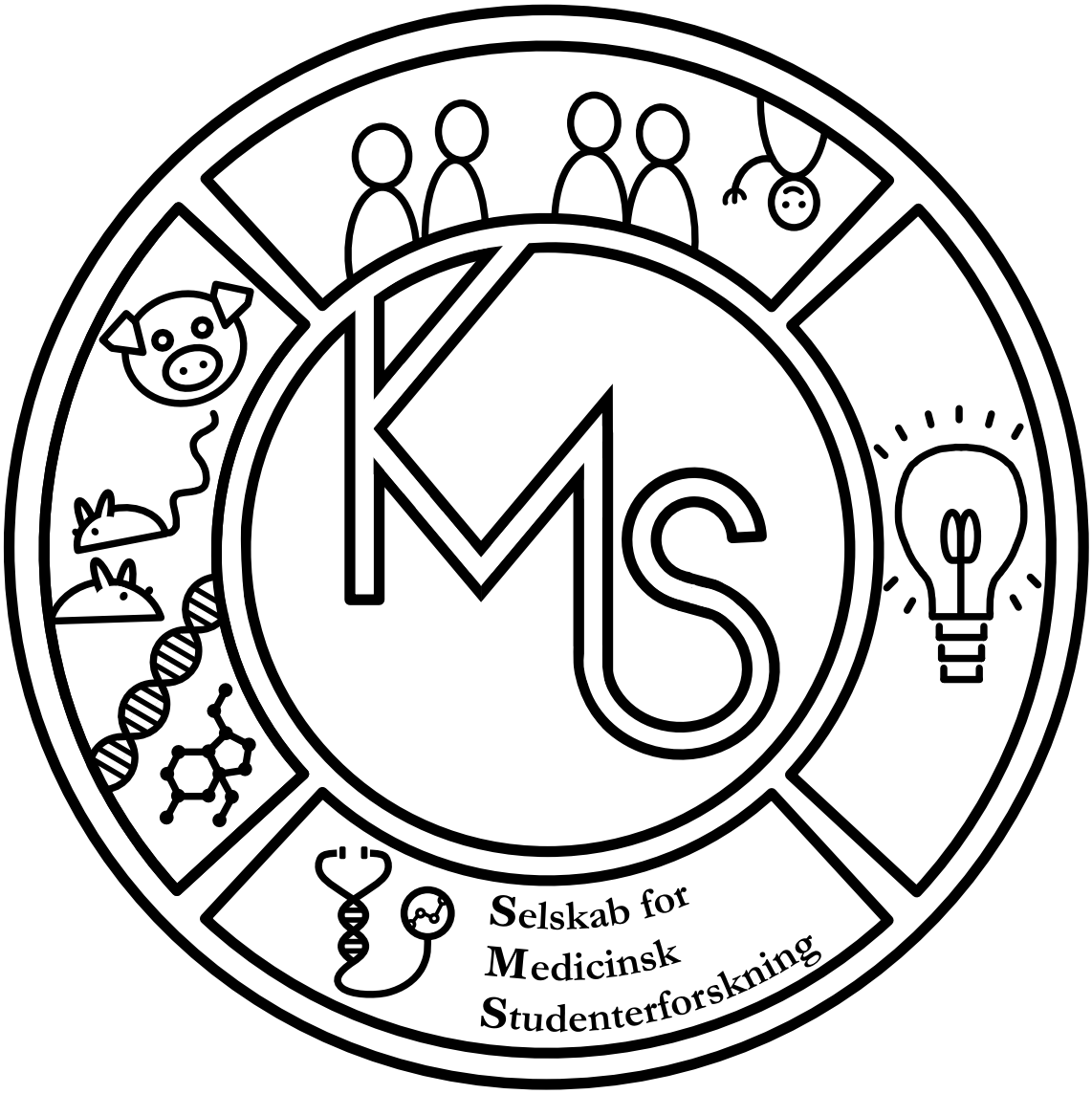
Selskab for Medicinsk Studenterforskning præsenterer

Kongres for Medicinsk Studenterforskning

ABSTRACTS

Sandbjerg Gods, Sønderborg

10. – 13. marts 2022


KMS
Selskab for
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Studenterforskning

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Velkomst

På vegne af Selskab for Medicinsk Studenterforskning ønskes der hjerteligt velkommen til den 13. nationale Kongres for Medicinsk Studenterforskning!

Vi var desværre nødt til at aflyse kongressen i 2021, så det er med endnu større begejstring, at vi ser frem til at afholde kongressen i 2022 med jer. Vi har i Selskab for Medicinsk Studenterforskning brugt det seneste år på at forberede weekendens kongres. Der er lagt meget arbejde i, at I får den bedst mulige weekend med fokus på præsentationsteknik, udveksling af ideer og networking.

Jeres præsentationer er i hovedfokus, og vi er meget beærede over, at forskere fra landets universiteter ønsker at deltage i vores kongres og give jer den bedst mulige feedback på jeres præsentationsteknik. Det er vigtigt, at vores kongres udgør et trygt læringsmiljø, og da I alle er i samme båd, håber jeg, at I vil være med til at bidrage til de bedste rammer for jeres medpræsenterende. For at fremme et godt miljø sørger vi for en masse spændende og sjove sociale aktiviteter, så du kan lære dine meddeltagere at kende.

Derudover vil weekenden også byde på meget interessante oplæg med relevans for forskningsverdenen, samt en paneldebat om hvorvidt der er plads til forskning i lægelivet, som vi håber, at I alle sammen vil deltage aktivt i. Til at belyse problematikken får vi hjælp af læger, forskere og meningsdannere, og vi er meget stolte af, at de vil deltage på vores lille kongres.

Til sidst vil vi takke alle vores sponsorer, som har givet økonomisk støtte til kongressen, og ikke mindst vil jeg sende en kæmpe tak til alle medlemmerne i Selskab for Medicinsk Studenterforskning, som har ydet en fantastisk indsats det sidste års tid på trods af svære omstændigheder. Uden jer havde vi ingen kongres.

Vi håber, at alle får en fremragende kongres!

Aimi Hamilton

Forkvinde, Selskab for Medicinsk Studenterforskning

Program

Torsdag d. 10. marts

16.45	Ankomst	
16.45 – 17.30	Indkvartering	
17.40 – 17.45	Velkomstdrink	
17.45 – 18.00	Velkomst	Aimi Hamilton *Forkvinde, Selskab for Medicinsk Studenterforskning*
18.00 – 19.00	Middag	
19.10 – 19.55	Foredrag *Forskning under COVID-19 pandemien*	Allan Randrup Thomsen *Professor, Københavns Universitet*
20.00 – 22.00	Teambuilding	

Fredag d. 11. marts

7.00 – 8.00	Løb eller yoga	
8.00 – 9.00	Morgenmad	
9.00 – 10.30	Session O.1	Chairmen
	Mor-barn	Søren Rittig
		Anne Sofie Borg Hammer
10.30 – 10.45	Frugt, vand og kaffe	
10.45 – 12.00	Session O.2	Chairmen
	Epidemiologi	Jacob Hjemborg
		Line Lund Kårhus
12.00 – 13.00	Frokost	
13.00 – 14.30	Paneldebat	Debattører
	Forskning og lægelivet	Bo Løfgren
		Vibeke E. Hjortdal
		Helga Schultz
		Michael Kjær
		Sanne Marie Thysen
		Moderator
		Jens Christian Djurhuus
14.30 – 14.45	Kaffe og kage	
14.45 – 16.00	Postersessioner	
	P.1 Intern medicin og kirurgi	Chairmen
		Johan Burisch
		Søren Gullaksen
	P.2 Hjerte-lunge	Chairmen
		Axel Brandes
		Omeed Neghabat
16.00 – 16.15	Kaffe og kage	
16.15 – 17.45	Session O.3	Chairmen
	Grundforskning	Sebastian Frische
		Laura Øllegaard Johnsen
18.30 – 19.30	Middag	
20.00 – 22.00	Pubquiz	

Lørdag d. 12. marts

7.00 – 8.00	Løb eller morgenbadning	
8.00 – 9.00	Morgenmad	
9.00 – 10.30	Session O.4	Chairmen
	Intern medicin og kirurgi	Christian Borbjerg Laursen
		Johan Yde
10.30 – 10.50	Frugt, vand og kaffe	
10.50 – 12.30	Postersession	
	P.3 Epidemiologi	Chairmen
		Reimar W. Thomsen
		Simon Kok Jensen
	P. 4 Grundforskning	Chairmen
		Louiza Bohn Thomsen
		Laura Linnea Määttä
12.30 – 13.30	Frokost	
13.30 – 14.45	Session O.5	Chairmen
	Hjerte-lunge	Michael Mæng
		Kevin Kris Olesen
14.45 – 15.30	Gåtur	
15.30 – 15.45	Kaffe og kage	
15.45 – 17.15	Session O.6	Chairmen
	Psykiatri og neurologi	Nikolaj Bøgh
		Ole Köhler-Forsberg
18.45 – 19.00	Velkomstdrink	
19.00	Gallamiddag	Festtaler
		Jens Leipziger
		Professor, Aarhus Universitet
03.00	Natmad	

Søndag d. 13. marts

8.30 – 9.30	Udtjekning	
9.30 – 10.30	Morgenmad	
11.00 – 11.45	Foredrag	Peter Musaeus
		Lektor, Aarhus Universitet
11.45 – 12.00	Kaffe, frugt og sandwich	
12.00 – 12.30	Afrejse	

Paneldebat

Mange læger med en PhD kommer aldrig til at forske igen. Alligevel er en PhD mange steder et indforstået krav til en klinisk hoveduddannelse. Bliver man overhovedet en bedre kliniker af at have brugt tid på forskning? Og i så fald, bør forskning være en mere integreret del af hverdagen som læge?

Til paneldebatten ved KMS 2022 vil vi diskutere, om forskning har en for stor eller for lille plads i lægelivet. Vi vil gerne forske mere i Danmark, men vi mangler også kliniske læger. Hvordan løser vi denne udfordring?

Debattører

Bo Løfgren, professor, overlæge

Vibeke E. Hjortdal, professor, overlæge, dr.med.

Helga Schultz, læge, PhD, formand for Yngre Læger

Michael Kjær, professor, overlæge

Sanne Marie Thysen, læge, postdoc, formand for Lægeforeningens Forskningsudvalg

Moderator

Jens Christian Djurhuus, professor i eksperimentel kirurgi, tidl. institutleder for Institut for Klinisk Medicin AU, æresmedlem af Selskab for Medicinsk Studenterforskning

Taksigelser

Selskab for Medicinsk Studenterforskning vil gerne takke alle sponsorerne for deres flotte bidrag, uden hvilke Kongres for Medicinsk Studenterforskning 2022 ikke var mulig.

Aarhus Universitets Forskningsfond

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Institut for Klinisk Medicin, Aarhus Universitet

Rigshospitalet

Det Sundhedsvidenskabelige Fakultet, Aalborg Universitet

Det Sundhedsvidenskabelige Fakultet, Syddansk Universitet

Forlaget Munksgaard

Arrangører

Mads Andersen

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Marine Sølling

Camilla Wibrand

Frederik Bromer

Ditte Rasmussen

Simone Dragsbæk

Kjeld Mohr

Marie Louise Guldfeldt

Thomas Thorsen

Thomas Jensen

Martin Termansen

Jonas Holm

Jonathan Yde

Christina Nielsen

Amalie Povlsen

Chairmen

Postersession 1

Johan Burisch, 1. Reservelæge, Ph.D., Hvidovre Hospital
Søren Gullaksen, Ph.d.-studerende, Aarhus Universitets Hospital

Postersession 2

Axel Brandes, professor, Odense Universitetshospital og Syddansk Universitet
Omeed Neghabat, Ph.d.-studerende, Aarhus Universitets Hospital

Postersession 3

Reimar Wernich Thomsen, professor, overlæge, PhD, Aarhus Universitets Hospital
Simon Kok Jensen, Ph.D.-studerende, læge, Aarhus Universitets Hospital

Postersession 4

Louiza Bohn Thomsen, professor, Aalborg Universitet
Laura Linnea Määttä, Ph.d.-studerende, Aarhus Universitets Hospital

Oral session 1

Søren Rittig, klinisk lærestolsprofessor, Aarhus Universitet**s** Hospital
Anne Sofie Borg Hammer, Ph.d.-studerende, Aarhus Universitet

Oral session 2

Jacob Hjemborg, professor, Syddansk Universitet
Line Lund Kårhus, sektionschef, læge, PhD, Frederiksberg Hospital

Oral session 3

Sebastian Frische, associate professor, Aarhus Universitet
Laura Øllegaard Johnsen, Ph.d.-studerende, Aarhus Universitet

Oral session 4

Christian Borbjerg Laursen, klinisk professor, overlæge, ph.d., Syddansk Universitet
Jonathan Yde, Ph.d.-studerende, Aarhus Universitet

Oral session 5

Michael Mæng, klinisk lektor, Aarhus Universitets Hospital
Kevin Kris Olesen, Ph.d., Aarhus Universitets Hospital

Oral session 6

Ole Köhler-Forsberg, dr.med, Aarhus Universitets Hospital
Nikolaj Bøgh, Ph.d.-studerende, Aarhus Universitets Hospital

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Postersessioner

P.1 Intern medicin og kirurgi

P-1.1

Astrid Kolind Christensen

The Clinical Importance of a Repeated Upper Endoscopy in Patients Referred to a Specialised Esophago-Cardia-Ventricle Centre with Upper Gastrointestinal Cancer

AK Christensen[1] *CKL Egeland*[1] *TU Solstad*[1] *R Loprete*[1] *MP Achiam*[1]

[1]Department of Surgical Gastroenterology

BACKGROUND: The surgical treatment of upper gastrointestinal (GI) cancer is centralised to four Esophago-Cardia-Ventricle (ECV) Centres in Denmark. Typically, the patients are referred based on a gastroscopy conducted by a private gastroenterologist or a hospital department. An additional gastroscopy is then performed at an ECV centre. In this multicentre retrospective cohort study, we seek to assess whether the additional ECV gastroscopy has a clinical significance when determining the treatment strategy.

METHODS: The study includes patients with a confirmed upper GI malignant tumour. All patients have been examined with a gastroscopy before and after referral to an ECV centre, assessed at an MDT-conference and surgically treated with a curative intent.

Parameters of importance when determining the treatment strategy were set up by ECV specialists. These included information about tumour size, location as well as synchronous lesions and all the gastroscopy descriptions were reviewed for the parameters.

RESULTS: Patient inclusion at Rigshospitalet is finished. No analyses have been made as of yet. Results will be presented at KMS in March 2022 if ready.

CONCLUSION: No conclusion has been made yet.

ACKNOWLEDGEMENTS: The study has not received any funding.

P-1.2

Jonas Kassow Grønlund

Droplet digital PCR to permit early detection of acute myeloid leukemia relapse after allogeneic cell transplantation

JK Groenlund[1, 2] *HB Ommen*[1] *AS Skou*[1] *CN Veigaard*[2] *C Juhl-Christensen*[1]

[1]Department of Hematology, Aarhus University Hospital

[2]HemoDiagnostic Laboratory, Aarhus University Hospital

BACKGROUND: Disease relapse is a remaining risk to patients with acute myeloid leukemia (AML) even after allogeneic cell transplantation. With sensitive monitoring of measurable residual disease (MRD) an upcoming relapse can be predicted allowing for a time-window to intervene. Quantitative PCR (qPCR) is the "golden standard" but only applicable in 50 %. Digital droplet PCR (ddPCR) allows for patient specific detection of mutations present in AML cells. We aim to validate and implement ddPCR.

METHODS: In this retrospective study we analyse blood and bone marrow samples from AML patients transplanted at Aarhus University Hospital in the period 2008-2021. Diagnosis samples are retrospectively analysed for AML related mutations with next generation sequencing (myeloid NGS). Patient specific ddPCR assays are designed based on the myeloid NGS-analysis. ddPCR analyses are performed on one sample prior to transplantation and multiple samples after transplantation.

RESULTS: 120 AML patients were included in this study. Based on myeloid NGS analyses ddPCR assays were designed to detect 26 different mutations in 11 genes (until now). Approx. 25 patients experienced relapse. In these patients ddPCR-analyses are expected to reveal exponential leukemic growth in blood and bone marrow samples before relapse. ddPCR assays will be tested in post-transplantation samples from non-relapsing patients to demonstrate ddPCR-negativity in these cases.

CONCLUSION: We expect that ddPCR assays can be designed and implemented to allow for reliable, sensitive and relapse-predictive follow-up after allogeneic cell transplantation.

ACKNOWLEDGEMENTS: This study is financed by The Danish Cancer Society.

P-1.3

Søren Nygaard

Ex vivo effects of argatroban and dalteparin in critically ill patients with sepsis and coagulopathy

S Nygaard[1] *CL Hvas*[2, 3] *AM Hvas*[1, 2] *K Adelborg*[1, 2, 4]

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[3]Department of Anesthesiology and Intensive Care, Aarhus University Hospital, Aarhus, Denmark

[4]Department of Clinical Epidemiology, Aarhus University Hospital, Aarhus, Denmark

BACKGROUND: Coagulopathy is a frequent complication in sepsis, leading to microvascular thrombosis, organ dysfunction, and death. An anticoagulant intervention in septic patients with early signs of coagulopathy is needed before the onset of thrombosis. This study aims to investigate the potential of the direct thrombin inhibitor argatroban as thromboprophylaxis in critically ill patients with sepsis and coagulopathy compared to low-molecular-weight heparin (LMWH).

METHODS: We will include ten patients admitted to the intensive care unit who develop sepsis and thrombocytopenia and five healthy volunteers. Blood samples will be spiked with either argatroban or the LMWH dalteparin and examined with rotational thromboelastometry (ROTEM) and ex vivo thrombin generation. Additionally, in patients, in vivo thrombin generation, platelet, and coagulation parameters will be measured. Patient data and disease scores will be collected on days 1-3 after inclusion.

RESULTS: Our preliminary data using five healthy volunteers showed that increasing plasma concentrations of the anticoagulants prolonged ROTEM clotting times in a linear fashion, whereas argatroban influenced all ROTEM assays and dalteparin only prolonged the clotting time in one ROTEM assay named INTEM. Furthermore, dalteparin and argatroban caused inhibition of ex vivo thrombin generation with increasing plasma concentrations in platelet-poor plasma samples. Inclusion of patients is ongoing.

CONCLUSION: When examining healthy blood, argatroban and dalteparin cause a dose-dependent increase in ROTEM clotting times and a dose-dependent inhibition of ex vivo thrombin generation. We await the results from the patients before further conclusions can be made.

ACKNOWLEDGEMENTS: The authors would like to give special thanks to Vivi Bo Mogensen for assistance in experiments and the design of the laboratory assays. We thank doctors, nurses, and healthcare personnel at the Department of Anesthesiology and Intensive Care at Aarhus University Hospital, Denmark for their cooperation and assistance during enrolment procedures. The study is supported by the Aarhus University Research Foundation. The authors declare no competing financial interests.

