

Pélerin Symposium 2025

ABSTRACTBOEKJE

OP WEG NAAR DE TOP

OVER AMBITIE, GROEI EN GRENZEN

30 ste
editie

I N H O U D S

OPGAVE

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Voorwoord

De Stichting Pélerin

Sinds 1996 kent de Stichting Pélerin de Pélerin Wetenschapsprijs toe aan het beste onderzoek verricht door een arts-assistent of promovendus in het Maastricht Universitair Medisch Centrum. Het symposium heeft als doel jonge artsonderzoekers te stimuleren en schept de mogelijkheid voor het presenteren van wetenschappelijk onderzoek.

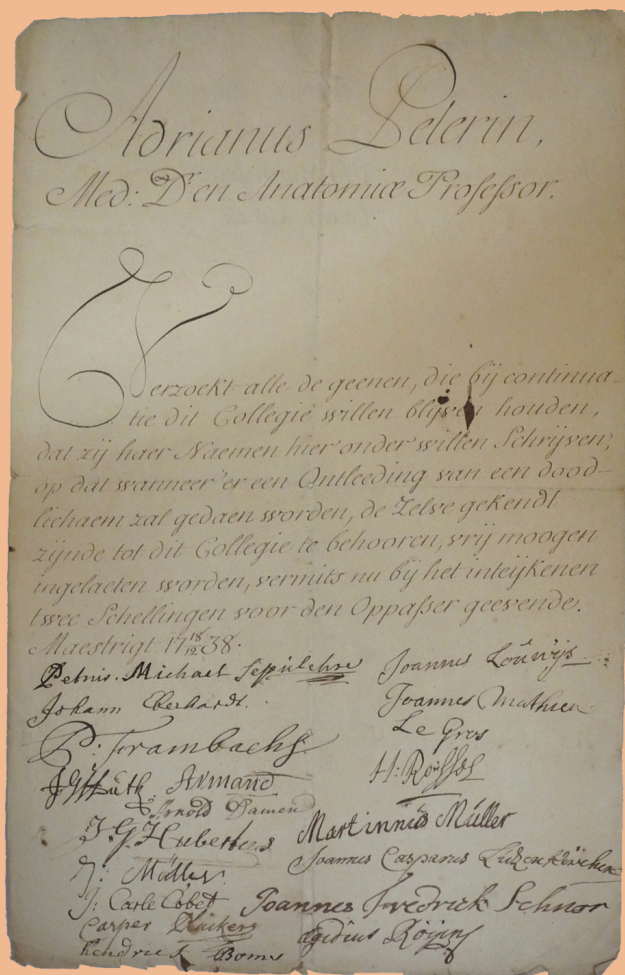
Dit jaar zal het symposium voor de 30e keer plaatsvinden. Echter het fundament voor dit symposium werd al ruim 250 jaar geleden gelegd.

In 1738 werd Adrianus Pélerin benoemd als eerste professor in de anatomie en chirurgie in Maastricht. Hij stond aan de wieg van het medisch onderwijs in Maastricht. Met zijn anatomische lessen verbeterde hij de medische zorg in het militair hospitaal van de garnizoenstad Maastricht. Tevens was Pélerin verbonden aan de illustere School van Maastricht, een instelling die studenten voorbereidde op een verdere universitaire studie. Ofwel een Maastrichtse bacheloropleiding avant la lettre. Tijdens zijn opleiding verrichte hij onderzoek naar het op dat moment endemische pokkenvirus. In 1719 promoveerde Pélerin in Leiden op het proefschrift "de Variolis". Zijn proefschrift heeft hoogstwaarschijnlijk bijgedragen aan de vroegtijdige invoering van de pokkenvaccinatie in Maastricht.

In de geest van Pélerin zijn zowel wetenschap als opleiding gebundeld in het jaarlijkse Pélerin Wetenschapssymposium.



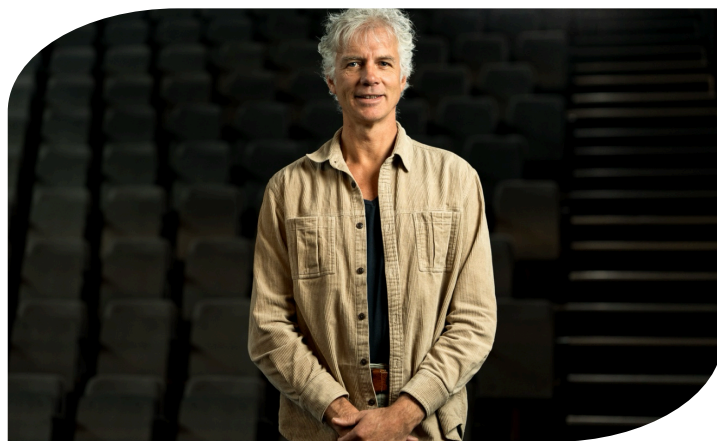
De Pélerin Stichting wil de kwaliteit en de continuïteit van academische patiëntenzorg bevorderen



Het Pélerin Symposium 2025

OVERBRUG DE
COMMUNICATIEKLOOF

Het jaarlijkse Pélerin arts-assistenten symposium is dé gelegenheid voor arts-assistenten, arts-onderzoekers en senior-coassistenten om wetenschappelijk onderzoek, verricht vanuit het Maastricht UMC+, onder de aandacht te brengen. Ook dit jaar zijn er weer veel interessante abstracts ingediend. De top 5 zal hun onderzoek presenteren tijdens het symposium, waarbij de beste presentatie wordt beloond met de Pélerin Wetenschapsprijs. Daarnaast zullen de top 6 t/m 10 strijden om de Pélerin Pitchprijs en wordt tijdens de lunchsessie een postersessie voor coassistenten gehouden.



Omdat we dit jaar de 30e jubileumeditie vieren, introduceren we een nieuwe categorie: de Onderzoekersprij. Deze zal, evenals de senior-coassistentenprijs, worden gehouden tijdens de lunchsessie.

Ook verwelkomen we dit jaar een extra gastspreker tijdens de lunch: Bernard Leenstra, huisarts en oprichter van “Dokter Bernard”, die zich inzet voor betere zorg en meer begrip tussen patiënt en zorgverlener.

De avond wordt afgesloten met onze hoofdgastspreker: Wilco van Rooijen, professioneel bergbeklimmer en avonturier. Met zijn indrukwekkende ervaringen over het bereiken van uiterste hoogtes en het omgaan met tegenslagen zal hij ons inspireren om door te zetten, samenwerking te zoeken en grenzen te verleggen – thema’s die onmiskenbaar ook in de gezondheidszorg van waarde zijn.

Kortom, wij zijn blij dat we dit jaar weer de mogelijkheid hebben om zoveel interessant onderzoek te kunnen presenteren aan u. Wij wensen u een leerzame en vooral ook plezierige avond toe!

Programma

Terras niveau 4, MUMC+

- 12:00u Senior-co sessie & Onderzoekerssessie
- 12:30u Gastspreker Bernard Leenstra

Greepzaal, MUMC+

- 17:00u Openingswoord
- 17:25u Nominaties Pélerin Pitchprijs
- 17:45u Diner
- 18:40u Nominaties Pélerin Wetenschapsprijs
- 20:20u Gastspreker Wilco van Rooijen
- 21:20u Prijsuitreiking
- 21:40u Borrel

ORGANISATIE 2025

pélerin
ARTS ASSISTENTEN SYMPOSIUM



Al vroeg in het jaar beginnen wij achter de schermen met de voorbereidingen voor het symposium. De organisatie bestaat uit 7 gedreven, actieve maar vooral ook gezellige leden uit verschillende vakgebieden (zie hiernaast). Om de continuïteit van het symposium te waarborgen blijft elk lid voor 2 jaar in de organisatie, waarbij per jaar de helft wisselt. Zo kunnen we alle leerzame ervaringen van dit jaar weer meenemen in de organisatie van het Pélerin symposium volgend jaar! Interesse? Kijk op onze website!

Van links naar rechts:
Drs. S. van de Walle (Cardiothoracale
Chirurgie/Radiologie)
Drs. L. Reinders (Longgeneeskunde)
Drs. M. Lemmens (Cardiologie/Radiologie)
Drs. F. Veldman (Maag-, darm- en leverziekten)
Drs. K. Hawinkels (Maag-, darm- en leverziekten)
Drs. L. Bica (Vaatchirurgie/Biochemie)
Drs. M. Eussen (Chirurgie)



WINNAARS VOORGAANDE EDITIE

Editie 2024



Pélerin Wetenschapsprijs:
Tom Wolswijk - Dermatologie

Pitch prijs:
Yesim Kaya - Cardiologie

Senior-coassistenten prijs:
Otte Borghouts - Dermatologie



(foto's op volgorde van boven naar beneden)