P-1.4

Andia Cheneymann

Opportunistic screening for osteoporosis on cardiac scans via quantitative CT - A sub-study on the Danish Study of Non-Invasive Diagnostic Testing in Coronary Artery Disease (Dan-NICAD)

A Cheneymann[1] *J Therkildsen*[2] *S Winther*[1] *J Thygesen*[4] *LD Rasmussen*[1] *B Langdahl*[3] *M Nyegaard*[5] *M Bottcher*[1]

[1]Department of Cardiology, Herning

[2]Department of Rheumatology, AUH

[3]Department of Endocrinology, AUH

[4]Department of Clinical Engineering

[5]Institute for Biomedicine, AU

BACKGROUND: This study furthers the utility of implementing quantitative CT (QCT) on CT scans made for other indications, thereby screening for low bone mineral density, thus osteoporosis. DXA-scans have limitations QCT avoids: 1) Sensitivity to calcifications and osteoarthritis, 2) 0.5M Danes have undetected osteoporosis mainly due to lack of referral to DXA. Assessing the vertebras on cardiac CT scans, with and without contrast, upgrades the utilization of QCT, a screening method we believe is urgent.

METHODS: A patient cohort (n=3604) obtained in Dan-NICAD studies 1&2, due to symptoms of coronary artery disease, 300 are selected, based on variations in sex, age, BMI, scanner kV (100, 120, 135), and location (Herning, Silkeborg). The non-enhanced, to assess bone-mass-density (BMD) and the enhanced cardiac CT, to assess the effect of contrast, was analyzed via QCT, measuring BMD in three consecutive vertebrae from the left main coronary artery. The Mindways Solid 3 Phantom was used for BMD calibration.

RESULTS: No results are presentable yet (Dec 2021), but are expected ready in Feb 2022. BMD analyses are ongoing, and statistics are conducted simultaneously. Analyzing enhanced and non-enhanced scans on each patient respectively ensures paired-data results which strengthen the power. A power of 80%, a significance level of 0.05, and a difference in BMD of 30% revealed a sample size value of 58. Hence, a sample size of 300 allows sufficient assessment of the respective sites and the contrast effect.

CONCLUSION: Osteoporosis is significantly underdiagnosed. QCT offers improvement through screening without extra patient time, radiation, or economical expenses. Potentially, any type of CT scan can be used. Identification can initiate treatment, reducing morbidity, and mortality in the population.

ACKNOWLEDGEMENTS: Thanks to my research group, and my supervisors in particular: Josephine Therkildsen whose previous work is crucial, Simon Winther and Morten Böttcher for making it possible. Thanks to Ellen Hauge who provides me space at AUH. Thanks to Jesper Thygesen and Wolframm Timm whose engineering skills have been imperative. Thanks to all who have contributed to the Dan-NICAD cohort over the last 10 years - my project stands on the shoulders of countless efforts, which I am honored to be part of.

P-1.5

Cecilie Boyskov

Bleeding and thrombosis in intensive care patients with liver failure

C Boyskov[1] *JB Larsen*[1] *CL Hvas*[2] *NKM Aagaard*[3] *AM Hvas*[1]

[1]Department of Clinical Biochemistry, Aarhus University Hospital.

[2]Department of Intensive Care, Aarhus University Hospital.

[3]Department of Hepatology and Gastrointestinal Diseases, Aarhus University Hospital.

BACKGROUND: Patients with liver cirrhosis have a fragile coagulation system. Our conventional coagulation tests provide an incomplete picture of bleeding and thrombosis risk in these patients, leading to a lack of proper guidance for choosing the best treatment. Therefore, we aim to investigate the coagulation system in patients with liver cirrhosis in the intensive care unit (ICU) using new dynamic coagulation and fibrinolysis assays, and thereby identify new biomarkers for bleeding and thrombosis.

METHODS: Adult patients with liver cirrhosis admitted to the ICU will be included. ICU patients without known pre-existing liver dysfunction will serve as controls. Blood samples will be taken on day 1, 2, 3, 7, and 21. The laboratory analyses include impedance aggregometry (Multiplate(R)), thromboelastometry (ROTEM), ex vivo thrombin generation (Calibrated Automated Thrombogram(R)) and an in-house fibrin clot formation and lysis assay.

RESULTS: The study is a research year project planned from Sep 1, 2021-Aug 31, 2022 and is thus in progress. We plan on including 44 patients with liver cirrhosis, 44 ICU patients without liver cirrhosis and 44 healthy controls. Preliminary results will be presented at KMS2021.

CONCLUSION: Our hypothesis is that ICU patients with liver cirrhosis have a hypercoagulable profile assessed with rotational thromboelastometry (ROTEM(R)) when compared to critically ill patients without liver cirrhosis.

ACKNOWLEDGEMENTS: This project is supported by a scholarship from the Independent Research Fund Denmark

P-1.6

Sardar Khalaf

Peritoneal cytokine and matrix metalloproteinase microdialysis: a novel screening method for the early detection of postoperative anastomotic leakage in rectal cancer patients

Ss Khalaf[1] *MB Ellebæk*[1] *KL Lambertsen*[2] *H Rahr*[3] *S Möller*[4] *N Qvist*[1]

[1]Department of Surgery, Odense University Hospital, Odense, Denmark

[2]Department of Neurobiology Research, Institute of Molecular Medicine, University of Southern Denmark, Odense, Denmark

[3]Department of Surgery, Vejle Hospital, Vejle, Denmark

[4]OPEN, Odense Patient data Explorative Network, Odense, Denmark

BACKGROUND: Anastomotic leakage (AL) is a common complication post rectal cancer surgery with a mortality of up to 2%. Early detection is critical and according to previous studies, peritoneal cytokine, and matrix metalloproteinase (MMP) concentrations could help detect AL earlier, but these studies were under-powered. This prospective cohort study aimed to investigate the use case of intraperitoneal cytokine and MMP microdialysis (MD) as a novel diagnostics tool for early detection of AL.

METHODS: During a low anterior resection of rectal cancer, an MD catheter was fixed near the anastomosis. MD peritoneal samples were collected continuously for 7 days. Data from postoperative days 1-3 were analyzed 8-hourly for cytokines (IL-6, IL-1-beta, IL-10, and TNF-alpha) and matrix-metalloproteinase-9, using electrochemiluminescence immunoassays. A pelvic CT with rectal contrast enema was conducted on postoperative day 7 to determine radiologi-cal AL for controls.

RESULTS: As the study is planned to be completed by the end of January 2022, we expect to present all data and results at KMS2022. If any unforeseen delays occur, preliminary results will be presented instead.

CONCLUSION: Conclusions will be presented at KMS2022.

ACKNOWLEDGEMENTS: A special thanks is given to Associate Professor Mark Bremholm Ellebæk and the Department of Surgery at Odense University Hospital for securing funding for the project. Thanks are given to Overlægerådet for funding materials and Professor Kate Lykke Lambertsen for providing additional materials and equipment. Thanks are given to the Danish Cancer Society for providing an undergrad-uate scholarship.

P-1.7

Muhammed Alparslan Gøkhan

Dare - Dairy pain Relief: Role of dairy proteins in the reduction of oral burning pain

MA Gøkhan[1] *ES Sørensen*[2] *L Baad-Hansen*[1]

[1]Section for Orofacial Pain and Jaw Function, Department of Dentistry and Oral Health, Faculty of Health, Aarhus University

[2]Department of Molecular Biology and Genetics, Faculty of Natural Sciences, Aarhus University

BACKGROUND: Burning mouth syndrome is a condition seen primarily among peri- and postmenopausal women with unexplained chronic burning pain in the oral mucosa. Milk is known for its ability to reduce oral burn induced by the consumption of capsaicin. A recent study has shown no difference in the ability of milk with high and low-fat content in reducing capsaicin-induced oral burn. Therefore, the aim of this study is to assess the role of milk proteins in reducing capsaicin-induced oral burning sensation.

METHODS: The study is a double-blinded placebo-controlled cross-over study consisting of two parts. 24 healthy volunteers will participate. Each will attend four sessions in randomized order. One is a placebo session. The participants will dip their tongues in 0.1% capsaicin gel for 5 min. The level of unpleasantness is scored continuously. After 5 min. the participant rinses the mouth for 10 s with a solution of different milk proteins. After rinsing, scoring of unpleasantness continues for 15 min.

RESULTS: The study is ongoing. Part one of the study is expected to end before the congress. Therefore, results from part one of the study will be presented during the congress, whilst results from part two analyzing effects of specific proteins will not be presented.

CONCLUSION: This paper will clarify the role of dairy proteins in reducing capsaicin-induced oral burning sensation with potential clinical applications for burning mouth syndrome.

ACKNOWLEDGEMENTS: This work is funded by the Danish Dental Association (Tandlægeforeningen) by awarding scholarship for Research Year Student Muhammed Alparslan Gøkhan. Milk proteins used in the project were sponsored by Arla Food Ingredients Group.

P-1.8

Mohsen Redda

Measurement of oxygen partial pressure in vitro and in vivo using Magnetic Resonance Fingerprinting and T_2-relaxation-under-spin-tagging (TRUST)

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BACKGROUND: Initial evaluations of an acute ischemic stroke must be done rapidly to avoid long-term disability. Neuroimaging, incl. MR, is a critical part of the stroke evaluation. Current clinical standard MR imaging is highly sensitive and precise, however is limited in the evaluation of the underlying metabolic features, as they are not easily interpreted from these results. We suggest improving the evaluation of stroke by incorporating a novel quantitative oxygen partial pressure (pO2) MRI technique.

METHODS: Programming is done to extend the MRF technique to allow accurate determination of the local pO2 in the brain, using the TRUST formalism. Firstly, we will validate this method on virtual and physical phantoms on multiple sites. Secondly, we will validate the method on porcine stroke models. Lasty, we will validate the method on healthy volunteers. The results from the MRF sequence will be compared to the golden standard of pO2 measurements, T1 and T2 mapping in a phantom with specific values.

RESULTS: Results are pending - If available, preliminary results and conclusions will be presented at the congress.

CONCLUSION: Conclusion is yet to be made, see above.

ACKNOWLEDGEMENTS: This research year is funded by Lundbeck.

P-1.9

Trygve Ulvund Solstad

BioXmark® may ensure the optimal resection line during the surgical treatment of gastroesophageal cancer

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BACKGROUND: In Denmark, the guidelines for gastroesophageal-junction (GEJ) adenocarcinoma (AC) surgery are an R0 resection with a minimum 5 cm proximal and distal resection margin to the tumor, measured in vivo. However, often, chemotherapy shrinks the tumor to a level where it is no longer macroscopically visible, increasing the risk of an R1 resection. We want to examine whether using BioXmark®, a surgical marker visible on ultrasound can help ensure an optimal resection of GEJ AC.

METHODS: This is a feasibility study of BioXmark®. A total of 10 patients scheduled to undergo curatively intended surgery for GEJ AC will be included. The 5 cm resection margins will be endoscopically marked

with BioXmark® prior to neoadjuvant chemotherapy. During surgery, the proposed resection line will be marked, and a second resection line will be marked using BioXmark® identified with ultrasound. The difference between the two lines will be measured and a pathologist will examine the specimen.

RESULTS: The project is expected to start in January 2022 and inclusion will still be active at the time of the conference. Thus, no results nor conclusion can be made at this point. If available, preliminary results and conclusions will be presented at the congress.

CONCLUSION: See above.

ACKNOWLEDGEMENTS: The initiative for this study was taken by Michael Patrick Achiam, MD, DMsci, Ph.D., on his own accord. The study has received external funding from Nanovi A/S, financing the expenses related to publication and conferences, BioXmark®, pathology evaluation, and the salary of research year student Trygve Ulvund Solstad. Nanovi A/S have no influence on the collection and analysis of the data, nor the publication from this study.

P-1.10

Christina Winther

Better diagnostic tools for children with acute and chronic liver failure

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BACKGROUND: Pediatric liver failure is a life-threatening condition with liver transplantation (LTX) being the only potentially curative treatment option. The transplanted children receive lifelong immunosuppression and risk developing severe complications relating to LTX. It is difficult to assess which children need a LTX due to lack of consensus of how to assess the regeneration potential of a native liver. Thus, it is important to assess the prognostic value of the diagnostic tools currently available.

METHODS: Since 2016, 180 children with acute or chronic liver failure have been included into a prospective cohort study. They undergo an examination program at inclusion and are followed up after 1- and 3-years. The program focuses on examining the liver function and level of fibrosis using blood analyses, liver biopsies and ultrasound and magnetic resonance (MR) imaging.

RESULTS: The 3rd follow-up visit is currently being conducted. Results are expected in 2022.

CONCLUSION: By comparing different methods of measuring liver fibrosis, we hope to provide additional knowledge on the optimal follow-up methods on liver-sick children. This will lead to more precise predictions on the prognosis of the individual child and thus optimize the treatment.

ACKNOWLEDGEMENTS: The project has been funded with a 12-month scholarship by the Free Research Fund, Aarhus University.

P-1.11

Freja Kruse

Coasting in Taxane-induced Peripheral Neuropathy in Patients with Breast Cancer: A Systematic Review

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BACKGROUND: Taxane-induced peripheral neuropathy (TIPN) is a common dose limiting adverse effect, that may be transient or become permanent after ended treatment. The taxane paclitaxel induces TIPN in 57-83% of patients treated7. The neuropathy may debut or progress after the end of treatment, known as coasting, but little is known about the incidence of this phenomenon. The aim of the review is to examine the incidence and severity of coasting in TIPN.

METHODS: MEDLINE, Embase, clinicaltrials.gov and medrivx.org were searched using terms related to taxanes, adverse effects and breast cancer. Studies had to have a follow up of at least 3 months after end of treatment (EOT) and patients had to receive taxanes in monotherapy. Additionally, studies had to be longitudinal and describe the neuropathy assessment method and timing.

RESULTS: 16 studies met the eligibility criteria, with 4245 participants summarized. Of these, one study reported a coasting event in 14,3% (n=4) of patients.8 8 studies reported no coasting events and 7 were unclear.

CONCLUSION: Few studies reported on coasting in TIPN. Reasons for this could be different assessment methods and timing of assessment. More information is needed about coasting in TIPN to better characterize the neuropathies, guide patient decisions and aide in the development of interventions towards TIPN.

ACKNOWLEDGEMENTS: Thank you to the co-authors and supervisors: Margrethe Bastholm Bille, Maria Elisabeth Lendorf, Steffen Birk, Christian Krarup. The CryoPac projectgroup and staff at the Oncology and Neurophysiology Department of Rigshospitalet and last but not least friends, family and office-mates.

The project was financed by the Lundbeck Foundation.

P-1.12

Josephine Reinert Quist

Finding the Goldilock zone: optimised osmolality in oral supplements. A quasi-randomized crossover study

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BACKGROUND: Patients with an ileostomy have impaired quality of life, sodium depletion, complicated fatigue, secondary hyperaldosteronism, and other organ-specific pathologies. Osmolality of oral fluids is a major determinant of ileostomy output and sodium loss. Ways to increase fluid and sodium absorption in patients with an ileostomy via adjusting oral drinks' osmolality are understudied. The aim of this study is to quantify the association between osmolality in liquid oral fluids and ileostomy output.

METHODS: Twelve patients with an ileostomy will be included in a quasi-randomized crossover intervention study. Each patient will ingest between 3-15 different supplements during separate 6-hours intervention periods, and ileostomy output and urine volume will be collected. Outcome measures include faecal wet-weight, urine volume, electrolytes, osmolality, and body composition measured with bioelectrical impedance analysis.

RESULTS: Statistical mixed model linear regression with cluster dependency analysis can help determine the association between osmolality of oral supplement and ileostomy output and sodium loss. Hopefully, this will demonstrate an optimal osmolality range, which we call the Goldilocks zone. We expect to see that isoosmolar fluids result in the lowest ileostomy output loss, and the amount of ileostomy output loss will probably increase for both hypo- and hyperosmolar fluids.

CONCLUSION: In conclusion, by examining ileostomy and urine output, it will improve our understanding of real-life fluid and sodium absorption in the small bowel in patients with an ileostomy, identify the optimal osmolality range, a Goldilocks zone and improve the advice given to patients with an ileostomy.

ACKNOWLEDGEMENTS: Nothing to declare

P.2 Hjerte-lunge

P-2.1

Victor Tang Merit

Pulmonary vasodilatation in the prolonged phase of acute pulmonary embolism in pigs

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BACKGROUND: Acute pulmonary embolism (PE) causes an increased strain on the right ventricle due to increased pulmonary vascular resistance (PVR). Experimental studies have shown PVR reduction within 12 hours of onset, when administering pulmonary vasodilatory drugs. However, the effects beyond 12 hours remains unknown. This study aims to investigate if the effects of the pulmonary vasodilatory drug, sildenafil, are preserved in the days following experimental intermediate-high PE.

METHODS: Pigs will serve as their own controls in repeated measurements.

Day 1: Baseline computed tomography (CT) scans and hemodynamic evaluation will be recorded. Animals will then receive consecutive PE until mean pulmonary artery pressure (mPAP) is doubled. At stable conditions, hemodynamics are recorded before sildenafil and oxygen are administered. Effects are measured 30 min later.

Day 2 and 3: Animals are evaluated before and after sildenafil and oxygen treatment. Euthanisation after day 3.

RESULTS: The project will commence 1st of September 2021. Preliminary results will be presented at KMS 2022 if available.

CONCLUSION: This study will provide novel insight into the contribution of pulmonary vasoconstriction in the days following acute PE and the potential effects of the pulmonary vasodilators sildenafil and oxygen. This may provide knowledge and contribute to the designs of future clinical trials of acute PE.

ACKNOWLEDGEMENTS: The project has received funding from The Danish Heart Foundation.

This project is conducted at Department of Cardiology, Department of Clinical Medicine and Department of Forensic Medicine at Aarhus University Hospital in collaboration with Department of Radiology at Aarhus University Hospital. International collaboration with Dr. Chris Kabrhel, Associate Professor at Harvard University Medical School, Boston, USA.

P-2.2

Caroline Boye

The impact of perinatal factors on the neonatal electrocardiogram

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BACKGROUND: The fetal and neonatal heart rhythm is routinely monitored, but so far, no study has evaluated perinatal factors and whether a variety of these affect the neonatal cardiac conduction system, thereby causing variation in neonatal electrocardiographic parameters. If so, are these effects shorter or longer lasting.

METHODS: The Copenhagen Baby Heart Study is a large general population study that performed cardiac evaluation in neonates from 2016-2018. Electrocardiograms and echocardiographies were obtained and systematically analysed. Furthermore, numerous variables on maternal and perinatal factors were obtained.

RESULTS: The data analysis is currently ongoing. Thus, no results can be presented at this point. Preliminary results are expected to be presented at the KMS 2022.

CONCLUSION: No conclusion has been made yet.

ACKNOWLEDGEMENTS: Herlev-Gentofte Hospital, Interne fond til kardiologisk forskning (FUHAS)

P-2.3

Camille Reese

Increasing reliability of fetal heart rate variability assessment by 60 minutes electrocardiogram recordings

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BACKGROUND: Fetal heart rate variability (FHRV) occurs as a result of strict regulation between sympathetic and parasympathetic activity and has potential as a clinical tool in fetal surveillance. Based on 20 min. fetal electrocardiogram (fECG) recordings, a prior study proved that fetal movements distract the reliability of the results as they affect FHRV. By prolonging the recordings to 60 min., we aim to improve the day-to-day reliability of FHRV including evaluation of the impact of fetal movements.