Winnaars Pélerin Wetenschapsprijs voorgaande edities

- 1996 Drs. M.J. Bonten, afdeling interne geneeskunde
- 1997 Drs. H.W. van Straaten & drs. L. Koster-Kamphuis, afdeling kindergeneeskunde
- 1998 Drs. J.A. de Priester, afdeling radiologie
- 1999 Drs. R.J. van Oostenbrugge, afdeling neurologie
- 2000 Drs. L. Hofstra, afdeling cardiologie
- 2001 Drs. S.W.Olde Damink, afdeling algemene heelkunde
- 2002 Drs. E. Hoitsma, afdeling neurologie
- 2003 Drs. A.W. Nap, afdeling gynaecologie & obstetrie
- 2004 Drs. F.M. van Dielen, afdeling algemene heelkunde
- 2005 Drs. V.C. Cappendijk, afdeling radiologie
- 2006 Drs. M.A. Hoving, afdeling neurologie
- 2007 Drs. J. Trip, afdeling neurologie
- 2008 Drs. J.P. Derikx, afdeling algemene heelkunde
- 2009 Drs. M.G. Snoeijs, afdeling algemene heelkunde & Drs. J.V. Been, afdeling kindergeneeskunde
- 2010 Drs. J.G. Bloemen, afdeling algemene heelkunde
- 2011 Drs. E.J. Rondagh, afdeling maag-, darm- & leverziekten
- 2012 Drs. A.H. Arits, afdeling dermatologie
- 2013 Drs. R.M. Schols, afdeling algemene heelkunde
- 2014 Drs. T. Brinkhuizen, afdeling dermatologie
- 2015 Drs. M. Dickman, afdeling oogheelkunde
- 2016 Drs. J. Beugels, afdeling plastische chirurgie
- 2017 Drs. M.W. Smulders, afdeling cardiologie
- 2018 Drs. M.H.E Jansen, afdeling dermatologie
- 2019 Drs. B. Corten, afdeling heelkunde
- 2020 Drs. V. Schiffer, afdeling gynaecologie en obstetrie
- 2021 Drs. F. Adan, afdeling dermatologie
- 2022 Drs. F. Pinckaers, afdeling radiologie
- 2023 Drs. H.C.R. Verberght, afdeling heelkunde
- 2024 Drs. T. Wolswijk, afdeling dermatologie

Genomineerden 2025

PÉLERIN WETENSCHAPSPRIJS

ANNISA AARTS - TROMBOSE EXPERTISE CENTRUM
ANOUK ACHTEN - CARDIOLOGIE
MIRJAM ESSER - KINDERGEHEESKUNDE
TOM KONINGS - BIOMEDICAL ENGINEERING
JOEP VAN ROOIJ - PLASTISCHE CHIRURGIE

PÉLERIN PITCHPRIJS

SADÉ ASSMANN - MAAG-, DARM-, EN LEVERZIEKTEN
SHABNAM BABAKRY - NEUROCHIRURGIE
ILSE HUIJBERTS - NEUROLOGIE
RIANNE KILLAARS - KINDERCHIRURGIE
NIEKE SMEINS - RADIOLOGIE EN PLASTISCHE CHIRURGIE

PÉLERIN SENIOR COASSISTENTENPRIJS

CHRIS ADANG - RADIOLOGIE EN NUCLEAIRE GENEESKUNDE
DAAN BOSCH - MAAG-, DARM- EN LEVERZIEKTEN
LARS VAN DER BROECK - CHIRURGIE
OMAR MOLLEMA - KINDERCHIRURGIE

PÉLERIN ONDERZOEKERSPRIJS

NIKKI HAMERS - INFECTIEPREVENTIE
SOPHIA GIMPLE - NEUROCHIRURGIE
JURRIAAN HODZELMANS - KLINISCHE NEUROFYSIOLOGIE
EVIE HOEIJMAKERS - KLINISCHE FYSICA
ZOE VAN DER HOOFD - FYSIOTHERAPIE / CTC
SVEN MANSE - LONGZIEKTEN
JULIA VAN DER VEEN - PLASTISCHE CHIRURGIE
JARI VERBUNT - MMI
ANNA WIJEN - MEDISCHE MICROBIOLOGIE

*Genomineerd voor
de Pélerin
Wetenschapsprijs
2025*

Apixaban vs. vitamin K antagonists in relation to the post-thrombotic syndrome; data from a prospective cohort study.

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Introduction

Post-thrombotic syndrome (PTS) is a prevalent complication following deep vein thrombosis (DVT) of the leg. Direct oral anticoagulants are recommended for DVT treatment due to their lower bleeding risk and comparable effectiveness to vitamin K antagonists (VKAs). Previous studies suggest rivaroxaban may reduce PTS risk compared to VKAs. Our objective was to compare PTS incidence in DVT patients treated with apixaban versus VKAs.

Methods

Adults with DVT of the leg, recruited between 2003 and 2022 in a Maastricht UMC+ prospective cohort, were eligible for analysis. In 2017, prescription guidelines changed from VKAs to apixaban for new patients. Patients received anticoagulation treatment according to (inter)national guidelines, along with elastic stockings for at least six months. Multivariable-adjusted logistic regression analyses were performed to assess the relationship between the use of apixaban compared to VKAs, and PTS occurrence. PTS was defined as a Villalta score ≥ 5 at least six months after DVT.

Results

PTS was diagnosed in 28.0% of patients treated with apixaban and in 35.7% treated with VKAs. The odds were significantly lower in both unadjusted (OR 0.70 95%CI 0.50-0.98) and multivariable-adjusted models (adjusted for age, sex, and BMI: OR 0.62 95%CI 0.44-0.88). Figure 1 shows a Kaplan-Meier plot illustrating the time to PTS. Moderate-severe PTS was diagnosed in 4.1% of patients treated with apixaban and in 8.4% treated with VKAs (adjusted for age, sex, and BMI: OR 0.42, 95% CI 0.20-0.87). Also in obese patients, PTS incidence was lower (adjusted for age and sex: OR 0.44 95%CI 0.24-0.84).

Conclusion

Apixaban reduced both the risk and severity of PTS, particularly in obese patients.

Serum Transthyretin as a Screening Tool For Transthyretin Amyloid Cardiomyopathy

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* Equal contribution

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Introduction

Diagnosing transthyretin amyloid cardiomyopathy (ATTR-CM) remains challenging due to overlapping clinical features with causes of heart failure. Current screening tools primarily detect advanced disease and often miss early or atypical presentations of ATTR-CM. Serum transthyretin (TTR) has emerged as a potential low-cost biomarker for broad ATTR-CM screening.

Aims To evaluate whether serum TTR can facilitate screening for ATTR-CM in patients with suspected disease.

Methods

In this multicentre diagnostic study, serum TTR concentrations were compared between patients with ATTR-CM (n=96 in the development cohort; n=812 in the validation cohort) and non-amyloid controls (n=183 development cohort; n=215 validation cohort). The optimal cut-off value was determined using Youden's index. Multivariable logistic regression was performed to assess the association between serum TTR and ATTR-CM, adjusted for clinical factors (e.g. Age, sex, NT-proBNP, hsTnT and echocardiographic parameters).

Results

In this multicentre diagnostic study, serum TTR concentrations were compared between patients with ATTR-CM (n=96 in the development cohort; n=812 in the validation cohort) and non-amyloid controls (n=183 development cohort; n=215 validation cohort). The optimal cut-off value was determined using Youden's index. Multivariable logistic regression was performed to assess the association between serum TTR and ATTR-CM, adjusted for clinical factors (e.g. Age, sex, NT-proBNP, hsTnT and echocardiographic parameters).

Serum Transthyretin as a Screening Tool For Transthyretin Amyloid Cardiomyopathy

Conclusion

Serum TTR was significantly lower in ATTR-CM compared to controls (Figure 1; $p < 0.001$), even after matching for age, sex and body mass index. Patients with variant ATTR-CM had significantly lower serum TTR concentration compared to those with wild-type ATTR-CM (0.16g/L – IQR [0.13, 0.20] vs 0.22g/L IQR [0.19, 0.26] respectively, $p < 0.001$). Variant ATTR-CM patients with the p.(V142I) variant presented with the lowest serum TTR concentration (0.15g/L IQR [0.11, 0.18], Figure 1). The diagnostic performance of TTR alone was modest (AUC 0.60–0.75). A threshold of ≤ 0.25 g/L was identified as the optimal cut-off (Figure 2). In the validation cohort, a serum TTR level ≤ 0.25 g/L had 72% sensitivity and 65% specificity with a positive predictive value 89% for ATTR-CM. Multivariable regression confirmed serum TTR concentration as an independent predictor of ATTR-CM (adjusted OR 0.25 per 0.1 g/L increase, $p < 0.001$).

Infant Immune system development and vaccination response after in utero exposure to immunomodulating drugs.