METHODS: Twenty-six healthy singleton pregnant women were included. FECG was obtained for sixty minutes at two different occasions with a maximum of 7 days interval. Ultrasound scanning's were performed continuously to detect fetal movements. Outcome measures were standard deviation of normal

to normal RR-intervals (SDNN), root mean square of successive RR-interval differences (RMSSD), high frequency power (HF-power), low frequency power (LF-power) and LF/HF.

RESULTS: We made the fECG recordings and found that the planned analyses are feasible. Further results are approaching. The statistical analyses will be made in STATA. Results will be presented at KMS 2022 if available.

CONCLUSION: It has not been possible to conclude anything yet.

ACKNOWLEDGEMENTS: This project is supported by "Søster og Verner Lipperts Fond".

P-2.4

Julie Molin

Electrocardiographic characteristics in newborn twins

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BACKGROUND: Twin births constitute approximately 2 % of all births in Denmark and are associated with a higher risk of complications. Earlier studies have reported an incidence of congenital heart disease in twins of up to 7,5 %. Early detection of twins with electrocardiographic abnormalities could potentially enable early intervention and treatment. Currently there are no reference values for newborn twins.

METHODS: Copenhagen Baby Heart Study (CBHS) is a prospective population study that included newborns in the period 2016-2018 from hospitals in the Copenhagen area. The newborns had a electrocardiogram and echocardiography performed. In the cohort there are 412 twins, which can be used to create comprehensive and new useful knowledge about newborn twins ECG. The twins will be divided by chronicity and matched 1:2 with newborns from a singleton pregnancy. Several ECG parameters will be analyzed.

RESULTS: The data analysis is currently ongoing, and no results can be presented at this point. Preliminary results can be presented at the KMS 2022.

CONCLUSION: No conclusion has been made yet.

ACKNOWLEDGEMENTS: Herlev-Gentofte Hospital, Interne fond til kardiologisk forskning (FUHAS)

Herlev-Gentofte Hospital Internt Scholarstipendium

P-2.5

Mette Marie Olsen Nørregaard

Maternal Risk Factors and Cardiac Structure and Function in the Newborn: a Copenhagen Baby Heart Study

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BACKGROUND: Severe congenital heart defects (CHD) affect 8 of every 1000 live births. However, the aetiology remains poorly understood. Previous studies have shown an association between certain maternal factors and increased risk of CHD in the newborn. We aim to investigate whether maternal factors such as advanced age, BMI or smoking during pregnancy may influence fetal cardiac development in more subtle ways, reflected by changes in newborn cardiac structure and function using pediatric echocardiography.

METHODS: The Copenhagen Baby Heart Study (CBHS) is a population-based birth cohort study with prenatal inclusion and postnatal cardiac examination including echocardiography of more than 25 000 newborns (Apr 2016-Oct 2018). The CBHS' database also hold pre- and postnatal data from medical records, hospital databases, and national registers. Using a multiple linear regression model, we will assess the differences in newborn echocardiographic left ventricular parameters according to maternal factors.

RESULTS: Data is currently being analyzed and preliminary results will be presented at KMS 2022.

CONCLUSION: The present study will shed light on the more subtle consequences of advanced maternal age, BMI, and smoking on the newborns heart, and will provide greater insight into whether further attention on the cardiac health of these newborns is warranted.

ACKNOWLEDGEMENTS: The project is financially supported by the Department of Cardiology, Herlev-Gentofte Hospital (Cardio HGH) and the Novo Nordisk Foundation. The funding sources had no influence in the conduct of the study-

P-2.6

Christian Valdemar Skibsted

Long-term risk of atrial fibrillation after transcatheter patent foramen ovale closure in patients with cryptogenic stroke: A nationwide population-based cohort study.

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BACKGROUND: Patent foramen ovale (PFO) is an interatrial communication meant to close after birth. It may act as a shunt for paradoxical embolisms and is prevalent in cryptogenic stroke patients <60 years. Transcatheter closure of PFO has become the recommended treatment for secondary stroke prevention.

Postprocedural atrial fibrillation (AF) is a known adverse effect of PFO closure, but little is known about long-term risk of AF. This study will examine whether PFO closure increases long-term risk of AF.

METHODS: Using the Danish National Patient Registry, we identified all Danish patients diagnosed with ischemic stroke/transient ischemic attack and a PFO during 1977-2017. Patients <18 years or with a prior diagnosis of AF were excluded. Follow-up started at PFO diagnosis. Exposure was defined as PFO closure and assessed in a time-varying manner. Outcome was defined as a diagnosis of AF.

RESULTS: Analyses are ongoing. Preliminary results will be presented.

CONCLUSION: This will be the first population-based study on long-term risk of AF after PFO closure. Through improved knowledge of potential complications to PFO closure, this study will improve the basis for clinical decision making for patients with cryptogenic stroke and PFO.

ACKNOWLEDGEMENTS: Nothing to declare.

P-2.7

Gitte Pedersen

Proteomics and coronary plaque characteristics in patients with suspected coronary artery disease: Predicting coronary plaque characteristics in patients with coronary CTA using proteomics

G Pedersen[1] *S Winther*[1] *JN Dahl*[1] *LD Rasmussen*[1] *M Bøttcher*[1]

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BACKGROUND: The evaluation of patients with symptoms suggestive of coronary artery disease (CAD) is a cornerstone in medicine in general and particularly in cardiology. Recent studies suggest that proteomics can have incremental value for identifying coronary plaque burden and specific plaque characteristics that are related to prognosis. This study aims to develop a proteomic profile that identifies high-risk coronary plaque characteristics in patients with new-onset symptoms suggestive of obstructive CAD.

METHODS: Coronary computed tomography angiography (CCTA) and blood samples are obtained from a cohort consisting of 1 675 patients included in a randomized clinical trial (Dan-NICAD I). Using semiautomatic CCTA software along with proteomics from blood samples we aim to develop a proteomic profile for identifying high-risk coronary plaque characteristics in patients with first time symptoms of CAD. Statistical analyses will be performed using R.

RESULTS: As of November 2021, no results have been obtained yet.

CONCLUSION: Only few studies with small cohorts investigating the association between high-risk coronary plaque characteristics and proteomics exist. This study is the first of its caliber and can improve diagnosis of patients with symptoms suggestive of CAD.

ACKNOWLEDGEMENTS: Nothing to declare.

P-2.8

Sofie Paarup Thomsen

Optimal Utilization of Telemetry following Acute Myocardial Infarction

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BACKGROUND: Myocardial Infarction (MI) is a common cause of hospitalization and death. Following revascularization there is an increased risk of arrhythmias but evidence on the needed duration of telemetry monitoring is sparse. Accordingly, international guidelines on telemetry monitoring are inconsistent. Therefore, this study aims to investigate time to clinically significant arrythmia in patients admitted to hospital with AMI and characterize the patients suffering from clinically significant arrythmias.

METHODS: This is a cohort study including patients admitted with a MI in the Central Denmark Region during a 5-year period. Time to any clinically relevant arrhythmia and arrythmia characteristics will be collected from the electronic patient chart. In addition, data on admission electrocardiogram, echocardiograms, characterization of occluded coronary arteries, and troponine levels will be collected.

Primary endpoint: time to first clinically relevant arrhythmia following revascularization.

RESULTS: Results are pending. Data collection will begin in 2022.

CONCLUSION: Conclusion is pending.

ACKNOWLEDGEMENTS: None

P-2.9

Mathilde Emilie Kirk

Effects of Repetitive Pulmonary Emboli and Inhibition of Endogenous Fibrinolysis in Pigs

ME Kirk[1] *VT Merit*[1] *MD Lyhne*[1] *SJ Dragsbæk*[1] *JV Hansen*[1] *JG Schultz*[1] *JE Nielsen-Kudsk*[1] *A Andersen*[1]

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BACKGROUND: Chronic thromboembolic pulmonary hypertension (CTEPH) is a life-threatening complication of acute pulmonary embolism (PE). It is characterized by unresolved thrombi and persistent increased pulmonary arterial pressure. Treatment options are few and the exact underlying pathophysiological mechanisms remain unclear. We hypothesize that repetitive PEs and inhibition of endogenous fibrinolysis in a porcine model will induce chronic thrombi and pulmonary hypertension resembling CTEPH.

METHODS: Six pigs will be included. Baseline evaluation is performed before autologous PEs are injected until mean pulmonary arterial pressure is doubled. This is repeated after three, six and ten days. After one month a long-term evaluation is performed and tissue samples of heart and lungs are acquired. Tranexamic acid is administered throughout the experiment. Effects of the interventions will be evaluated by CT-scans, invasive pressure and volume measurements, hemodynamic values, and blood samples.

RESULTS: Preliminary data will be presented at the congress.

CONCLUSION: This study will evaluate the effects of repetitive PE's combined with inhibition of endogenous fibrinolysis in a porcine model. Potentially, this can lead to an animal model of CTEPH, and hereby create opportunities of further investigation of the pathogenesis and novel treatment options.

ACKNOWLEDGEMENTS: The project is supported by the Danish Heart Foundation. The experiments will be performed at the Department of Clinical Medicine and the Department of Cardiology in collaboration with the Department of Radiology and the Department of Forensic Medicine, Aarhus University Hospital. International collaborations are established with Dr. Mannudeep Kalra, Harvard Medical School, Boston, and Dr. Frances de Man, Vrije University, Amsterdam.

P-2.10

Mohab Basem Abdallah

Influence of blood cholesterol levels on the cardiovascular risks associated with use of non-steroidal anti-inflammatory drugs after myocardial infarction

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BACKGROUND: The use of non-steroidal anti-inflammatory drugs (NSAIDs) in patients with previous myocardial infarction (MI) has been associated with an increased risk of death, recurrent MI and atrial fibrillation. The use of NSAIDs in patients with previous MI remains common with a one-year prevalence of opproximately 9%. The study aims to examine whether baseline and target lipid levels influence the cardiovascular risks associated with NSAID use after MI.

METHODS: This nationwide cohort study will include all patients ≥18 years with a first-time inpatient MI diagnosis between 2000 and 2020 and at least one measurement of blood lipid levels within one month after their MI. Data will be obtained using several Danish registries. Cox proportional-hazards models will be used to calculate hazard ratios and 95% confidence intervals for risk of major adverse cardiovascular events (recurrent MI, ischemic stroke, and all-cause death).

RESULTS: The project will commence in February 2022. Preliminary results will be presented at KMS 2022 if available.

CONCLUSION: If patients' blood lipid levels modify the association between NSAIDs and adverse outcomes after MI, it adds to the pathophysiological understanding of the adverse effects of NSAIDs and guidelines should be specified accordingly.

ACKNOWLEDGEMENTS: The project is supported by the Novo Nordisk Foundation (grant NNF19OC0054908). The authors declare no conflict of interests.

P.3 Epidemiologi

P-3.1

Anne Christine Wiuff Jørgensen

The safety and efficacy of long-term lithium therapy

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BACKGROUND: Lithium has been a cornerstone in the treatment of bipolar disorder for >60 years. However, the use of lithium has been decreasing in recent years due to the need for regular monitoring and the risk of potentially severe side effects. Therefore, this study aims to investigate i) the frequency of serum-lithium monitoring, ii) the impact of long-term lithium treatment on renal, thyroid, and parathyroid function, and iii) the association between regular serum-lithium monitoring and admissions

METHODS: We will perform a retrospective cohort study within the Central Region of Denmark. Using the Electronic Patient Record system, we will include ≈ 3 400 patients with a registered serum-lithium measurement during the period from 2016 to 2022, and a non-exposed control-group. Outcomes will be i) frequency of lithium tests, ii) renal, thyroid, and parathyroid functioning (evaluated via blood tests and diagnostic codes) and iii) psychiatric admissions. Statistical analyses will be performed in STATA

RESULTS: As of November 2021, no results have been obtained yet.

CONCLUSION: The present study will represent one of the largest and most comprehensive investigations on the association between long-term lithium treatment with detrimental side effects and clinical efficacy.

ACKNOWLEDGEMENTS: Nothing to declare.

P-3.2

Isabella Gringer Rousing

Ovarian cancer patients in Denmark – Use of primary healthcare and investigations before diagnosis

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BACKGROUND: Women with ovarian cancer (OC) in Denmark have a poor prognosis due to advanced disease at the time of diagnosis. Six in ten OC-patients present vague and unspecific symptoms, which complicates the general practitioner's symptom interpretation. When referral in a Cancer Patient Pathway is not considered, the diagnostic interval is prolonged. We aim to establish knowledge of the diagnostic pathway for women with OC in DK and thereby strive to identify factors that prolongs the time to diagnosis

METHODS: Observational study based on register data linked at the individual level. Women with a first-time OC or borderline ovarian tumor diagnosis registered in the Danish Cancer Registry or the Danish Gynecological Cancer Database from 2012-18 aged ≥ 40 years were included. 10 age-matched non-cancerous women were identified in the Civil Registration System by density sampling. Healthcare use of women with and without OC a year prior to diagnosis will be compared by incidence rate ratios.

RESULTS: We have just received data and expect to have analyses ready for spring 2022. Preliminary results will be presented at KMS 2022 if available.

CONCLUSION: This study will contribute to a better understanding of the diagnostic pathway for OC-patients in Denmark. We may find a window of opportunity for more timely diagnosis and thus reveal key elements to change.

ACKNOWLEDGEMENTS: The project has received funding from the Lundbeck Foundation. The authors have nothing to declare.

P-3.3

Astrid Ibsen Bruun

Is burnout among general practitioners in Denmark associated with the workload of selected services?

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BACKGROUND: In spite of a generally high job satisfaction among general practitioners (GPs) in Denmark, more than a third shows a moderate or severe level of burnout. Since 2004 the Research Unit for General Practise in Aarhus has been documenting an increase in the number of GPs showing moderate and severe signs of burnout. The degree of moderately burned-out GPs has increased from 24% to 40% whereas the degree of severely burned-out GPs has increased from 3% to 10% in the years from 2004 to 2019.

METHODS: The project will be a combined questionnaire and register study (n=1866). The questionnaire provides information on burnout, working hours, perceived workload in the clinic and emergency service respectively. Data from the questionnaire will via Statistics Denmark be enriched with information from the National Provider Number Register. By use of regression analysis the association between number of services, number of patients connected to the clinic, and the risk of burnout will be assessed.

RESULTS: Ingen resultater foreligger.

CONCLUSION: Ingen konklusion foreligger.

ACKNOWLEDGEMENTS: The authors would like to thank the Lundbeck Foundation, The Danish College of General Practitioners and the Research Unit for General Practice in Aarhus for financial assistance.

P-3.4

Harald Vindahl Andersen

Protocol: Blood stream infections among patients admitted to the intensive care unit with severe burns

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BACKGROUND: The leading cause of death in patients with severe burns is infection. Severely burned are at risk of infection due to their non-intact barrier, necrosis, and concomitant immune depression. Prevention and treatment of bloodstream infections (BSI) in patients with severe burns pose a challenge, among other things due to limited research on risk of BSI and their effect on outcomes among patients with severe burns.

METHODS: The study will include all patients with severe burns admitted to the intensive care unit at Rigshospitalet, Denmark, in the period 1 January 2010 to 31 December 2020. Primary outcome is BSI. We will examine: Incidence rate overall, timing of BSI in relation to date of admission and necrectomy, causative pathogens and their antimicrobial resistance pattern, as well as risk factors for BSI. Secondly, we will examine adverse outcomes associated with blood stream infections.

RESULTS: No results to present.

CONCLUSION: No conclusion to present.

ACKNOWLEDGEMENTS: Nothing to declare.

P-3.5

Louise Krog

Risk of Progression of Cervical Intraepithelial Neoplasia Grade 2 by HPV Vaccination Status

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BACKGROUND: HPV infection can lead to cervical precancer (cervical intraepithelial neoplasia [CIN], graded as CIN1 [mild], CIN2 [moderate], and CIN3 [severe]) and cancer. Historically, CIN2 was surgically removed, but as this is associated with preterm birth, fertile women are now recommended active surveillance. However, identification of women at risk of progression is needed. HPV vaccination protects against cervical cancer, but it is unknown if HPV vaccination status can be used to risk stratify CIN2.

METHODS: We will conduct a nationwide population-based cohort study using data from Danish registers. We will identify women with an incident CIN2 diagnosis during 2010-2020. Information on exposure (HPV vaccination) will be retrieved, as will all subsequent cervical samples to determine the outcome (regression, persistence, or progression of CIN2). We will estimate the risk of CIN2 progression among HPV-vaccinated vs. unvaccinated women adjusting for socio-economic status and other important covariates.

RESULTS: The project is currently ongoing, and no results are obtained yet. Cox regression will be applied to estimate the hazard of progression to CIN3 or cancer by HPV vaccination status (vaccinated vs. unvaccinated). Results will be stratified by age at CIN2 diagnosis, birth year, year of CIN2 diagnosis, years since vaccination, age at vaccination, number of vaccine doses, and type of vaccine.

CONCLUSION: We expect our results will contribute with knowledge on whether HPV vaccination status can be used to identify risk of progression of CIN2. This will provide clinicians with important information that may be useful in clinical counselling and shared decision-making.

ACKNOWLEDGEMENTS: The project is funded by the Danish Cancer Society, Tømrermester Axel Kastrup-Nielsen og hustru Eva Kastrup-Nielsens Mindelegat, and Dagmar-Marshalls Fond. Anne Hammer has received a speaker's fee from Astra Zeneca, Denmark, and test kits from Roche Denmark, but none of this were related to this project.

P-3.6

Freja Nejsum

Neonatal Morbidity and Exclusive Breastfeeding among Late Preterm and Term Infants: A Register-based National Cohort Study

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BACKGROUND: The Danish National Board of Health recommends exclusive breastfeeding (EBF) for four months yet only 60% of Danish infants are exclusively breastfed that long. Neonatal morbidity often necessitates prophylactic in hospital formula feeding and/or hospital admission that commonly disrupts the mother-child dyad, both of which are known risk factors for premature cessation of EBF. We aim to investigate the association between neonatal morbidity and EBF in late preterm and term infants.

METHODS: A register-based study including all late preterm and term infants born in Denmark in 2014-2015. Data were collected from both multiple registers held by Statistics Denmark and from the National Child Database held by The National Board of Health. The association between neonatal morbidity necessitating medically indicated prophylactic in hospital formula feeding or admission to a neonatal intensive care unit within 24 hours of birth and EBF 1- and 4-months postpartum will be investigated.

RESULTS: 116 572 liveborn infants were born in Denmark in the period 2014-2015. Of these 106 491 (91%) late preterm and term infants were included in the study. The data analysis is ongoing and preliminary results will be presented at KMS 2022.

CONCLUSION: This study provides knowledge of the association between EBF and neonatal morbidity among late preterm and term infants. Preliminary conclusions will be presented at KMS 2022.

ACKNOWLEDGEMENTS: The project is partly funded by Nordsjællands Hospitals Forskningsklyngepulje.

P-3.7

Kalle Haisler Lindbjerg

Risk of post-colonoscopy colorectal cancers among patients with dementia, stroke, and other neurodegenerative diseases: A Danish population-based cohort study

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BACKGROUND: Circa 8% of all colorectal cancers (CRCs) arise 3-5 years after a non-cancer detecting colonoscopy. These cancers, referred to as post-colonoscopy CRCs (PCCRCs), are thought to derive from missed or incompletely resected lesions at initial colonoscopy. Mental and physical impairment reduce patient compliance, possibly challenging bowel preparation for colonoscopy and the procedure itself; however, there is a lack of knowledge about PCCRC risk in patients with neurodegenerative diseases.