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Introduction

Current international guidelines on inflammatory bowel disease (IBD) advise to continue immunomodulating medication during pregnancy. The effects of exposure to these medications on the developing immune system of infants are uncertain.

Methods

FPregnant women with IBD receiving immunomodulating medication and their infants were prospectively recruited in the PETIT study cohort from 16 hospitals in the Netherlands between December 2018 and March 2023. All infants were vaccinated according to the Dutch National Immunization Program. IgG concentrations against vaccine components were measured after primary series and booster vaccination at 6 and 12 months of age. Leukocytes and T- and B-cell subsets were analysed at birth, 2, 6 and 12 months of age. Proportions of infants with IgG concentrations above protective cut-off values and Geometrical Mean Concentrations (GMCs) were compared between exposed infants and healthy controls. T- and B-cell subsets were compared to healthy controls from a historical cohort.

Infant Immune system development and vaccination response after in utero exposure to immunomodulating drugs.

Results

The proportions of infants with IgG concentrations above protective cut-off values and GMCs were comparable between 137 infants exposed to immunomodulating medication and 103 healthy controls for most vaccine components at 6 and 12 months.

Neutropenia occurred in significantly more exposed infants than was expected when compared with reference values at 2 and 12 months of age but was mostly mild and often related to viral infections.

The number of infants with low T- or B-cell counts was similar between healthy controls and those exposed to immunomodulating drugs.

Conclusion

Infants exposed to immunomodulating medication during pregnancy have a sufficient response to vaccination comparable to healthy controls and do not suffer from clinically relevant neutropenia or T- and B-cell subset abnormalities in the first year of life.

Patient-Specific Computational Analysis of Hemodynamic Performance Following Endovascular Repair of the Aortic Arch With a Double-Branched Endograft in a Single-Center Patient Cohort

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2. Department of Vascular Surgery, Maastricht University Medical Center+, the Netherlands

Introduction

Endovascular repair of aortic arch aneurysms using double-branched stent grafts provides a minimally invasive alternative to open surgery. However, thrombo-embolic complications remain a concern, as altered branch-specific hemodynamics may promote thrombosis. This study investigates patient-specific blood flow characteristics following repair, focusing on the brachiocephalic trunk (BCT) and left common carotid (LCCT) branches, to assess their potential contribution to thrombus formation.

Methods

Eleven patients who underwent double-branched endovascular aortic arch repair with the Zenith arch graft (Cook Medical, 2015–2020) were retrospectively analyzed. Postoperative CT angiograms were segmented to reconstruct patient-specific aortic geometries. Computational Fluid Dynamics (CFD) simulations were performed with standardized inflow and outflow conditions to compute time-averaged wall shear stress (TAWSS), oscillatory shear index (OSI), and relative residence time (RRT). These surface-based hemodynamic metrics, each linked to thrombogenic risk, were quantified on the BCT and LCCT stent grafts (Figure, panel A). Lagrangian particle tracking was used to derive additional flow-based metrics associated with platelet activation and thrombus potential: platelet activation potential (PLAP), helical flow index (HFI), particle residence time (PRT), and average particle velocity (PAV) (Figure, panel C). Panels B and D provide visualizations of stent positioning and flow trajectories within the branches.

Results

Six patients experienced post-operative thrombo-embolic events, four right-sided and suspected to originate from the BCT. The BCT stent exhibited greater surface exposure to pro-thrombotic conditions than the LCCT stent: low TAWSS (<0.4 Pa, 3.98 vs 0.73 cm²), high OSI (>0.25 , 4.52 vs 1.82 cm²), and high RRT (>5 Pa⁻¹, 1.45 vs 0.17 cm²) (Figure, panel A). Lagrangian metrics indicated lower PAV (0.16 vs 0.23 m/s), longer PRT (0.61 vs 0.49 s), and higher HFI (0.57 vs 0.44) in the BCT (Figure, panel C). PLAP was higher in the BCT in 3 of 4 patients with right-sided events. One patient showed elevated values across all particle-based metrics and experienced a confirmed right-sided event.

Conclusion

Patient-specific CFD analysis identified distinct hemodynamic environments between the stent branches, with the BCT showing greater exposure to flow conditions associated with thrombus formation. These patterns aligned with the distribution of observed embolic events and support the clinical relevance of CFD in postoperative risk assessment.