METHODS: We will conduct a population-based cohort study identifying all Danish patients having undergone colonoscopy between 1995 and 2018. We will calculate cumulative incidence proportions for patients with and without neurodegenerative diseases and compare these by hazard ratios using Cox proportional hazard regression model. We will calculate PCCRC-3 year rates by dividing the number of true-positive and false-negative colonoscopies. For all measures we will calculate 95% confidence intervals.

RESULTS: The study is ongoing, and results are yet to be produced. We expect to present the preliminary results at KMS 2022.

CONCLUSION: We expect to contribute with knowledge about the risk of PCCRC in patients with neurodegenerative disease. Such knowledge could help improve interventions to optimize CRC screening and clinical decision making for patients with neurodegenerative diseases undergoing colonoscopy.

ACKNOWLEDGEMENTS: This project was funded by Kræftens Bekæmpelse. Grant no: R309-A17851.

P-3.8

Rasmine Birn-Rydder

Surgical procedures on patients with alcohol-related liver cirrhosis: A Danish nationwide register-based cohort study

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BACKGROUND: Patients with alcohol-related liver cirrhosis have an increased risk of complications during and after surgery. However, some patients might still require surgery despite the increased risks. The extent of surgical procedures performed on patients with alcohol-related liver cirrhosis is still unknown. The aim of our study was to describe the surgical procedures performed on patients with alcohol-related liver cirrhosis.

METHODS: This register-based cohort study included all Danish patients diagnosed with alcohol-related liver cirrhosis from 1994-2019. Surgical procedures performed within 10 years after the date of cirrhosis were assessed for all patients, and the procedures were divided by surgical site (abdominal, thoracic, urogenital, neurosurgical, and orthopedic). We evaluated the proportion of the patients who have had surgery within 10 years after cirrhosis and the distribution within surgical sites.

RESULTS: We included 24197 Danish patients with alcohol-related liver cirrhosis. Surgical procedures were performed on 22.2 % (n = 5365) of the included patients within 10 years of diagnosis with cirrhosis. Abdominal and orthopedic surgery was the most frequent surgical sites followed by thoracic surgery. A total of 4596 patients required abdominal surgery, 4346 patients required orthopedic surgery and thoracic surgery was performed on 2617 patients.

CONCLUSION: Approximately one-fifth of all Danish patients with alcohol-related liver cirrhosis required surgery within 10 years after diagnosis with cirrhosis. The majority of surgical procedures performed on patients with cirrhosis were abdominal procedures and orthopedic procedures.

ACKNOWLEDGEMENTS: Nothing to declare.

P-3.9

Ane Emilie Friis Vestergaard

Oral anticoagulant therapy and risk of kidney disease – a nationwide cohort study

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BACKGROUND: Vitamin K-antagonists (VKA) and direct anticoagulants (DOACs) are widely used in the treatment of atrial fibrillation and venous thromboembolism. Recently, these drugs have been identified as potential causes of acute kidney injury (AKI) and chronic kidney disease (CKD). We aim to investigate the risk of developing AKI and CKD overall and by type of oral anticoagulant. In addition, we will identify predictors of these kidney complications.

METHODS: We will conduct a nationwide cohort study of patients who initiate a prescription of an oral anticoagulant drug in the period 2000-2018. Using serum creatinine measurements from laboratory databases, patients will be followed for lab-confirmed AKI and CKD. Cumulative incidence rates of kidney complications will be assessed and compared by Cox proportional hazards regression. Propensity scores and inverse probability of treatment weighting will be used to minimize confounding.

RESULTS: We will include around 400,000 oral anticoagulant users. Analysis is ongoing, and results will be presented at the congress.

CONCLUSION: We hypothesize that kidney complications are common among anticoagulant treated patients and that DOACs may be associated with lower risk compared with VKAs. Knowledge about the association between oral anticoagulant treatment and kidney complications may help prevent these conditions.

ACKNOWLEDGEMENTS: This study is funded by the Independent Research Fund Denmark.

P-3.10

Christine Louise Møberg

Treatment effect of immune checkpoint inhibitors and prognostic biomarkers of metastatic mucosal melanoma – a retrospective evaluation

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BACKGROUND: Mucosal melanoma patients have a poor prognosis due to late diagnosis and low treatment response. Little is known about the efficacy of treating metastatic mucosal melanoma patients with immune checkpoint inhibitors (ICI), and knowledge on predictive and prognostic biomarkers is limited. This study investigates the efficacy of ICI treatment and potential predictive and prognostic biomarkers of metastatic mucosal melanoma.

METHODS: The study is retrospective and based on data from the Danish Metastatic Melanoma Database. 66 metastatic mucosal melanoma patients treated with ICIs from 2014 to 2021 in Denmark will be included. Additionally, diagnostic tumor tissue samples will be stained with 3 biomarker panels including innate immune cell infiltration, adaptive immune cell infiltration and PD-L1 expression. Data will be analyzed with survival analysis using endpoints such as overall survival and progression free survival.

RESULTS: There are no available results yet.

CONCLUSION: The publication will focus on the value of ICI treatment in metastatic mucosal melanoma patients, and on the prognostic and predictive significance of tissue biomarkers. This knowledge may aid the selection of patients suitable for ICI treatment.

ACKNOWLEDGEMENTS: Henrik Schmidt, Department of Oncology, Aarhus University Hospital. Torben Steiniche, Department of Pathology, Aarhus University Hospital. Louise Bønnelykke-Behrndtz, Department of Plastic and Breast Surgery, Aarhus University Hospital. Jeanette Bæhr Georgsen, Department of Pathology, Aarhus University Hospital.

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P-3.11

Amanda Fagerberg

Effect of Do-It-Yourself Automated Insulin Delivery Systems in Danish Children with Type 1 Diabetes Mellitus; a Cross-Sectional Retrospective Study

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BACKGROUND: Treatment of type 1 diabetes mellitus (T1DM) is technical. Recent years have seen integration of pumps and sensors to regulate insulin dosage and patient-initiated solutions (Loop-DIY) has become popular. Studies show increased glycemic control and mental wellbeing in Loop-DIY users, though only few studies exist. This study wants to estimate the prevalence of Loop-DIY use among Danish children with T1DM, the risk of Loop-DIY, and the effect of Loop-DIY on glycemic control and mental wellbeing.

METHODS: This is a cross-sectional retrospective study recruiting participants through pediatric diabetes outpatient clinics throughout Denmark. Current and retrospective data on glycemic control will be collected from patient records. Mental wellbeing, sleep, self-efficacy and fear of hypoglycemia (FOH) will be measured through questionnaires and compared to a matched control group.

RESULTS: Early results are expected ready for KMS. As one of the first of its kind, this paper will present preliminary results on the prevalence and effect of LOOP-DIY use in Danish children. We will also discuss positive and negative effects of LOOP-DIY use on children's and parent's mental and physical well-being.

CONCLUSION: Our study will generate knowledge important to the rapid development within diabetes technology

ACKNOWLEDGEMENTS: This study is partially funded by STENO Partners and Department of Pediatrics, Regional Hospital West Jutland. We sincerely thanks the participants and their families.

P.4 Grundforskning

P-4.1

Ida Larsen

The role of the Calcium activated Chloride channel protein, TMEM16A, in stroke

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BACKGROUND: Accumulating evidence suggests an importance of the Ca^{2+}-activated Cl^- channels for vascular dysfunction in stroke pathology, but this is complicated by the poor specificity of available pharmacological tools. TMEM16A is the Ca^{2+}-activated Cl^- channel protein, and its inhibition was recently shown to improve stroke outcome.

METHODS: In the proposed study on these TMEM16A knockout mice, we hypothesize that TMEM16A contributes to microvascular dysfunction in strokes and aim to suggest the molecular mechanism behind it. We plan to use transient middle cerebral artery occlusion to model ischemic strokes in knockout- and wild type mice and assess cerebrovascular function in-vivo (Laser Speckle imaging), in brain slices, and in-vitro (myograph) using pharmacological interventions, Western blot, and proteomics.

RESULTS: We do not have any results yet.

CONCLUSION: We do not have any results yet.

ACKNOWLEDGEMENTS: Independent Research Fund Denmark and Department of Biomedicine, Aarhus University.

P-4.2

Jesper Staulund

Assessing renal cell viability in porcine kidneys ex-vivo during normothermic machine perfusion

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BACKGROUND: Transplantation remains the curable option for end-stage kidney disease and the demand outweighs the supply. As a response expanded criteria donors and donation after circulatory death has been introduced. However, present assessment tools are insufficient, and the kidneys are seen as high-risk which leads to high discard rates. To diminish organ waste and utilize the available kidneys, we seek to develop a method to assess renal cell viability in kidneys during normothermic machine perfusion.

METHODS: 24 pigs will be anesthetized in a validation study where kidneys with different degrees of damage are provided to validate our imaging tool of nanoparticle-mediated delivery of Near-Infrared fluorescence. Nephrectomies are performed in two models of warm ischemia or in a braindead model. Following nephrectomy, the kidneys are placed on hypothermic machine perfusion for approx. 15 hours, before transferred to normothermic machine perfusion, where scanning, tissue and urine samples are collected.

RESULTS: At the time of application, no results nor conclusions have been produced. Data will be collected during 2022 and we expect that the results from our imaging method can confirm the damage seen in histological tissue samples.

CONCLUSION: Our ambition is that our results could be a step towards implementing a reliable and efficient method to monitor the state of a donor kidney ex-vivo prior to transplantation.

ACKNOWLEDGEMENTS: This project has received financial support from Novo Nordisk Foundation.

P-4.3

Madeleine Hopkirk

Investigation of alpaca antibodies against the Na^+-dependent Cl^-/HCO_3^- - exchanger Ncbe with the perspective of reducing intracranial pressure

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BACKGROUND: Persistent intracranial pressure requires efficient treatment. The condition can be caused by several pathologies which are often caused by disruption in CSF homeostasis. Inhibition of Ncbe expressed in the choroid plexus (CP) epithelium could be a treatment as it is centrally involved in CSF secretion. While the access for conventional antibodies to Ncbe is limited, VHH domains derived from camelid single-domain antibodies may offer means to target Ncbe across fenestrated capillaries of the CP.

METHODS: To investigate the prospect of future therapeutic use of VHH, alpaca IgGs targeting the external loop (i.e. facing the blood side) of Ncbe were evaluated in this study. Bleeds from a Ncbe-immunized alpaca were explored on WT and Ncbe-KO mouse CP tissue section in immunohistochemistry after an affinity purification had been performed. During this study, a need for deglycosylation emerged.

RESULTS: No evident binding of alpaca serum or purified IgG were detected initially. After enzymatic deglycosylation of tissue sections, the affinity purified antibodies were able to bind Ncbe in the basolateral membrane of the choroid plexus. Immunolabeling was absent in similar tissue sections from Ncbe-knockout mice. This proves that alpacas are able to produce antibodies targeting the extracellular domain of this transporter.

CONCLUSION: The findings increase the likelihood of using VHH as a drug, as they might be able to cross the fenestrated capillaries and most likely escape the need for deglycosylation. Using VHH as a drug is still at an early stage, why more research is needed.

ACKNOWLEDGEMENTS: This project was carried out at Biomedicin Aarhus Universitet under the supervision of professor Jeppe Prætorius and guidance of laboratory technicians Golshah Ayoubi and Inger Merete S. Paulsen.

P-4.4

Julie Jaszczak

In vitro investigation of IgGs made in three camelids against the Na^+-dependent Cl^-/HCO_3^--exchanger Ncbe

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BACKGROUND: The use of VHH domains of single-domain camelid antibodies offers an attractive approach for binding and inhibiting a main mechanism in CSF production by the choroid plexus: the Ncbe. A former study regarding IgGs made in camelids against Ncbe showed the need for deglycosylation when using immunohistochemistry. As the future purpose of this study is to use VHH to reduce intracranial pressure in humans, methods closer to in vivo situation and native 3D protein conformation should be explored.

METHODS: Dot blots were performed to investigate IgG titer of the bleeds from three camelids. This was done to determine whether the lacking results observed in previous studies were due to low presence of IgGs and not low affinity for Ncbe. MDCK (Madin-Darby, Canine Kidney) cells exploited to express Ncbe were used to investigate the properties of the antibodies. This was done by using a fluorescent molecule conjugated to a secondary antibody and studied using immunofluorescence confocal microscopy.

RESULTS: The dot blot showed a high titer for one camelid, the alpaca, while only a low titer was observed for one of the llamas. The last llama showed no titter and was not used further in the study. Antibody binding to the external domain of Ncbe in MDCK cells was observed after being exposed to both the affinity purified alpaca and llama antibodies. This indicates that the antibodies are more likely to bind when Ncbe is closer to its native configuration.

CONCLUSION: This study found that the prospect of using IgGs from camelids is better when using methods exploiting the native 3D configuration of Ncbe over immunohistochemistry and immunoblotting. The findings support the aspiration of using camelids to produce inhibitory antibodies against Ncbe, including VHH.

ACKNOWLEDGEMENTS: This project was carried out at Biomedicin Aarhus Universitet under the supervision of professor Jeppe Prætorius and guidance of laboratory technicians Golshah Ayoubi and Inger Merete S. Paulsen.

P-4.5

Khatera Saii

Project TG2: the role of TG2 in restoring vasodilation in resistance arteries in young and old patients with and without diabetes

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BACKGROUND: Overactivation of the enzyme transglutaminase 2 (TG2) has been shown to be involved in the development of endothelial dysfunction and vascular stiffness leading to vascular complications. We aim to investigate if pharmacological promotion of the closed conformation of TG2 induces vasodilatation and restores endothelium-dependent vasodilatation in human resistance arteries, and if the expression and activity of TG2 is linked to ageing and diabetes.

METHODS: We include patients undergoing abdominal surgery at Aarhus University Hospital, stratified in adults (25-45 years) and elderlies (60-80 years), and then divided in diabetics and non-diabetics aiming for 25 patients in each group.

Subcutaneous arteries from patients are mounted in wire myography, in order to assess the contractility of vascular smooth muscles. The expression of TG2 will be studied with immunostaining and qPCR. The transamidase activity, will be determined with a dot blot assay.

RESULTS: The study is ongoing, but preliminary results are expected to be presented.

CONCLUSION: This study will generate new knowledge on the TG2 enzyme and its relation to vascular dysfunction in ageing and diabetes. Furthermore, the research results are hoped to contribute to improved treatment of diabetics, hypertensive and elderly patients by pharmacological modulation of the TG2 enzyme.

ACKNOWLEDGEMENTS: The research project has been funded by the Heart Foundation.

P-4.6

Matilde Kanstrup Christensen

Investigations of the Association Between Maternal Obesity, the Expression of LRP1 in Placental Villi and Maternal Serum Levels of Proinflammatory Cytokines

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BACKGROUND: Obese women have an increased risk of pregnancy complications, like pre-eclampsia. Many pregnancy complications have been suggested to relate to a dysfunctional placenta. Data from our research group show increased expression of Low density receptor-Related Protein 1 (LRP1) in first trimester placentas from obese women and in placentas from women that later had pre-eclampsia. In vitro experiments further show that LRP1 expression is upregulated by stimulation with proinflammatory cytokines.

METHODS: This study investigates if placental LRP1 expression from obese women remains increased at term and examines the relation with serum levels of proinflammatory cytokines. Patients are being recruited at Randers Regional Hospital at approximately 12 weeks of pregnancy and blood samples are taken at time of inclusion. Placental samples are collected within 5 hours after birth and placental gene and protein expression of LRP1 will be analyzed.

RESULTS: The study is currently ongoing. Results will be presented at KMS 2022.

CONCLUSION: Conclusion will be presented at KMS 2022.

ACKNOWLEDGEMENTS: Nothing to declare

P-4.7

Annita Petersen

Investigating the role of IκBζ in the pathogenesis of atopic dermatitis

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BACKGROUND: Atopic dermatitis (AD) is a chronic, itching, eczematous disease. The inflammation in AD is dominated by a Th2/Th17/Th22 response, yet the intracellular molecules involved are less understood. As available biological treatments need to be injected, new oral or topical treatments such as small molecule inhibitors are needed. IκBζ is a potential intracellular target and is a nuclear transcriptional co-activator involved in inflammatory processes. Thus, we aim to investigate the role of IκBζ in AD.

METHODS: The expression and localization of IκBζ will be investigated in AD skin biopsies by RT-qPCR and immunohistochemistry. In primary human keratinocytes stimulated with AD-associated cytokines the expression of IκBζ and the underlying regulatory molecular mechanism is investigated by RT-qPCR and western blotting. The role of IκBζ as a transcriptional regulator of AD-related inflammatory markers is characterized by siRNA transfection before the gene expression of an immunology panel is investigated.

RESULTS: Results are pending. Preliminary results will be presented at KMS2022.

CONCLUSION: To our knowledge this is the first study to investigate the role of IκBζ in AD. Depending on the results, IκBζ could emerge as a novel treatment target in AD. Preliminary results will be presented at KMS2022.

ACKNOWLEDGEMENTS: The research year was funded by Aarhus Universitets Forskningsfond.

P-4.8

Mathias Skov

Glucoseuria as promotor of urinary tract infections with uropathogenic E. coli

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BACKGROUND: Urinary tract infections (UTIs) occur more frequently in patients with diabetes mellitus and studies implicate that increased glucose concentrations can accelerate bacterial growth. This issue is major concerns for using SGLT-2-inhibitors (SGLT2i) in treating type 2 DM. However, meta-analyses of SGLT-2is cannot confirm an increased risk of UTIs. Here, we test the hypothesis that glucose does not directly impose proliferation or increased in vivo virulence of uropathogenic E. coli in the urine .

METHODS: The study combines various in vitro methods to measure bacterial growth and virulence and in vivo murine model of ascending UTIs. In the latter, HlyA-producing E.coli or vehicle are inserted directly into the urinary bladder in anaesthetised female mice, and the degree of cystitis and pyelonephritis measured after 24 hours. All data are tested by either multiple comparison test (ow/tw-ANOVA/Tukey or Kruskall-Wallis/Dunn) or by Student's t-test/Mann-Whitney- Wilcoxon as appropriate.

RESULTS: Our preliminary data show that uropathogenic E. coli (UPEC) grow exceedingly fast in human urine. Adding glucose in concentrations corresponding to levels during SGLT-2i treatment does not accelerate urinary UPEC growth. In absence of glucose, we did observe a slight growth inhibition of UPEC after 5h. However, this has little implication in vivo where fresh urine is continuously delivered to the urinary bladder. This study is designed to substantiate urinary glucose as a risk factor for UTI in DM.

CONCLUSION: The ambition of this study is to determine the parameters that are responsible for the increased frequency of UTIs in patients with DM and/or patients treated with SGLT2is, by combining in vivo murine models and a pilot on the growth for UPEC from patients with DM or without DM treated with SGLT-2i.

ACKNOWLEDGEMENTS: The project is founded by the Novo Nordisk Foundation.

P-4.9

Oliver Hahn

Proteomic analysis of pig kidney after unilateral urethral obstruction injury

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BACKGROUND: Chronic Kidney Disease (CKD) is one of the leading causes for premature death worldwide affecting approximately 10% of adult population. A major risk factor for CKD is acute kidney injury (AKI). Despite global efforts the transition from AKI to CKD remains elusive, with strong evidence pointing towards metabolic reprogramming during AKI being of major influence in the development of CDK.