Sensory nerve coaptation in DIEP flap breast reconstruction: a double-blind, randomized controlled trial

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2 Department of Clinical Epidemiology and Medical Technology Assessment (KEMTA), Maastricht University Medical Center, Maastricht, the Netherlands

Introduction

There is a debilitating loss of breast sensation after mastectomy and breast reconstruction. Sensory nerve coaptation accompanying free flap breast reconstruction has the potential to increase recovery of postoperative breast sensation and quality of life (QOL).

Methods

In this double-blind, randomized controlled trial, patients who underwent DIEP flap breast reconstruction were included and randomized for either innervated or non-innervated reconstruction by coapting a sensory branch of the DIEP flap to the anterior cutaneous branch of the second or third ICN at chest level.

Breast sensation was measured at different areas of the breast with the Semmes-Weinstein monofilaments (SWM; tactile thresholds), the pressure-specified sensory device (PSSD; static and dynamic pressure sensation), and TSA-2 (temperature thresholds). QOL was measured with the BREAST-Q questionnaire (scale 0-100). Measurements were performed preoperatively and at 3, 6, 12, 18, and 24 months postoperatively.

Results

118 patients were included, contributing 182 reconstructed breasts (80 innervated, 102 non-innervated). Sensation improved in both groups during the follow-up period. Innervated breasts had significantly better SWM values of the flap skin ($p=0.02$) and total breast skin ($p=0.01$) after 24 months and had a significantly faster improvement in SWM values. Innervated breasts had significantly better PSSD values for static ($p=0.03$) and dynamic ($p<0.01$) sensation of the flap skin and dynamic sensation of the total skin after 24 months, and had a significantly faster improvement in PSSD values. Besides a significantly better improvement in cold pain, there were no other significant differences for warmth sensation, heat pain, cold sensation, or cold pain.

Clinically significant differences for QOL were found for the domains of Psychosocial Well-Being at 12 (66 ± 24 vs. 60 ± 31) and 24 months (70 ± 27 vs. 64 ± 32), for Sexual Well-Being at 24 months (56 ± 27 vs. 52 ± 29), and for Physical Well-Being of the Abdomen at 12 months (65 ± 24 vs. 59 ± 30). Physical Well-Being of the Chest was statistically significant at 12 months ($p=0.04$).

Conclusion

Innervated DIEP flap breast reconstructions have better sensory recovery of breast sensation than non-innervated breast reconstructions for the flap and total breast skin, with a clinically relevant improvement in quality of life for several important domains.

*Genomineerd voor
de Pélerin
Pitchprijs 2025*

Controlling Faecal Incontinence with a novel anal device (CONFIDEnCE): a multicentre randomized controlled trial

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Introduction

Faecal incontinence (FI) affects approximately 8% of community-dwelling adults, significantly impairing physical and psychological well-being. Conservative treatments (e.g., anti-diarrheals) often provide insufficient relief, while surgical options carry higher risks and costs. This randomized controlled trial (RCT) investigated a novel, minimally invasive anal insert (Fig. 1) as an alternative to standard care for preventing stool leakage in adults with FI.

Methods

In this multicenter, open-label RCT (CONFIDEnCE), conducted in two Dutch hospitals, participants aged 16–90 with FI were randomized 1:1 using minimization (stratified by center, age, and sex) to receive either the anal insert or care as usual for 8 weeks. The primary outcome was a ≥ 3 -point reduction in the St. Mark's incontinence score. Secondary outcomes included frequency of FI episodes, quality of life (QoL), anxiety, depression, and overall well-being. Participants completed daily digital diaries and weekly questionnaires. The trial was registered at clinicaltrials.gov (NCT04657588).

Results

Between May 2021 and March 2024, 73 participants were recruited (83% female, mean age 66); 72 were randomized (35 to anal insert, 37 to control). ITT analyses included 35 and 37 participants, while per-protocol analyses included 25 (insert) and 34 (control). The primary outcome, a ≥ 3 reduction in FI severity did not differ significantly between groups ($p=0.25$). However, the anal insert group had a significantly greater reduction in weekly FI episodes compared to controls (mean difference: -3.09, 95% CI: -4.39 to -1.75, $p<0.001$ during treatment; -2.97, 95% CI: -4.91 to -1.03, $p=0.003$ at follow-up). A $\geq 50\%$ reduction in FI episodes was achieved by 55.6% of the treatment group vs. 11.4% of controls ($p<0.001$). Improvements in FI-specific coping and depression scores were also observed in the treatment group. No serious adverse events occurred. Common issues with the insert included device displacement (22.8%), discomfort (20.0%), and urge sensation (20.0%).

Conclusion

While the anal insert did not significantly reduce overall FI severity, it effectively decreased number of FI episodes and improved coping and depression score, and should therefore be considered as a treatment option for FI.

Deep brain stimulation of the medial geniculate body for refractory tinnitus: a feasibility study

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Introduction

Tinnitus disorder can have a significant negative impact on quality of life, especially when refractory to standard care. Deep brain stimulation (DBS) of the medial geniculate body (MGB) attenuates pathological neuronal activity in the central auditory pathway and is a potential treatment for severe tinnitus. The aim of this pilot study was to assess the safety and feasibility of bilateral MGB DBS in patients with refractory tinnitus disorder.

Methods

This randomised double-blind 2×2 cross-over study was conducted at Maastricht University Medical Centre, Maastricht, the Netherlands. The included patients had treatment refractory, severe, and chronic tinnitus without an anatomical substrate. Patients with bilateral MGB DBS were randomised to an ON-OFF or OFF-ON stimulation order for two cross-over phases. Primary outcomes consisted of safety and feasibility. Secondary outcomes on tinnitus severity, psychiatric and cognitive functioning and quality of life were assessed at screening, after both cross-over phases and at one-year follow-up.

Results

Four patients were included. No irreversible stimulation-induced side effects were observed. Surgical-related side effects were transient and resolved within two weeks. All patients experienced DBS as an acceptable treatment. Three of four patients showed improvement of tinnitus complaints based on the Tinnitus Functional Index. In the non-responder, electrodes had the largest distance from the centre of the MGB.

Conclusion

This study shows that bilateral MGB DBS is safe and feasible for patients with refractory tinnitus. Findings suggest the potential for clinically meaningful reduction in tinnitus burden through DBS. Effectiveness needs to be further evaluated in a follow-up study.

Visualisation of lenticulostriate arteries using photon counting CT angiography: comparison to conventional CT angiography and digital subtraction angiography

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Introduction

Occlusions in lenticulostriate arteries (LSA) may cause deterioration or non-recovery after endovascular treatment for ischaemic stroke. Digital subtraction angiography (DSA) is the current imaging standard, but the recently introduced photon-counting CT (PCCT) could be a non-invasive alternative due to its high resolution at a low dose. This study evaluates PCCT for LSA visualisation compared to DSA and conventional CT angiography (CCTA). Data from subarachnoid haemorrhage (SAH) patients were used, as they are expected to have intact LSA and routinely undergo DSA.

Methods

From 2021-2024, adult SAH-patients who underwent both CTA (either CCTA or PCCT) and DSA were enrolled. For LSA >5mm from the middle cerebral artery (MCA) origin, only the largest branch was measured, and for LSA <5mm, all branches were individually measured by two experienced radiologists. Subjective scan quality was scored on a 4-point Likert scale. Conventional statistics were used to compare LSA presence, length and image quality among PCCT, CCTA, and DSA.

Results

159 eligible records were identified. No significant differences were found between DSA and PCCT in LSA detection and length <5mm from the MCA origin. However, more distal LSA were significantly longer on DSA. PCCT outperformed CCTA for LSA detection and length measurements. Observer 1 rated PCCT quality lower than DSA, while observer 2 found no difference. CCTA quality was rated significantly lower than both PCCT and DSA.

Conclusion

These results indicate that PCCT holds promise as a method for non-invasive LSA visualisation but requires further evaluation in prospective studies and clinical settings.

An International Multicenter Experience with the Senhance® Surgical System in Pediatric Surgery: Analysis of the First 150 Cases

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Introduction

Minimally invasive surgery (MIS) has become the standard of care in pediatric surgical practice due to reduced morbidity and faster recovery. Robotic-Assisted Surgery (RAS) refines MIS and offers further advantages, particularly in delicate pediatric anatomy. The Senhance Surgical System® (SSS®), designed with pediatric use in mind, allows the use of 3-mm and 5-mm instruments and trocar placement to child's body size. Despite promising single-center reports, multi-center outcome data in pediatric RAS remain limited.

Methods

This retrospective observational study analyzed the first 150 pediatric cases performed using the SSS® across two European tertiary centers. Patient demographics, intraoperative parameters, conversion rates, complications, and short-term postoperative outcomes were collected and analyzed. In addition to overall analysis, outcomes were assessed according to procedure category and patient age group to identify trends and experience-specific insights.