METHODS: Proteomic analysis using Liquid Chromatography – Mass Spectrometry (LC/MSMS) allows for high sensitivity analysis of altered enzyme and kinase composition in kidney. We utilize this technology to analyze the kidneys of unilateral urethral obstructed model of CKD, compared to contralateral control kidneys. Parallel analysis of the kidney metabolome allows for analysis of functional aspects of protein alterations.

RESULTS: Initial results of metabolome data showed an increase in lactate, a decrease in many metabolites of the TCA cycle and a decrease in pyruvate of the kidneys of the CKD pigs. Further analyses are performed in order to substantiate proteometabolic effects of the disease.

CONCLUSION: We hope to find the link between CKD induced tissue damage and metabolism to pinpoint specific metabolic interventions that could protect from kidney disease.

ACKNOWLEDGEMENTS: Funded by Novo Nordisk Foundation.

P-4.10

Anders Tobias Frederiksen

The importance of controls in vitro

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BACKGROUND: This experiment was about testing the uniformity of dose planning in vitro at proton treatment facilities in Europe as a part of the Inspire Collaboration. The goal was to test each center's ability to follow a pre-defined dose plan on V79 Chinese hamster lung cells and the end goal was a survival curve for cells at different depths in the proton beam. The experiment also tested each centers cell processing after radiation, and this article is about what we learned at DCPT.

METHODS: We cultured V79 Chinese hamster lung cells in T75 flasks. Cells were trypsinized, diluted in minimum essential medium (MEM) and seeded unto plastic plates. After cell attachment the slides were placed in a plastic box filled with MEM. The box was then beamed with 6 Gy pencil beam scattering proton irradiation. Post beaming the cells were seeded unto petri dishes, stained, scanned, and counted using the software ImageJ to make a survival fraction curve depend on depth-positioning in the box.

RESULTS: With this experiment we were successful in creating a survival depth curve like those of other centers. The experiments also illuminated differences within the institute. Our experiment showed that there was a systematic non-neglectable difference in who handled the cells from the same experiment with the same workflow.

CONCLUSION: In conclusion, in vitro data is sensitive, and care should be taken in preparing controls.Our data shows that care should be taken in how to interpret in vitro data, as processes are prone to errors when accumulating process steps.

ACKNOWLEDGEMENTS: The research was conducted with my supervisor professor Brita Singers Sørensen, and Co-supervisor post.doc. Mateusz Sitarz. Since this was part of the bigger European inspire collaboration the phantom and initial protocol was made and written by Dr. Olga Sokol.

The research was collaboratively funded by DCPT and The Department of Experimental Clinical Oncological at Aarhus University Hospital in Aarhus, Denmark.

P-4.11

Sandra Maria Hansen

Genomic incompatibility at the LIMS1 locus and the risk of rejection in heart and kidney patients from Aarhus University Hospital

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BACKGROUND: Recent studies have reported an association between genomic incompatibility between donor and recipient at rs893403, which are in full linkage disequilibrium with a deletion in LIMS1, and rejection of kidney transplants. This study aims to investigate whether the same association is seen in heart transplanted patients, as well as replicating the results seen in kidney transplanted patients.

METHODS: This is done by rs893403 genotyping of genomic DNA purified from pre-transplant blood samples, which systematically have been preserved at Aarhus University Hospital from at least 380 heart recipients along with matched donors. Along with clinical data, genomic data is examined under a recessive model (GG vs GA/AA) with both corrected and uncorrected odds ratios. Lastly, a subgroup of pre- and post-transplant serum samples are analyzed for LIMS1 antibodies using ELISA.

RESULTS: We hypothesis that a similar association between genomic incompatibility between donor and recipient at rs893403 and rejection is found in heart transplanted patient from Aarhus University Hospital.

CONCLUSION: If so, screening for LIMS1 genomic incompatibility could be implemented in routine settings and used along with current standards as a predictive value for rejection in kidney as well as heart transplant patients.

ACKNOWLEDGEMENTS: The project is internally funded and there are no financial interests.

P-4.12

Marcus Blanke

Investigating Stromal Subtypes in the Tumor Microenvironment of Localized Prostate Cancer Using Tissue Microarrays

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BACKGROUND: Prostate cancer (PC) patients can be treated by radical prostatectomy (RP), but ~30% relapse within 10 years. Inability to predict which patients will relapse leads to overtreatment of indolent PCs and undertreatment of aggressive PCs.

Recent research suggests that the stromal composition, especially cancer-associated fibroblasts (CAF), are crucial modulators of PC progression. Thus, we hypothesize that high-risk PC can be identified by the stromal composition and/or CAF prevalence.

METHODS: We will use tissue microarrays (TMA) from RP specimens (n=803) with 3 malignant cores and 2 adjacent normal (AN) cores per patient. Additionally, we will create a multifocal PC TMA from RP specimens (n=50) with 3 cores from 2 distinct PC foci, 3 AN cores and 3 premalignant cores per patient.

We will stain the TMAs by multiplex immunofluorescence (mIF) and thereby visualize 4 stromal and 4 CAF markers in parallel. By digital analysis, we will attain the localization and quantity of each marker.

RESULTS: No results are ready yet. Preliminary results will be presented at the conference.

CONCLUSION: We will investigate subtypes of PC stroma and CAF prevalence in relation to patient prognosis. Furthermore, we will investigate intra-tumor heterogeneity of pre-cancerous and cancerous lesions by mIF staining of the multifocal PC TMA.

We aim to develop a biomarker that can predict relapse after RP.

ACKNOWLEDGEMENTS: This research project is supported by The Independent Research Fund Denmark.

Orale sessioner

O.1 Mor-barn

O-1.1

Camilla Wibrand

A cross-sectional study of the correlation between ALAT-levels and methotrexate-induced nausea in juvenile idiopathic arthritis

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BACKGROUND: Methotrexate (MTX) plays a key role in the treatment of juvenile idiopathic arthritis (JIA), but MTX-intolerance (including nausea) is a significant clinical challenge (Brunner et al., 2005, Beukelman et al., 2011). MTX-treatment may affect the liver causing elevated levels of alanine aminotransferase (ALAT), and nausea is a common symptom of liver affection (Yassin et al., 2020). Our study aims to investigate the correlation between ALAT-levels during MTX-treatment and MTX-intolerance in JIA.

METHODS: 121 children aged 9 years or above, diagnosed with JIA and treated with MTX for at least 6 weeks, were enrolled (82 girls; 39 boys). MTX-intolerance was assessed on the date on enrollment using the Methotrexate Intolerance Severity Score (MISS) (completed by the children's parents) and defined as MISS ≥ 6 and at least 1 point for a behavioral/anticipatory/associative symptom. ALAT-levels were determined at the date of enrollment.

RESULTS: 72 children (60%) were MTX-intolerant (50 girls;22 boys). ALAT-levels did not differ between the MTX-intolerant group (mean = 29.8 [95%CI: 21.4-38.1]) and the MTX-tolerant group (mean = 29.4 [95%CI: 19.7-39.2]; p= 0.96). The MTX-intolerant girls had higher ALAT-levels (mean = 33.9 [95%CI: 19.9-47.8]) than the MTX-intolerant boys (mean = 19.4 [95%CI: 15.6-23.1]; p=0.05); and a higher MISS (mean = 14.5 [95%CI: 12.8-16.3]) than the MTX-intolerant boys (mean = 10.9 [95%CI: 8.8-13.1]; p=0.01).

CONCLUSION: Our results suggest a gender specific susceptibility to MTX-intolerance and elevated ALAT-levels.

ACKNOWLEDGEMENTS: Nothing to declare.

O-1.2

Mikkel Vilmand

Prenatal and current phthalate exposure and cognitive development in 7-year-old children from the Odense Child Cohort

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BACKGROUND: Phthalates are endocrine disturbing chemicals used in a variety of consumer products. Many human studies suggest a link between phthalate exposure and cognitive development, but few studies have addressed sex differences and the adverse effects of the newer phthalate substitutes and Danish children have not been examined. The aim of this study was to investigate associations between prenatal and current exposure to phthalates and IQ in 7-year-old children.

METHODS: Between 2010 and 2012, all newly pregnant women residing in the Municipality of Odense were offered participation in the Odense Child Cohort. Phthalate metabolites were measured in maternal urine samples during 3rd trimester and in urine samples from their offspring at age 7 years. IQ was assessed at age 7 years using Wechsler Intelligence Scale for Children. Associations between phthalate exposures and IQ were investigated using linear regression.

RESULTS: Phthalate exposure both in pregnant women and children was low compared to previous studies. The association between prenatal and current phthalate exposure and IQ were negative for most phthalates. Prenatal exposure to MEP and $\Sigma DEHP_m$ was significantly associated with lower IQ at age 7 years. In addition, current exposure to MCPP, $\Sigma DHxP_m$, $\Sigma DiDP_m$ and $\Sigma DiNP_m$ was significantly associated with lower IQ in children aged 7 years. Associations between prenatal exposure and IQ were stronger in girls.

CONCLUSION: We found associations between prenatal and current phthalate exposure and IQ at age 7 years in this low exposed population, which raise concern about the potential neurotoxic adverse effects of phthalates. More studies with repeated exposure assessment are urgently needed.

ACKNOWLEDGEMENTS: The technicians at Hans Christian Andersen's Children's Hospital are acknowledged for their careful examination of the children. The lab technicians at Clinical Pharmacology, Pharmacy and Environmental Medicine, University of Southern Denmark and Department of Growth and Reproduction, Rigshospitalet are acknowledged for their thorough work in analyzing the blood and urine samples. No conflict of interest to declare.

O-1.3

Lærke Hjøllund Hansen

Remote ischemic postconditioning as a neuroprotective treatment in a newborn piglet model of moderate to severe hypoxic-ischemic encephalopathy

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BACKGROUND: Therapeutic hypothermia (TH) is the only neuroprotective treatment for hypoxic-ischemic encephalopathy (HIE) in newborns. However, TH is only partly neuroprotective and additional treatments to supplement TH are needed. Remote ischemic postconditioning (RIPC) has been suggested to be neuroprotective in HIE. The combined effect of TH and RIPC is still unknown. The aim of this study is to compare RIPC combined with TH to TH alone in a piglet HIE model by MRI/MRS measures of brain damage.

METHODS: A global hypoxic-ischemic insult will be induced in 34 newborn piglets followed by randomization to TH+RIPC, TH alone, or supportive care only. RIPC will be conducted by occluding blood flow to both hind limbs for five minutes, followed by five minutes of reperfusion in four cycles. Our primary outcome will be Lac/NAA ratio measured by MRS in the thalamus, white matter, frontal- and occipital cortex. Secondary outcomes will be various MRI measures. Scans will be performed after 42 hours.

RESULTS: The last data will be collected in January 2021.

CONCLUSION: A conclusion is expected February 2022 and will be presented at the congress.

ACKNOWLEDGEMENTS: Nothing to declare.

O-1.4

Caroline Kleis Schmidt

A retrospective survey of the COVID19 pandemic's burden and related policies on East Danish NICUs

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BACKGROUND: On the 11th of March 2020, the World Health Organisation declared the novel coronavirus disease 2019 (COVID-19) a pandemic. The knowledge was limited regarding the risk of severe illness if especially preterm and sick newborn infants was infected. This uncertainty led most countries to issue guidelines based on a precautionary principle. The objective of this study was to investigate how the COVID-19 pandemic and related guidelines affected the neona-tal intensive care unit (NICU).

METHODS: Methods for collecting both qualitative and quantitative data were used. A qualitative design was applied with a focus group discussion (FGD) of COVID-19 Task Force members from East Danish NICUs. The interview was subsequently analysed and interpreted through thematical analysis according to Steiner Kvale's six steps of data analysis. Additionally, quantitative data was collected through an audit conducted by the Vermont Oxford Network to assess the impact of COVID-19 on infant care.

RESULTS: The audit disclosed that the number of COVID-19 cases on the audit dates was zero. Additionally, the audit displayed how the department experienced a shortage of personal protective equipment, testing kits, nurses, and physicians. The analysis of the FGD identified three themes: 1. The fear of a possible decline in values, 2. Knowledge sharing, and 3. Planning for the worst imaginable scenario. Furthermore, several opportunities to improve the collaboration between the NICUs are identified.

CONCLUSION: The results indicate that the prevalence of infants with confirmed COVID-19 was low. However, the restrictions relating to the pandemic severely challenged the departments' moral values. Furthermore, the study identifies sever-al areas of improvement for the departments' management of the pandemic.

ACKNOWLEDGEMENTS: The authors declare no conflict of interest.

O-1.5

Henriette Ladegård Skov

Inter-arm blood pressure differences in early pregnancy and the risk of preeclampsia

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BACKGROUND: One of the most frequent causes of maternal and fetal morbidity and mortality worldwide, is preeclampsia. Identifying women in risk of developing preeclampsia is central in the prevention of the disease. Blood pressure difference between arms, is found to be related to the risk of cardio-vascular disease, and since preeclampsia and cardio-vascular disease share risk factors, we hypotheses that blood pressure difference already in early pregnancy is associated to the risk of preeclampsia .

METHODS: The study is based on a Danish multicenter study including 8820 singleton pregnancies. Blood pressure was measured at the first trimester routine visit at an automated blood pressure station, guiding the patient to comply with international guidelines for measurements. Three simultaneous measurements were performed, and data were automatically stored in a RedCap Database. Furthermore, information on maternal characteristics, medical history and pregnancy outcome was collected.

RESULTS: Results have not yet been analyzed but will be presented at KMS 2022.

CONCLUSION: Results from the study can improve our insight to the pathology of preeclampsia, and potentially improve the algorithm in identification of women at increased risk of developing preeclampsia.

ACKNOWLEDGEMENTS: The project has received a scholarship of 120.000 DKK from Fonden af 17-12-1981. The research project is performed in collaboration with PhD-student Iben Riishede Christiansen, and Consultant PhD Charlotte Ekelund, Copenhagen who are involved in the national multicenter study PRESIDE (Preeclampsia Screening In Denmark) from which this project is based.

O-1.6

Emma Bendix

Assessment of an early screening method for late-onset preeclampsia: Apolipoproteins are poor predictors in early screening for late-onset preeclampsia

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BACKGROUND: Preeclampsia (PE) is a common pregnancy disorder affecting 5-8% gestations worldwide. Late-onset preeclampsia (LO-PE) is defined as the delivery after 34 weeks of gestation and is accounting for up to 90% of the cases. Studies suggest that dyslipidemia plays a role in the pathophysiology. This study assesses apolipoproteins as biomarkers for LO-PE at 11-14 weeks of gestation in combination with maternal characteristics, mean arterial pressure (MAP) and uterine artery pulsatility index (Uta-PI).

METHODS: This nested case-cohort study was based at the University Hospital of Odense, Denmark. Women attending their first trimester scan, above the age of 18, and had singleton pregnancies were invited to participate. Blood pressure, maternal medical history, uterine artery pulsatility indices and blood samples were collected at inclusion. Cases were selected when preeclampsia diagnostics were present. Blood samples were analyzed using an apolipoprotein panel by targeted mass spectrometry.

RESULTS: The cohort consisted of 27 cases and 194 controls. None of the apolipoproteins showed any significant difference ($p>0.05$). The Receiver Operating Characteristics Curves combining maternal characteristics, Mean Arterial Pressure and two apolipoproteins showed the best sensitivity of 59.2% and an Area Under the Curve of 0.87.

CONCLUSION: The study found no significant difference in any of the tested apolipoproteins. The combination of apolipoproteins, maternal characteristics and mean arterial pressure showed a minor improvement in detection of late-onset preeclampsia compared to other screening methods

ACKNOWLEDGEMENTS: This study was carried out as a sub-study of the multicenter study PRESIDE (Preeclampsia Screening In Denmark). Funding was primarily covered by the PRESIDE study which received grants for a total of 3.201 mil. DKK. Additional expenses for biochemical measurements were covered by

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O-1.7

Kjerstine Breintoft

Endometriosis and preterm birth: A Danish cohort study

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BACKGROUND: Emerging evidence has shown that women with endometriosis face a higher risk of preterm birth. However, the pathways are unclear. Preterm birth can be induced or spontaneous. We aimed to study the association between endometriosis and preterm birth while assessing the timing of preterm birth as well as investigating the pathways of preterm birth, including medically indicated preterm birth, preterm pre-labor rupture of membranes (PPROM), and preterm labor contractions.

METHODS: We included 82,743 births between 1989 and 2013 from the Aarhus Birth Cohort. By linking these data with the Danish National Patient Registry, the Danish Medical Birth Registry, the Danish National Pathology Registry and Data Bank, and the Danish IVF-registry we gathered information on endometriosis status and preterm birth. We performed logistic regression analyses and estimated adjusted hazard ratios with 95% confidence intervals.

RESULTS: Endometriosis was associated with preterm birth (OR: 1.6, 95% CI: 1.1-2.9) and very preterm birth (OR: 1.8, 95% CI: 1.1-2.9). Medically indicated preterm birth was more common in women with endometriosis among all preterm births (OR: 2.4, 95% CI: 1.8-3.2) while preterm labor contractions were more prominent among very preterm births (OR: 2.2, 95% CI: 1.1-4.5). Women with a biopsy verified diagnosis of endometriosis had an increased risk of PPROM in very preterm births (OR:3.5, 95% CI:1.4-9.0).

CONCLUSION: Endometriosis is associated with both preterm and very preterm birth which seems to be through different pathways.

ACKNOWLEDGEMENTS: Aarhus University Research Foundation

O.2 Epidemiologi

O-2.1

Simone Elmholt

Treatment results after anterior cruciate ligament reconstruction with adjustable-loop implants for femoral fixation - results from the danish anterior cruciate ligament reconstruction registry

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BACKGROUND: During anterior cruciate ligament reconstruction (ACLR) there are numerous implants, that can be used for femoral fixation of the graft. Newly developed button implants with an adjustable-loop (AL) are used more often. However, various results from biomechanical studies have led to concerns about clinical results. We wanted to investigate if AL implants was non-inferior compared to fixed-loop (FL) implants in terms of revision ACLR, knee stability and patient reported knee function after ACLR.

METHODS: This was a register-based cohort study. Data was obtained from the nationwide Danish Knee Ligament Reconstruction Registry (DKRR). We included a total of 14 866 patients: 10 894 in the FL group and 3 972 in the AL group, between July 2005 and December 2020. The primary outcome was revision ACLR. Secondary outcomes were objective knee stability measures (side-to-side difference and Pivot Shift test) and patient reported Knee Injury and Osteoarthritis Outcome Score (KOOS) at 1-year follow-up.

RESULTS: The adjusted cummulative revision rates for AL implants at 2 and 5 years was 2.29% (95% CI: 1.83%-2.86%) and 5.44% (95% CI: 4.66%-6.35%). In the FL group this was 2.27% (95% CI: 2.00%-2.58%) and 4.98% (95% CI: 4.56%-5.44%). The side-to-side difference at 1 year was 1.17mm in the AL group and 1.45mm in the FL group. 13% had a positive pivotshift test in the AL group and 22% in the FL group. In the patient reported KOOS outcome scores the AL group scored equal to or higher than the FL group.

CONCLUSION: ACLR with AL implants for femoral fixation was not inferior compared to FL implants regarding revision rates, knee stability and patient reported outcomes.

ACKNOWLEDGEMENTS: The authors declare no conflict of interest.

O-2.2

Andreas Søborg

Trends in underlying causes of death in solid organ transplant recipients

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BACKGROUND: Mortality rates of solid organ transplant (SOT) recipients have improved significantly over the past several decades but remain high. It is important to monitor specific underlying causes of death in this population to identify trends and emerging health challenges in this vulnerable group of patients.

METHODS: The study includes all SOT recipients transplanted at Rigshospitalet between January 1st, 2010 and December 31st, 2019. The underlying cause of death was determined using the newly developed Classification of Death Causes after Transplantation (CLASS) method. Cox regression analyses assessed risk factors for all cause and cause-specific mortality with deaths from other causes treated as competing risks.

RESULTS: Of the 1774 SOT recipients included, 299 died with cancer (N=57), graft rejection (N=55) and infections (N=52) being the most frequent causes.

A decrease in risk of death from all-causes (HR 0.91, 95% CI 0.86-0.96 per 1-year increase in transplant year), graft rejection (HR 0.84, 95% CI 0.74-0.95) and infection (HR 0.87, 95% CI 0.77-0.98) was observed. There was a trend towards lower cumulative incidence of death from all categories except other organ specific and non-organ specific causes.

CONCLUSION: All-cause mortality, death from graft rejection and death from infections among SOT recipients has decreased over the past decade. Conversely, causes from a broad range of diseases have remained unchanged, suggesting that cause of death among SOT recipients is increasingly diverse.

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O-2.3

Julie Dissing

PD-L1 does not predict duration of treatment in patients with EGFR mutated non-small cell lung cancer receiving tyrosine kinase inhibitor treatment

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BACKGROUND: Tyrosine kinase inhibitors (TKIs) are the standard treatment for disseminated non-small cell lung cancer (NSCLC) harboring mutations in the epidermal growth factor receptor (EGFR) gene. But response varies and resistance is inevitable. Studies of tumoral programmed death ligand-1 (PD-L1) as a biomarker for response yield conflicting results. We aimed to investigate if PD-L1 expression in the tumor correlates to the duration of treatment (DoT).

METHODS: We used Aarhus Lung Cancer Registry to identify patients with NSCLC that had received EGFR-TKIs for a minimum of 30 days. A tumoral PD-L1 status no older than 3 months at treatment start was required. PD-L1 expression was categorized as none (0%), low (1-49%) or high (≥50%). The log-rank test for equality of survival was used to calculate if DoT differed significantly between the groups. DoT was our primary end point because this reflects clinical practice more accurately than the use of PFS.

RESULTS: We included 111 NSCLC patients of any histology in our study. Patients were from either Herning or Aarhus. We compared DoT between the three different groups of PD-L1 expression. None of our calculations resulted in significant p-values (0% vs 1-100% (p-value=0.28), 0-49% vs 50-100% (p-value=0.1), 0% vs 1-49% vs 50-100%, (p-value=0.23)). We also investigated the potential of PD-L1 as a prognostic biomarker but found no correlation between expression levels and overall survival.

CONCLUSION: The literature is conflicting regarding the value of PD-L1 as a biomarker for EGFR-TKI treatment. Our study, which is the largest one conducted in Europe, show that tumoral PD-L1 does not correlate to duration of benefit from EGFR-TKIs. PD-L1 does not serve as a prognostic biomarker either.

ACKNOWLEDGEMENTS: Nothing to declare.

O-2.4

Sabine Jansson

Psychiatric disorders in paediatric onset inflammatory bowel disease - a nation-wide register study from Denmark

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BACKGROUND: Patients diagnosed with paediatric onset inflammatory bowel disease (pIBD) (including Crohn's disease [CD] and Ulcerative Colitis [UC]) often experience more severe disease courses compared to adults. Symptoms of anxiety and depression are commonly reported in pIBD, but data on comorbid psychiatric disorders are limited. In this nation-wide study, we investigate psychiatric disorders after pIBD diagnosis.

METHODS: Patients with >1 diagnosis of pIBD before the age of 18, were identified from the Danish National Patient Registry (DNPR) 1996-2018. Up to 10 eligible controls without pIBD matched on age, sex, and place of residence were selected for each case. Psychiatric disorders were identified from the Danish Psychiatric Central Research Registry and the DNPR. Cox regression adjusted for age, sex and year of diagnosis was used to estimate adjusted hazard ratios (aHR) with 95% confidence intervals (CI).

RESULTS: We included 4190 pIBD cases (49% male) and 38289 controls without a prior psychiatric disorder. Median age (years) at pIBD diagnosis was 15 (interquartile range [IQR]: 12-17] and at psychiatric disorder 19 (IQR: 16-23). During follow-up, the cumulative incidence rate of psychiatric disorders in pIBD was 826 (19.7%) and for controls 4957 (12.9%) corresponding to an aHR of 1.6 (95%CI: 1.5-1.7). The cumulative incidence was 457 (21.5%) in CD and 365 (17.8%) in UC.

CONCLUSION: Patients with pIBD had an increased risk of psychiatric disorders compared to controls. The cumulative incidence was higher in patients with CD than patients with UC. It is important for physicians to be attentive to the mental health problems when caring for pIBD patients.

ACKNOWLEDGEMENTS: S. Jansson was supported with a research year scholarship from the Lundbeck Foundation.

O-2.5

Lotte Bjerre Lassen

Parents' socioeconomic position does not affect the accuracy of the treatment of their children in out-of-hours primary care: a combined observational and register-based study

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BACKGROUND: Parents' socioeconomic position (SEP) affects the health of their children. People with low SEP contact out-of-hours (OOH) primary care more frequently than those with high SEP. It is unclear whether people with lower SEP get the help they need at the OOH primary care. Thus, we aimed to study if parents' SEP affects the correctness of the level of care provided to their children by telephone triage in OOH primary care.

METHODS: Calls to OOH primary care services in Denmark were retrieved over a two-week-period in 2016. A panel of doctors rated the accuracy of the assigned level of care. We supplemented this data with register data from Statistics Denmark on the parents' ethnicity, educational level, labour market affiliation, and household disposable income. We performed logistic regression analyses on 382 calls to examine associations between the socioeconomic parameters and the accuracy of the assigned level of care.

RESULTS: Our findings suggest that the health care professionals at the Danish OOH primary care system handle children equitably regardless of their parents' SEP. Also, suboptimal care does not seem to explain the high number of contacts from parents with low SEP.

CONCLUSION: We found no statistically significant associations between any of the socioeconomic parameters and the accuracy of the level of care.

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O-2.6

Martin Brink Termansen

SARS-CoV-2 prevalence and transmission in swimming activities: results from a retrospective cohort study

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BACKGROUND: Because of limited knowledge and an unpredictable behavior of coronavirus, the extent of transmission of SARS-CoV-2 in swimming activities compared to other sports and leisure activities is still debated. Indoor swimming has conditions similar to other indoor activities for transmission by droplets and close contact. However, the aquatic environment may affect transmission rates.

METHODS: Here we report on a questionnaire-based, nationwide, retrospective cohort study of swimming activities in Danish swimming clubs in the last five months of 2020. Geographically, this survey covered all five Danish regions. The sampling frame was the Danish Swimming Federation's official list of member clubs (n = 298). The primary outcome was the fraction of swimming episodes with SARS-CoV-2 positive participants that resulted in other participants subsequently testing positive for SARS-CoV-2.

RESULTS: Based on replies from 172 Danish swimming clubs, eight of 162 swimming activities with a SARS-CoV-2 positive participant led to transmission to 23 other participants. Overall, the percentage of episodes leading to transmission was 4.9% (competitive swimming 8.9%; recreational swimming 1.3%). Overall, the incidence rate of transmission was 19.5 participants per 100,000 pool activity hours (corresponding values: 43.5 and 4.7 for competitive and recreational swimming, respectively).

CONCLUSION: The generalizability of the results is limited by the special circumstances during the opening of Danish swimming activities in 2020. Nonetheless, the results provide a unique overview of disease transmission in a large cohort taking part in swimming activities during the COVID-19 pandemic.

ACKNOWLEDGEMENTS: The Danish Swimming Federation is thanked for collaborating in this study by distributing the questionnaire to its member clubs, sending out reminders and performing follow-up phone calls. The authors further would like to thank development consultant Lars Bo Larsen of the Danish Swimming Federation for sharing his expertise and knowledge on organized swimming activities in Denmark.

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O-2.7

Jonas Busk Holm

Obesity, type 2 diabetes, and breast cancer prognosis

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BACKGROUND: The prevalences of obesity, type 2 diabetes (T2D), and breast cancer (BC) are on the rise. Obesity and T2D are associated with an impaired prognosis in BC patients. However, the associations, including biological explanations, are incompletely mapped. This study aims to advance knowledge regarding the interplay between obesity, T2D, and BC investigating baseline circulating levels of obesity- and T2D-related biomarkers (e.g. IL6, MCP1, and TNFα).

METHODS: All female BC patients (stage I-III) seen at the Dept. of Plastic and Breast Surgery, Aarhus University Hospital between Mar 1st, 2010 and Aug 31st, 2020 were invited (N=4,190). Blood samples were ascertained at diagnosis and stored at the regional biobank. Baseline and prospectively collected follow-up data are ascertained from medical records and the Danish Breast Cancer Group database. We will examine the association of baseline levels of each biomarker with disease-free and overall survival.

RESULTS: After enrolment, 851 patients were excluded. Four patients withdrew their consent, 194 are not registered in the Danish Breast Cancer Group database, 283 presented with carcinoma in situ only, 90 had a previous cancer history/co-existing cancer, and 280 were registered in the Danish Breast Cancer Group database before Mar 1st, 2010. In total, 3,339 patients constitute the final study cohort. Further preliminary results will be presented at KMS 2022.

CONCLUSION: This study will enhance the knowledge of the association between obesity, T2D, and BC. The study is expected to promote identification of the patients likely to have an inferior prognosis, who may benefit from heightened clinical care.

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O-2.8

Marine Sølling Ramsing

Statins in alcohol-related liver cirrhosis – users, usage, and outcome

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BACKGROUND: Statins reportedly increase the survival of patients with cirrhosis due to alcohol-related liver disease (ALD cirrhosis) but may be underutilized due to fear of hepatotoxicity. Statin usage within this population is largely unknown.

We aim to examine time-trends in prevalence of statin use and predictors of statin initiation among patients with ALD cirrhosis. We further aim to estimate all-cause mortality and risk of hospitalization among users vs. nonusers.

METHODS: We will conduct a nationwide cohort study, including all Danish citizens receiving their first diagnosis of ALD cirrhosis (ICD-10: K703 and K704) between 1995 and 2019. Predictors of statin-usage among demographic and socioeconomic variables (employment, marital status, and educational level) will be identified. We will examine if the prevalence and the predictors change over time, and estimate hazard ratios for hospitalization and all-cause mortality in users vs. nonusers with Cox regression.

RESULTS: We have identified >30,000 patients diagnosed with ALD cirrhosis and will soon present prevalence and predictors of becoming a statin user and how those characteristics have changed during the last 25 years.

CONCLUSION: As statins are widely used and may improve survival among patients with ALD cirrhosis, a characterization of users, usage, and outcome is needed.

ACKNOWLEDGEMENTS: Nothing to declare.

O.3 Grundforskning

O-3.1

Benedicte Bech Andersen

Itaconate – a glucose metabolite with anti-inflammatory properties in Rheumatoid Arthritis – a novel treatment option

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BACKGROUND: Rheumatoid arthritis (RA) is the most prevalent inflammatory joint disease, robustly linked to immune dysregulation. A complex dysfunction of the immune response is considered vital for the pathogenesis. The aim of the project is to further examine and validate the anti-inflammatory effects of the natural glucose metabolite itaconate in RA. This project will add important knowledge on how cell metabolism plays a role in both leukocytes and inflammatory fibroblasts during inflammation.

METHODS: To examine and further validate prior findings we used in vitro models of RA. Plasma and synovial fluid was collected from patients with RA and from healthy individuals. These samples were examined using ELISA, Western Blotting and V-PLEX. Furthermore, both mono- and co-cultures of arthritis-derived fibroblast-like synovial cells and peripheral blood mononuclear cells were examined.

RESULTS: Our current data indicates that itaconate is effective in disease-modulating treatment of RA. We found that itaconate reduced production of Monocyte Chemoattractant Protein-1 (MCP-1). Furthermore, the measured decrease in MCP-1, was more prominent than that of Anti-TNF and corticosteroids which are both used in clinical treatment of RA, today. In addition, we found that the cells did not change their phenotypical expression after treatment, which does indicate that itaconate is safe to use.

CONCLUSION: Our findings are supported by a study by Mills et al., where it was also indicated that itaconate is involved in dampening inflammation. Our results are produced under controlled and limited circumstances and needs further validation using both in vitro and in vivo models such as mouse models of RA.

ACKNOWLEDGEMENTS: Gigtforeningen, DK.

O-3.2

Frederik Duch Bromer

The effect of bimagrumab on muscle and bone in healthy and immobilization-induced osteopenic and sarcopenic mice

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BACKGROUND: Bimagrumab is one of a series of recently discovered drugs that target the activin receptor. Drugs inhibiting the activin receptor pathways have shown potent stimulation of bone formation, skeletal muscle cell hypertrophy, and increased hematopoiesis. Bimagrumabs effect on muscle has been well documented, but its effect on bone remains unexplored. Thus, the aim of this study was to investigate the effects of bimagrumab on muscle and bone in ambulating mice and in osteopenic and sarcopenic mice.

METHODS: Mice were randomized into 5 groups (n=12 for each): 1) Baseline, 2) Control, 3) Bimagrumab, 4) Botulinum toxin A (BTX), and 5) BTX+Bimagrumab. BTX was injected into the rectus femoris muscle and gastrocnemius muscle of the right hindlimb. This causes paralysis of the limb leading to disuse-induced osteopenia and sarcopenia. The muscle mass of the rectus femoris muscle was determined by weighing. The femoral distal metaphysis and mid-diaphysis was analyzed with DEXA, µCT, and mechanical testing.

RESULTS: As expected, BTX injection resulted in a significant deterioration of bone at both the metaphysis (bone volume fraction (BV/TV): −49.9%) and diaphysis (bone area: −13.8%) as well as a reduction of skeletal muscle mass (−49.4%). Bimagrumab caused increased BV/TV for both ambulating (64.9%) and osteopenic (44.3%) mice at the distal femoral metaphysis. The bone parameters did not differ at the mid-diaphysis. Furthermore, bimagrumab caused a large increase in muscle mass in ambulating mice (22.0%).

CONCLUSION: Treatment with bimagrumab caused significant bone formation in trabecular, but not in cortical bone for both healthy and osteopenic mice. Moreover, bimagrumab treatment caused increased skeletal muscle mass in ambulating animals but did not counteract the BTX-induced atrophy of skeletal muscle mass.

ACKNOWLEDGEMENTS: The authors are thankful for the excellent technical assistance provided by Jytte Utoft. This study was supported by Riisfort Fonden. Authors declare no competing interests.

O-3.3

Zaka Humlesen

Flowmotion analysis in the mouse brain after ischemia and reperfusion

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BACKGROUND: Flowmotion originates from rhythmic oscillations in vascular diameter, i.e. vasomotion, and has been suggested to improve oxygenation and clearance in cerebral parenchyma. However, appearance of cerebral flowmotion, their mechanistic background and contribution to pathologic conditions is a topic of debate. In this project, we aimed to assess flowmotion before, during and after ischemic stroke mice using Laser Speckle Contrast Imaging.

METHODS: 12 week old mice (N=5) were exposed to ischemic stroke by transient (1 hour) middle cerebral artery occlusion followed by 2 hours of reperfusion. Cerebral blood flow and parenchymal perfusion was measured before, during and after cerebral ischemia using Laser Speckle Contrast Imaging through a cranial window. Region specific blood flow dynamics were analyzed for flowmotion using fast fourier transformation (FFT) with a custom-made script in Matlab.

RESULTS: Pronounced flowmotion was observed at ~0.5Hz both in LSCI and blood pressure data. The observed flowmotion does not originate from vasomotion in the brain, but rather seems to be the consequence of animal respiratory system reacting to intubation and anesthesia. Importantly, this activity cannot be identified without temporal dynamics, i.e., it might be present in other similar experiments. It is therefore an important thing to control for, if cerebral blood flow is to be analyzed correctly.

CONCLUSION: While it does not answer the original questions on vascular reactivity in stroke, the results highlight the importance of proper experimental design and surgical preparation when studying vasomotion. The next step would involve administering a muscle relaxant to localize the source of the activity.

ACKNOWLEDGEMENTS: Nothing to declare.

O-3.4

Kathrine Friis

In vitro Investigation of the Role of NCBE in Inflammation Induced Cerebrospinal Fluid Hypersecretion by the Choroid Plexus

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BACKGROUND: Post-hemorrhagic hydrocephalus (PHH) can be the result of inflammation or deposition of $FeCl_3$ in the choroid plexus (CP) after intraventricular hemorrhage (IVH). The hemorrhage leads to increased CSF secretion from the CP also known as the blood-CSF-barrier (BCSFB). The precise molecular mechanism is unknown, but the Na^+ dependent Cl^-/HCO_3^- exchanger, NCBE, located in the basolateral membrane of the CP epithelia has been suggested as a possible facilitator of CSF hypersecretion.

METHODS: An in vitro model of the BCSFB was established and validated. The model was generated from mouse pup CP epithelial cells. The cells were treated with either TNF-a, IL-1b, LPS or $FeCl_3$. NCBE protein expression of the CP epithelial cells was determined by immunoblotting.

RESULTS: The CP cultures showed characteristic morphology, polarization and tight barrier with TEER values of 100 $\Omega*cm^2$ and tight junctions. Compared with controls TNF-a and IL-1b decreased NCBE expression by 23.8 % and 28.3 % after 24 h ($p=0.0048$, $=0.0018$) persisting for IL-1b with a decrease of 88.5 % after 3 and 82.4 % after 7 d ($p<0.001$, $=0.0035$). LPS had no effect on NCBE expression. $FeCl_3$ increased NCBE expression by 52 % after 24 h ($p=0.024$) followed by a decrease of 57.8 % after 7 d ($p=0.045$).

CONCLUSION: In conclusion, NCBE expression of the CP epithelium in cultures decreases under pro-inflammatory conditions and increases after $FeCl_3$ deposition. Further studies are needed to define the pathways that lead to regulation of NCBE following hemorrhage.

ACKNOWLEDGEMENTS: Nothing to declare.

O-3.5

Tobias Jensen

Impaired urine base excretion in the secretin-receptor KO mouse

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BACKGROUND: We recently defined the molecular mechanism of secretin-mediated urine base excretion. Secretin can activate the β-intercalated-cells (β-IC) of the cortical collecting duct (CCD) to secrete HCO_3. This cellular function is fully dependent on the apical Cl^-/HCO_3^- exchanger SLC26A4 (pendrin) in tandem with CFTR. Here, we revisited this topic and studied the global secretin receptor (SCTR) KO mouse. Specifically, we asked if SCTR KO mice were able to acutely increase renal HCO_3^- excretion.

METHODS: In metabolic cages, SCTR KO and WT mice were challenged with 112mM gavage base load and their net base excretion was studied for 3h. In bladder-catheterized mice, the effect of i.p. injection of secretin (5 µg/25 g BW) on urine pH was studied. Pendrin activity was determined in micro perfused CCD by measuring pH in B-ICs after fast removal and re-addition of luminal Cl. Pendrin function was measured in two perfusion studies, one with direct secretin application and one with a 24 hour base load

RESULTS: SCTR KO mice had a strongly diminished ability to increase net base excretion following an oral base load. In SCTR KO mice acute application of secretin had no effect on urine pH, whereas WT mice showed a markedly urine alkalizing effect. Secretin stimulated pendrin function in B-ICs of WT mice and this was completed absent in KO mice. The 24h base loading protocol up-regulated pendrin function in both the WT and the KO animals. Interestingly, this upregulation was reduced in the SCTR KO mice.

CONCLUSION: The SCTR is of pivotal importance to permit acute HCO_3^- excretion into the urine. In its absence, the β-ICs cannot acutely increase pendrin function. A more chronic adaptation appears to be partially dependent on the SCTR, although a substantial pendrin up-regulation is still functional.

ACKNOWLEDGEMENTS: Nothing to declare.

O-3.6

Henriette Nymark Friis

Establishment of a highly sensitive ELISA to evaluate soluble LILRB1 as a biomarker in cancer patients

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BACKGROUND: Leukocyte immunoglobulin-like receptor subfamily B member 1 (LILRB1) is an immunoinhibitory receptor expressed on macrophages. Ligand binding deactivates macrophages which is exploited by cancer cells. A splice variant of LILRB1 results in a soluble form of LILRB1 (sLILRB1). This soluble protein could potentially function as a negative regulator of the LILRB1-MHC-I axis and has potential as a cancer biomarker.

METHODS: A sandwich ELISA for sLILRB1 measurement was established and validated. A number of commercial antibodies were tested in combinations under varying incubation conditions. Recombinant LILRB1 was used as calibrator. Serum standard material was used as internal control. Healthy serum samples were obtained from 120 blood donors.

RESULTS: The optimized assay had a low detection level (<0.0625µg/L). Serum soluble LILRB1 was very stable. No loss in reactivity was detected through freeze/thaw-cycles or samples left at 2 weeks at 22°C and 4°C. All healthy individuals had measurable sLILRB1, ranging from 6.3 to 82.1 µg/L. A 95% reference interval was calculated to 7.5-19 µg/L. Women had slightly higher sLILRB1 level than men (12.32 vs. 11.36, p = 0.04). sLILRB1 increased with age in women (p=0.0026), but not in men (p = 0.76).

CONCLUSION: We have established a robust method to measure sLILRB1 in human serum samples. sLILRB1 is stable and can be determined in all individuals. The assay is ideal for investigating sLILRB1 as a cancer biomarker in clinical studies.

ACKNOWLEDGEMENTS: The project is supported by the Department of Clinical Biochemistry, Aarhus University Hospital.

O-3.7

Pernille Lajer Sørensen

A Novel Animal Model in Diabetes: Regeneration of β cells in the Axolotl Salamander?

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BACKGROUND: Type I diabetes is characterized by loss of pancreatic β cells. Humans have a poor ability to regenerate β cells, empathizing the importance of conducting research in regenerative medicine. This field of study is limited by the animal models available due to their inadequate intrinsic ability to regenerate, size and/or remoteness from humans. As the axolotl (Ambystoma mexicanum) has an intrinsic regenerative ability, it is an advantageous animal model for studying β cell regeneration.

METHODS: To generate a diabetic axolotl, streptozotocin was injected intraperitoneally. Four protocols were tested. Group 1 was given 0.35 mg/g body mass at day 0, 1, 2, 11, and 18, group 2 was treated with 0.05 mg/g body mass at 5 consecutive days, group 3 was given 0.05 mg/g body mass at day 0, 2, 4, 12, and 19, and group 4 was given a single dose of 0.2 mg/g body mass. Disease development was detected by glucose tolerance tests and will be studied by immunofluorescence.

RESULTS: We found that the treatment given to group 1 caused high mortality, resulting in premature termination of the experiment. However, the dosage regimes used on group 2 and 3 resulted in diabetes-like symptoms when compared to a control group. Group 3 resulted in low-grade hyperglycemia, whereas the 5 consecutive injections given to group 2 caused moderate hyperglycemia.

CONCLUSION: Our results demonstrate that the axolotl is able to develop diabetes-like symptoms by streptozotocin treatment. We anticipate that the diabetic axolotl will be able to regenerate the lost β cells, and that this animal model will be useful for studying the mechanisms of regeneration.

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O.4 Intern medicin og kirurgi

O-4.1

Christina Harlev

Penetration depth and tissue concentration of cisplatin in relation to temperature and treatment time in a HIPEC procedure. Assessment in a novel experimental pig model

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BACKGROUND: Peritoneal metastasis origination from gynaecological malignancies are associated with poor prognosis and rapid disease progression. Previous studies have shown that cytoreductive surgery combined with hyperthermic intraperitoneal chemotherapy (HIPEC) is an effective treatment option with curative intent. Important basic factors for the HIPEC treatment like penetration depth in relation to temperature, chemotherapeutic agents and treatment time remains poorly investigated.

METHODS: The aim of this study is to develop a novel, reproducible and valid large porcine model to dynamically assess concentrations of the chemotherapeutic drug, Cisplatin, simultaneously from various target tissues by means of microdialysis. Microdialysis is a catheter-based sampling method that allows for continuous sampling of the unbound drug fraction in a range of different tissues over time. The concentration of cisplatin in dialysates will be estimated by the use of an UHPLC-MS.

RESULTS: To establish this novel porcine model the experiment will be performed on 8 porcine. To this date 3 out of 8 operations have been performed and we have received data from these. The last 5 experiments will be performed in January and the results will be ready for presentation at KMS. So far we have seen lower local concentrations than expected but an even distribution throughout the abdominal tissue.

CONCLUSION: At this point it is too early to draw any conclusions. Once the model is established, factors such as the duration of the HIPEC procedure and temperature of the cytotoxic solution that may affect the local chemotherapeutic penetration in abdominal tissue during HIPEC will be studied.

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O-4.2

Elisabeth Solmunde

Breast cancer and subsequent risk of hypothyroidism: a systematic review and meta-analysis

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BACKGROUND: Radiation therapy (RT) treatment for breast cancer (BC) may increase the risk of late effects, such as hypothyroidism (HT). We conducted a systematic review and meta-analysis to investigate the association between BC, focusing particularly on BC-directed RT, and the risk of HT in BC survivors.

METHODS: Through February 2021, we searched PubMed and Embase to identify papers on BC, BC-directed RT and subsequent risk of HT. We screened by title and abstract and reviewed relevant articles for eligibility. We used a data extraction sheet and evaluated the risk of bias using the STROBE guidelines. The main outcome was the confounder-adjusted relative risk (RR) of HT. We used a random-effects model to calculate pooled RRs and associated 95% confidence intervals (95%CI).

RESULTS: From 448 papers screened, 19 studies published between 1985 and 2021 were eligible for inclusion. All but five papers were cohort studies. The pooled RR of HT in BC patients was 1.18 (95% CI= 1.11, 1.26). BC patients treated with RT had increased risk of HT compared with BC patients without RT (RR=1.18, 95%CI=1.04, 1.32). Among BC patients treated with RT, highest risk of HT was associated with RT to the supraclavicular (SC) region (RR=1.34, 95%CI=1.01, 1.67).

CONCLUSION: Our study suggested an elevated risk of HT in BC patients, especially for RT to the SC field. Oncologists should be aware of this and if possible, institute preventive measures like delineating and minimizing radiation dose to the thyroid gland and/or following the patients with thyroid blood tests.

ACKNOWLEDGEMENTS: No acknowledgements

O-4.3

Hannah Gilliam-Vigh

Mucosal neurotensin mRNA levels and N cell density along the intestinal tract in patients with type 2 diabetes and healthy controls

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BACKGROUND: Neurotensin is released from enteroendocrine N cells. In rodents, neurotensin lowers food intake and stimulates insulin release. In humans, postprandial neurotensin responses increase after Roux-en-Y gastric bypass implicating the hormone in the glucose and body weight-lowering effects of these operations. We examined the mucosal expression profile of neurotensin and neurotensin receptors as well as N cell density along the intestinal tract in patients with type 2 diabetes and healthy controls.

METHODS: Mucosal biopsies taken from the entire length of the small intestine (with 30 cm intervals) and from seven anatomically well-defined locations in the large intestine using double-balloon enteroscopy in 12 patients with type 2 diabetes and 12 gender, age and body mass index-matched healthy controls were analysed using full mRNA sequencing and immunohistochemistry.

RESULTS: Gradual increases in neurotensin mRNA levels and N cell density were observed from duodenum to ileum in both groups; negligible number of neurotensin-positive cells and neurotensin mRNA were found in the large intestine. Compared to controls, patients with type 2 diabetes had non-significantly lower levels of neurotensin mRNA expression and N cell density in the small intestine. Neurotensin-receptors were undetectable.

CONCLUSION: We demonstrate increasing neurotensin mRNA expression and N cell density along the small intestine and low neurotensin mRNA expression and N cells in the large intestine. Non-significantly reduced small intestinal neurotensin mRNA levels and N cells were found in patients with type 2 diabetes.

ACKNOWLEDGEMENTS: Nothing to declare

O-4.4

Karoline Domela Kjøller

Falcarinol's impact on the FIT value and colorectal inflammation in false-positive patients of the Danish colorectal cancer screening program: a randomized clinical trial

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BACKGROUND: Many colorectal cancer lifestyle risk factors have long been associated with increased inflammation and COX coding genes are seen over-expressed in colorectal cancer. Falcarinol derived from carrots functions as a COX-2 inhibitor and has in rodent studies shown to reduce risk of development of precancerous lesions in the colon. This is the first study to examine the chemopreventive effect of falcarinol in humans and is investigated through inflammatory changes in blood biomarkers and FIT value.

METHODS: In this double-blinded clinical trial, 96 endoscopically verified false-positive patients of the danish colorectal cancer screening program were randomized into two groups. The groups were to supplement their daily dietary intake with either 30g of purple carrot powder, with a high concentration of falcarinol, or beetroot powder as placebo over 21 days. Blood samples were drawn after 21 days as well as FIT values to be compared to baseline samples.

RESULTS: The preliminary data do not indicate any significant changes in the FIT value in the carrot group compared to the placebo group. The remaining data is still pending and will be assessed and ready for presentation at KMS2022.

CONCLUSION: As of December 2021 no conclusions have been made.

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O-4.5

Emma Julie Hvidberg

Morphology of the Knee Joint after Tension-Band Plating

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BACKGROUND: Tension-band plating, i.e. eight-plates is commonly used to correct coronal angular limb deformities in children. The technique consists in tethering of the physis peripherally while allowing the rest of the physis to grow normally. Changes in joint morphology have been observed after epiphysiodesis using eight-plates. Therefore, it seems relevant to investigate if joint morphology also changes after temporary hemiepiphysiodesis.

METHODS: A retrospective study was performed on knee radiographs of 38 children. All patients undergoing temporary medial hemiepiphysiodesis using eight-plates from 2015–2020 were included. The patients were assigned to two groups, tibial and femoral, according to anatomic insertion. Medial and lateral slope angles of the tibial plateau, tibial roof angle and femoral notch angle were measured. Mean differences between pre- and post-operative values were estimated with confidence intervals and p-values.

RESULTS: 74 eight-plates on 69 knees were identified (femur 67, tibia 7) in 38 children. Mean insertion time was 13 months (95% CI: 12–14). Mean change of medial tibial and lateral slope angles was 0.45° (-1.83 –2.74) and 0.79° (-1.63–3.2). Mean difference in roof angle was -1.24° (-2.77–0.28) in the tibial group. Mean change in femoral notch angle was -1.2° (-3.3–0.91). ICC value for the femoral notch angle was 0.84 (0.49–0.99).

CONCLUSION: No alterations of the knee joint morphology were observed after temporary hemiepiphysiodesis with the insertion of eight-plates. It is safe to use eight-plates for hemiepiphysiodesis when correcting coronal limb deformities in children without changing the knee joint morphology.

ACKNOWLEDGEMENTS: Nothing to declare.

O-4.6

Marie Ingemann Pedersen

Benign Pancreatic cystic Lesions – Development of a Regional Follow-up Algorithm

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BACKGROUND: The frequent use of diagnostic imaging, has increased the detection of pancreatic cystic lesions. These represent a clinically challenging entity due to a risk of malignancy or malignant transformation. This study's objective was to investigate the clinical impact of the implementation of a pancreatic cyst multidisciplinary team conference (MDT) for all included patients and furthermore this study led to the development of a Regional Follow-up Algorithm.

METHODS: A retrospective follow-up design, was conducted comprising 455 patients all evaluated at the MDT conference from December 1st 2019 to November 31st 2020. All patients had diagnostic imaging done, with a pancreatic cyst as an incidental finding. The MDT recommendations were either enrollment in a surveillance program, further diagnosis, surgery or no further follow-up. A REDcap database was used to collect patient data, from medical records, for statistical analysis.

RESULTS: Study results showed a surprisingly low 6-month cyst-growth rate. Patients with a cyst below 10 mm and a branch duct intraductal papillary mucinous neoplasm had a significantly low risk of malignancy indicating that this patient group do not need to be re-evaluated at the MDT-conference. The ultimate consequence of the MDT was surgery. The success rate of identifying the right surgical candidates was 82%.

CONCLUSION: Based on the results, changes to the current MDT guidelines were suggested, leading to a draft of a new regional follow-up algorithm. The changes are believed to increase the efficacy of the MDT conference in order to avoid unnecessary scans and patient follow-up.

ACKNOWLEDGEMENTS: Nothing to declare.

O-4.7

Steffen Sørensen

Evaluation of Renal Oxygenation by BOLD-MRI in High-Risk Patients with Type 2 Diabetes and Matched Controls

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BACKGROUND: Chronic hypoxia is suggested to be one of the main drivers in the development of diabetic kidney disease. Recently the non-invasive method Blood Oxygenation Level Dependent Magnetic Resonance Imaging (BOLD-MRI) has made in vivo investigation of renal oxygenation in humans possible. This study investigated whether renal oxygenation differs between people with type 2 diabetes mellitus (T2DM) and matched controls measured with BOLD-MRI in addition to investigation of the repeatability of BOLD-MRI.

METHODS: The study is a matched cross-sectional study, in which the repeatability of BOLD-MRI and the TLCO method is also investigated. We included 20 participants with T2DM and 20 controls, matched in pairs on sex (1:1), age (maximum difference at 6 years) and cardiovascular disease (CVD). Participants with established CVD were paired and participants with only risk factors for developing CVD were paired. Scans were obtained on a GE DISCOVERY MR750 3.0 Tesla MR-scanner with a 32-channel body coil.

RESULTS: A significant reduction in renal oxygenation from cortex to medulla was found in both groups $P<0.01$, but no inter-group difference was detected. Mean difference 0.71[s-1], CI (-0.28–1.7) [s-1], $P=0.16$, indicating highest oxygenation in the patients with T2DM. Median intra individual coefficient of variation (CV) varied from 1.2% to 7.0% depending on layer no. and group.

CONCLUSION: T2DM per se, does not seem to cause lower renal oxygenation compared with non-diabetic controls as measured with BOLD-MRI and analyzed with the TLCO method.BOLD-MRI combined with TLCO seems like a reliable method for investigation of renal oxygenation in both T2DM and controls.

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O.5 Hjerte-lunge

O-5.1

Nareen Kader

Prognostic value of index of contractile asymmetry (ICA) in cardiac resynchronization therapy

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BACKGROUND: This study sought to investigate the prognostic survival value of the never seen before model: Index of contractile asymmetry (ICA) when selecting left bundle branch block (LBBB) heart failure (HF) patients for cardiac resynchronization therapy (CRT).

Currently, electrical rather than mechanical parameters of delayed left ventricle (LV) activation are used for patient selection. Still, approximately one-third of HF patients do not benefit from CRT despite matching selection criteria.

METHODS: Patients with HF and LBBB undergoing CRT (n = 367, 31.6% females, 73 +/- 9 years, ischemic etiology in 51%, LV ejection fraction 27 +/- 6%) were analyzed in this study. ICA was calculated using LV strain rate values from curved anatomical M-mode plots 2D-echocardiography images.

RESULTS: Survival probability over time was found significantly higher in groups of patients with high baseline ICA-values than patients with low baseline ICA values. Within the group of high baseline ICA values even inclusion of sex and chronic kidney disease only played some role in overall mortality assessment.

CONCLUSION: Modelling and quantification of the left ventricle accordingly to ICA in LBBB caused HF patients can be used as a prognostic tool when selecting patients for CRT.

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O-5.2

Thomas Jensen

Long-term antithrombotic treatment one year after percutaneous coronary intervention in patients with coronary artery disease and atrial fibrillation

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BACKGROUND: One-third of patients with atrial fibrillation (AF) have coronary artery disease and may require percutaneous coronary intervention (PCI). After this, guidelines recommend up to 12 months of dual therapy, using anticoagulant and antiplatelet therapy, followed by oral anticoagulant monotherapy. However, the effects of this remain uncertain. We examined bleeding and ischemic events in patients treated with mono- and dual therapy. We further compared DOAC to vitamin K antagonist (VKA) monotherapy.

METHODS: We included consecutive patients with AF undergoing first-time PCI between 2003 and 2017 in Western Denmark. To compare monotherapy to dual therapy, we included 3,331 patients undergoing PCI. In analyses comparing monotherapies, we included 1,275 patients undergoing PCI. Patients were included 15 months after PCI and followed for up to four years. Endpoints were hospitalization for bleeding and major adverse cardiac events (MACE) including ischemic stroke, myocardial infarction, and death.

RESULTS: Median age was 75 years, and the groups had similar baseline characteristics. Compared with dual therapy, monotherapy was associated with similar risks of bleeding (HRw 0.90, 95% confidence interval [CI]: 0.75–1.09) and MACE (HRw 1.04, 95% CI: 0.90–1.19). Likewise, DOAC and VKA monotherapy were associated with similar risks of bleeding (HRw 1.27, 95% CI: 0.84–1.92) and MACE (HRw 1.15, 95% CI: 0.87–1.50).

CONCLUSION: In agreement with current guidelines, our results support long-term OAC monotherapy in stable AF patients after PCI and suggest that DOAC use is as safe and effective as VKA monotherapy in this setting.

ACKNOWLEDGEMENTS: Nothing to declare.

O-5.3

Martin Thomsen

High vs low measurement frequency during 24-hour ABPM: A randomized controlled crossover study

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BACKGROUND: Current guidelines for 24-hour ambulatory blood pressure monitoring (ABPM) recommend 2-4 cuff-inflations per hour. A previous non-randomized study found that the average systolic blood pressure (SBP) was significantly lower when the ABPM device measured with a low frequency (LF) of cuff inflations, as compared with a high frequency (HF). The purpose of this study is to describe the effect of cuff inflations on measured SBP during ABPM in a randomized set-up.

METHODS: Patients are randomized to their first ABPM with either HF or LF measurements. A second ABPM using the other measurement frequency is then conducted 3-14 days after the first measurement. Patients are instructed to have similar activities during both days of measurement and no changes in medication are allowed between the two measurements. We calculated the need for a sample size of 150 patients.

RESULTS: When writing this abstract, 32 patients with normotension, 37 with mild HT, 23 with moderate HT, and 2 with severe HT have finished the study. Our preliminary results showed no significant difference in SBP between HF-ABPM and LF-ABPM. HF-LF difference was -0.7mmHg (95%CI = -2.3;0.9). We expect to present final results at the meeting.

CONCLUSION: Our preliminary data indicate that in normotension and mild to moderate HT, there is no difference in SBP between HF- and LF-ABPM. However, we have only been able to include two patients with severe HT, where we anticipated that the difference between the two methods would be the largest.

ACKNOWLEDGEMENTS: This project is funded by a full scholarship from Aarhus University.

The investigators declare no conflict of interest.

O-5.4

Christian Møller Jensen

Chest x-ray imaging score is associated with severity of COVID-19 pneumonia: the MBrixia score

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BACKGROUND: Spatial resolution in existing chest x-ray-based scoring systems for coronavirus disease 2019 (COVID-19) pneumonia is low and should be increased for better representation of anatomy and severity of lung lesions.

METHODS: The Brixia chest x-ray score was modified, creating the MBrixia score. MBrixia score is the sum, of a rule-based quantification of chest x-ray severity in 12 anatomical zones in the lungs. MBrixia was applied to chest x-ray images from COVID-19 patients at a single tertiary hospital in the time period May 4th – June 5th, 2020. The relationship between MBrixia score and 15 biomarkers along with level of respiratory support at time of performed chest x-ray imaging was investigated.

RESULTS: 37 COVID-19 patients with 290 chest x-rays (median=7 per patient [IQR 3-11]) were hospitalized. MBrixia correlated with 7 biomarkers. Comparing with patients receiving no supplemental oxygen, mean MBrixia score was estimated to be 1.75 (95% CI 1.31–2.33), 2.21 (1.65–2.95), 2.38 (1.80-3.14), and 2.66 (2.01–3.52) times higher in patients receiving 1-5 L O2/min; >5 L O2/min, high-flow O2 or non-invasive ventilation; mechanical ventilation; and extracorporeal membrane oxygenation, respectively

CONCLUSION: MBrixia correlated with biomarkers of inflammation and organ injury and was associated with the level of respiratory support in patients with COVID-19. Future studies should investigate the score's ability to predict clinical outcomes and how changes reflect response to effective interventions.

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O-5.5

Signe Marie Wulff

Association between CMV and Invasive Aspergillosis in lung transplanted patients

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BACKGROUND: Lung transplanted recipients (LTXr) are at high risk of developing infections. Cytomegalovirus (CMV) and invasive aspergillosis (IA) are frequent infections post lung transplantation (LTX) and both are associated with an increased risk of graft rejection and high mortality rate. CMV infection is associated with a 5-fold increased risk of IA in solid organ transplanted patients, but the risk of CMV infection following IA has not been investigated.

METHODS: The study will include all adult Danish LTXr transplanted 2010-2019. CMV infection is defined as positive microbiological test in blood or BAL. IA is defined in accordance to ISHLT criteria. Incidence rates and rate ratios will be estimated by Poisson regression with CMV and IA as time updated variables and death as competing risk. Time association between the two infections will be illustrated by descriptive statistics.

RESULTS: During the study period 295 LTXr were included. Underlying diseases included emphysema(46.1%), cystic fibrosis(18.3%), and pulmonary fibrosis(28.1%). High risk CMV serostatus at baseline (D+/R-) was found in 57(19.3%) patients. CMV infection was detected in 143 (48.8%) LTXr and a total of 265 CMV infection periods occurred during the study period.

CONCLUSION: Data regarding IA are currently being collected. We hypothesize that there will be an increased risk of IA if the patient has an ongoing CMV infection and vice versa. Through this study, we hope to expand the knowledge on the temporal association between these two infections.

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O-5.6

Johanne Juel Petersen

Immediate airway physiology improvement during endotracheal sealing of open tracheostoma post decannulation

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BACKGROUND: Today, approximately 10% of all mechanically ventilated patients in the intensive care units (ICUs) are tracheotomized. When clinically ready, the patient is decannulated. The decannulated stoma is attended to with conventional wound care. Until wound closure, there is risk of infection. We have developed a device to be inserted into the tracheostoma at decannulation, sealing the site endotracheally. The aim of this study was to observe airway physiology with the silicone disc in situ.

METHODS: In this study, 19 tracheostomized patients were included. Airway physiology was assessed through spirometry, performed with and without the silicone disc in situ in each patient. Accordingly, the patients acted as both case and control study subjects. To reduce fatigue induced distortion of the results, it was chosen at random whether to initiate the series of spirometries with the silicone disc implanted or with an open tracheostoma. The primary endpoints were FEV1, FVC, and the FEV1/FVC ratio.

RESULTS: All primary endpoints showed statistically significant difference between the endotracheally sealed group and the open tracheostoma control group. FEV1 ($p<0.001$) and FVC ($p=0.003$) were significantly better in the former group, whereas the ratio, FEV1/FVC, ($p=0.03$) between the two was improved in the latter group.

CONCLUSION: Airway physiology (FEV1 and FVC) was immediately improved as the open tracheostoma was sealed endotracheally with our silicone disc. Clinical significance of FEV1/FVC may be controversial as the spirometries were not performed on indication concerning assessment of lung obstruction or restriction.

ACKNOWLEDGEMENTS: This project was funded by the Novo Nordisk Foundation who provided an Exploratory pre-seed grant for the production of the temporary endotracheal silicone seal.

O-5.7

Anne-sophie Jensen

Role of the inflammasome in the protective effect of a KCa3.1 potassium channel blocker in acute pulmonary injury and oedema

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BACKGROUND: Acute respiratory distress syndrome (ARDS) is a life-threating respiratory failure characterized by widespread inflammation. Evidence suggests that potassium currents through the calcium-activated potassium channel (KCa3.1) are important for activation of the NLRP3 inflammasome, an important component in the immune response. To further study this, we examined the combined effect of senicapoc (KCa3.1 inhibitor) and dapansutrile (NLRP3 inflammasome inhibitor) in an endotoxin model of ARDS.

METHODS: Male mice received intratracheal instillation of LPS with a microsprayer and were treated one hour after exposure with either vehicle, senicapoc (30mg/kg), dapansutrile (200mg/kg) respectively or in combination. All endpoint data were collected after 24 hours. The primary outcome was lung injury score.

RESULTS: LPS did not cause a significant difference between the vehicle and SHAM mice in PaO2/FiO2-ratio and lung injury score, but it increased total cell count (P=0.0007), neutrophil infiltration (P=0.0026) and proinflammatory cytokines (KC; P=0.0008, MIP-2; P<0.0001, IL-1α; P=0,0018, IL-6; P<0.0001, and TNF-α; P=0.0046) in BALF. Senicapoc and dapansutrile respectively or in combination did not alleviate any signs of inflammation in treated animals compared to vehicle mice.

CONCLUSION: LPS did not induce ARDS in the mice, but evoked pulmonary inflammation with sepsis. None of the tested treatments showed anti-inflammatory effects.

ACKNOWLEDGEMENTS: Nothing to declare.

O.6 Psykiatri og neurologi

O-6.1

Rebecca Nyengaard

Hair cortisol and self-perceived stress – a comparison between adolescents with functional somatic disorders and adolescents from the general population

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BACKGROUND: The role of physiological factors in functional somatic disorders (FSDs) is debated. Studies suggest that cortisol is involved in the pathogenesis of FSDs, but little is known regarding adolescents. As cortisol accumulates in hair over time, hair cortisol concentration (HCC) is a promising new biomarker for long-term physiological stress.

We aim to compare HCC in adolescents with severe FSDs with general population data and to investigate the association between HCC and self-perceived stress.

METHODS: The data are retrieved from the AHEAD trial, including N=91 15–19-year-old adolescents diagnosed with severe FSDs, and the Copenhagen Child Cohort 2000, including N=1455 16-17-year-old adolescents. Hair samples were collected for HCC analysis. The Bodily Distress Syndrome (BDS) checklist was used to assess functional somatic symptoms, and the Perceived Stress Scale (PSS) was used to assess self-perceived stress.

RESULTS: The data collection has been completed and the data are currently being analysed. The results will be presented at KMS 2022.

CONCLUSION: This study will advance the knowledge on the potential role of cortisol in FSDs in adolescents, and whether self-perceived stress can be used as a marker for physiological stress measured by HCC.

The results of the study may inform future treatment strategies for adolescents with FSDs.

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O-6.2

Nanna Bertin

Brain health after Locus Coeruleus ablation: protocol optimization

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BACKGROUND: Neurodegenerative diseases are a growing health issue. The pathogeneses remain unknown, but the brainstem nucleus, locus coeruleus (LC), is known to be affected as one of the first brain structures. To understand LC's possible role, it is necessary to establish a model for studying the effect of LC damage to brain health. One option is LC ablation, which is feasible in mice. However, the optimal protocol (toxin dose) is not well-established and will therefore be investigated in this study.

METHODS: 20 C57BL/6J mice were divided in four groups (n=5). Three groups were administrated DSP-4 (a neurotoxin) at 50 mg/kg i.p either 2, 3 or 4 times with one-week intervals. A control group received saline injections 4 times for comparison. To evaluate the success of the ablation the behavioral test light-dark box was conducted. Then, brain slices will be immunohistochemically stained and used to a perform stereological estimation of the LC volume reduction and reduction in number of LC neurons.

RESULTS: As of November 2021, no stereology results have been obtained. Preliminary behavioral results show a significant difference within the control groups movements in the dark and light area. There seems to be a tendency for the mice receiving the neurotoxin to exhibit altered behavior compared to the control group measured in number of transitions, time spent in each zone, velocity and total distance moved.

CONCLUSION: Our behavioral data indicate a neurotoxin dose-dependent increase in curiosity and a decreased anxiety due to the administration of the. This indicates successful LC ablation with the high dose as damage to LC is known to decrease the number of activating projections from LC to amygdala.

ACKNOWLEDGEMENTS: The research project has received financial support from Lundbeckfonden. We are thankful for support from AUH, AU and CFIN staff for assistance throughout this project, especially Trine Mikkelsen and Stine Hasselholt for help with histology and stereology and Susanne Christensen and Anna Nielsen for help with animal handling, behavior testing and perfusion fixation.

O-6.3

Tobias Overmark

Neuromodulatory input from the basal forebrain to the retrosplenial cortex

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BACKGROUND: In the cerebral cortex, acetylcholine (ACh) is released from cholinergic neurons in the basal forebrain (BF). ACh from BF axons is necessary for higher cognitive functions, as altered levels of ACh is strongly linked to impairments in learning and memory. This study investigates the relatively unknown anatomical features and function of cholinergic projections from the horizontal diagonal band (HDB), a subregion of the BF, to the cortex.

METHODS: We combined cell-type specific transgenic mice, antero- and retrograde neuronal tracers, and immunohistochemistry to specifically label cholinergic neurons' somata in HDB and its axons in cortical projection sites with fluorescence in mice. We also used a recently developed Matlab-based program AmaSine and a high-throughput imaging system to precisely map the spatial location of labeled neurons' somata and projections sites.

RESULTS: We discovered a robust cholinergic projection from the HDB to the retrosplenial cortex (RSC). Moreover, these projections predominantly ramified in layer(L) 1 and 5 known to integrate distinct hippocampus inputs. This suggest HDB cholinergic projection selectively modulate hippocampal-RSC circuits known to be critical for memory encoding. We are currently testing this hypothesis by combining genetic tools for circuit manipulation with ex vivo electrophysiology and behavior.

CONCLUSION: Preliminary conclusions will be presented at KMS22.

ACKNOWLEDGEMENTS: This study is funded by the Lundbeck Foundation.

O-6.4

Thomas Haugaard Thorsen

Metabolic Changes in mild Traumatic Brain Injury are detectible with Hyperpolarized [1-^{13}C]pyruvate MRI

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BACKGROUND: Mild traumatic brain injuries (TBI) make up over half of the 2.5 million yearly TBI cases in Europe. On a pathophysiological level, secondary damage, including metabolic changes, occurs hour to days after injury. In severe TBI patients, these changes are sometimes monitored by cerebral microdialysis – an invasive measure. We aimed to evaluate multi-nuclear MRI, including hyperpolarized [1-^{13}C]pyruvate MRI, as a non-invasive method to detect secondary damage in mild TBI.

METHODS: Six pigs were anaesthetized and punched directly on dura mater, using a controlled cortical impact (CCI) device. At three hours and at two days after CCI, the pigs were scanned with a multi-nuclear MRI protocol. In between scan days, the pigs were awakened and returned to the animal facility. Finally, cerebral microdialysis were performed, and biopsies were obtained for tissue biochemistry. The contralateral brain area served as negative control, and two-way ANOVA was used for analysis.

RESULTS: The pigs showed no changes in clinical status in between scan days. At day 0, the blood flow was reduced globally (TBI: 31.7 ml/100ml/min, contralateral: 35.6 ml/100ml/min), and the impacted area showed reduced oxygenation (R2*, p=0.035). At both scans, the lactate to pyruvate ratios (hyperpolarized [1-^{13}C]pyruvate) were increased (day 0: p=0.023, day 2: p=0.022). This ratio difference was not found using cerebral microdialysis nor lactate dehydrogenase (LDH) activity assay.

CONCLUSION: We were able to depict changes in metabolism using hyperpolarized [1-^{13}C]pyruvate MRI as a non-invasive measure, as opposed to the non-statistically significant changes we found using invasive techniques. This study indicates a high sensitivity of hyperpolarized [1-^{13}C]pyruvate MRI on mild TBI.

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O-6.5

Ditte Tranberg

Combining GFAP biomarker and a prehospital stroke scale for early identification of stroke

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BACKGROUND: Acute severe brain tissue damage from blood vessel occlusion or hemorrhage (stroke) requires immediate treatment to secure the patient's survival and mobility. The effect is strongly time dependent – shorter delay gives better outcome. Glial fibrillary acidic protein (GFAP) can differentiate hemorrhagic from ischemic stroke, and stroke scales can identify stroke. This study examines the diagnostic performance of the combination of GFAP and a prehospital stroke scale.

METHODS: The study is a retrospective study based on prospectively collected data from Norway. The diagnostic performance for stroke will be investigated for PreSS and GFAP alone and in combination.

RESULTS: As of November 2021, no results have been obtained yet.

CONCLUSION: As of November 2021, no conclusions have been drawn.

ACKNOWLEDGEMENTS: As of November 2021, no conclusions have been drawn.

O-6.6

Lykke Elmquist

Why do mentally ill, homeless people use substances?

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BACKGROUND: In the Danish social welfare system, few people are homeless solely for economic reasons. In fact, 38% of homeless people suffer from both substance use and a psychiatric disorder, making diagnostic assessment and treatment difficult. Patients with dual diagnoses, often fail to receive effective treatment, and the consequences are far reaching and detrimental. A more comprehensive grasp of the history and patterns of substance use in these patients may contribute to improve their treatment.

METHODS: 42 homeless, mentally ill patients are examined in comprehensive interviews, exploring the pattern of substance use and the relationship between substance use, homelessness, and suffering from a mental disorder.

RESULTS: Preliminary results indicate that substance use in mentally ill homeless patients is a complex phenomenon. On the one hand, substance use seems to contribute to keep the patient homeless and makes it difficult for the patient to get the necessary psychiatric help. On the other hand, substance use also appear to play an important part in coping with life on the streets by offering some kind of social contact and some relief from a desperate situation.

CONCLUSION: It seems that the triad of substance use, mental illness, and homelessness reinforce each other and simultaneously locks the situation. A reconsideration of the structural separation of the treatment available is needed to disentangle the locked position and offer better treatment to these patients.

ACKNOWLEDGEMENTS: This project has been founded by the Lundbeck Foundation.

O-6.7

Amalie Sofie Vagner Uggerly

Cosmetic outcome after cranioplasty

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BACKGROUND: Cranioplasty after intracranial tumor surgery is performed by reattaching the cranial plate using for instance rails and screws. This procedure will leave behind a gab between the cranial plate and the cranium, resulting in a small slit around the cranial plate where the skin may submerge. This study aims to examine if the patients are satisfied with the cosmetic outcome after cranioplasty or if optimization is needed.

METHODS: 70 intracranial tumor patients undergoing first-time craniotomy were enrolled in the study. A questionnaire was sent out six months after surgery. The questionnaire included questions on the degree of content (the appearance of the scar, general cosmetic satisfaction, complications to the cranioplasty and alterations in facial appearance) graded by the patients on a scale from 1-10. Furthermore, data on tumor histology and surgical approach were collected.

RESULTS: Data retrieval and analysis is ongoing. Preliminary results will be presented at KMS2022.

CONCLUSION: The ambition is, that the results will determine if an optimization of the cranioplasty technique is necessary.

ACKNOWLEDGEMENTS: Nothing to declare.

O-6.8

Mette Rahr

Clinically and paraclinically evaluation of treatment I Multiple Sclerosis

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BACKGROUND: Is the Danish guideline to treatment regimens of Multiple Sclerosis (MS) sufficient? Patients with the neurological illness MS suffer from autoimmuneinduced demyelination and axonal loss of nerves in the central nervous system leading to different degrees of disability. This study aims to investigate superior measurements of the disease activity in MS patients.

METHODS: A total of 104 MS patients were found eligible for inclusion. Optical coherence tomography (OCT) was compared to clinical and MRI registrations and Expanded Disability Status Scale (EDSS). Immunological measurements from serum were compared.

RESULTS: The project is currently ongoing. Results will show if Soluble urokinase plasminogen activator receptor (SuPAR) and Glial fibrillary acidic protein (GFAP) from serum are superior marker for disease activity compared to neurofilament light chain (NFL) from serum and should be included in routinely registration, and if OCT registration is a more sensitive marker for disease activity compared to MRI.

CONCLUSION: The preliminary results show that GFAP is a better marker for disease progression.

ACKNOWLEDGEMENTS: We thank Louise Stenkjær Nedergaard for OCT assistance.

O-6.9

Mathilde Thrysøe Jespersen

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BACKGROUND: Neuropathy is a well-known complication to diabetes. However, still little is known about biochemical factors to detect early signs of neuropathy in younger patients. The aim of this study is to investigate the association between neuropathy and vitamin B12 (B12) deficiency and the nerve damage biomarker, Neurofilament light chain (NfL), in adolescents with type 1 diabetes (T1D).

METHODS: Blood samples from 60 adolescents (15–18 yrs) with T1D and 20 healthy controls will be analyzed as part of the clinical research study “Early detection of neuropathy in adolescents with type 1 diabetes”. Serum levels of vitamin B12, methylmalonate, vitamin B12-TC-bound and NfL will be determined. Levels of the biochemical markers will be compared to the results from neurological tests, testing for both large fiber, small fiber and autonomic neuropathy.

RESULTS: In the group of adolescents with T1D, associations between levels of B12 and NfL with findings of neuropathy will be analyzed. Results from patients with T1D will be compared with results from healthy controls.

CONCLUSION: This project will investigate a possible association between B12 deficiency and NfL-levels with diabetic neuropathy in adolescents with T1D. Hopefully, in the future biochemical markers can be a useful screening method to earlier detect neuropathy.

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