Results

A total of 152 children (55% male) with a mean age of 8.4 years (range 0.2-18.3) and mean weight of 32 kg (range 3.2-150) underwent robotic procedures using the SSS®. Conversion to conventional laparoscopy occurred in 12.5% of cases, while conversion to open surgery was necessary in only one patient (0.7%). Intraoperative complications were rare (0.7%), and the postoperative complication rate was 2.6%. The readmission rate was 12.5% and the reoperation rate was 4.6%. There were no mortalities. The system proved feasible across all procedures and age categories, even in infants and small children.

Conclusion

This international multicenter experience confirms that the SSS® is safe and feasible for a broad range of pediatric surgical procedures. The low rates of complication, conversions, and reoperations, along with age- and procedure-specific feasibility, suggest a valuable role of RAS in this unique and challenging patient population. Ongoing innovation may support broader implementation in pediatric surgical practice and help enhance future surgical outcomes in children.

Detection of residual fibroglandular tissue on breast MRI and associated factors in women treated with mastectomy and DIEP flap breast reconstruction

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Introduction

A potential explanation for local recurrences or new primary tumours after mastectomy is the presence of residual fibroglandular tissue (RFGT). As RFGT could pose a risk for oncological safety, it might be important to assess the presence of RFGT and contributing factors. Given the growing popularity of autologous breast reconstruction, it seems valuable to study this subgroup specifically. Therefore, this study investigates the frequency, extent and location of RFGT on breast MRI after mastectomy and deep inferior epigastric perforator (DIEP) flap reconstruction. Possible risk factors for RFGT and the effect of RFGT on local breast cancer recurrence risk are also investigated.

Methods

This retrospective, single-centre study included female patients after therapeutic and/or prophylactic mastectomy followed by DIEP flap reconstruction. All included women underwent breast MRI during follow-up between 2007-2022. Clinical data was collected. Breast MRI exams were independently reassessed by two breast radiologists on presence, diameter and location of RFGT. Relative risk was calculated to identify possible risk factors for RFGT. To determine the association with local disease recurrence a survival analysis was performed.

Results

73 patients were included (mean age 45 years, range 21-68). 66 out of 73 patients were previously diagnosed with breast cancer. RFGT was detected in 20 (27.4%) patients, with a mean diameter of 13.5 mm (range 6-31), most frequently located in the upper outer quadrant of the breast. Tumour grade 3 was associated with significantly increased risk of RFGT (RR = 2.7, 95%CI: 1.1-6.6, $p = 0.024$). After a median follow-up time of 110.0 months (range 14-354), a local recurrence had occurred in 13 patients. The risk of local recurrence was non-significantly higher in patients with RFGT (HR = 2.5, 95%CI: 0.6-10.4, $p = 0.206$).

Conclusion

RFGT is frequently detected on breast MRI after mastectomy and DIEP flap breast reconstruction and might be associated with an increased risk of local disease recurrence. Given its potential risk for oncological safety, awareness of RFGT is important. As many patients undergoing autologous reconstruction are relatively young and require long-term follow-up, baseline imaging following mastectomy and autologous reconstruction should be considered in future clinical practice.

*Genomineerd voor
de Pélerin
Senior coassistenten
prijs 2025*

TILs and metabolic activity of the spleen as predictors of therapy in patients with breast cancer

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Introduction

Clinical node positive (cN+) breast cancer, defined by axillary lymph node involvement at diagnosis, is associated with a poorer prognosis compared to node-negative disease. Surgery remains the cornerstone of treatment, but neoadjuvant systemic therapy (NST) facilitates tumor downstaging, increasing eligibility for breast-conserving surgery, and thereby reducing surgical morbidity. Baseline 18F-fluorodeoxyglucose (18F-FDG) positron emission tomography/computed tomography (PET/CT) allows assessment of metabolic activity, including immune related 18F-FDG uptake in lymphoid organs like the spleen. Elevated splenic FDG uptake has been linked to systemic inflammation and prognostic outcomes in various cancers. In breast cancer, its correlation with NST is an area of growing research. Similarly, tumor-infiltrating lymphocytes (TILs) are recognized as markers of local immune response and are also being investigated as predictors of NST. This study investigates the correlation between baseline splenic metabolic activity on 18F-FDG PET/CT and stromal TILs levels in the primary tumor and subsequently examines whether these variables are associated with axillary pathological complete response (pCR) following NST in cN+ breast cancer.

Methods

In this retrospective analysis, we included patients from the previously conducted RISAS trial (NCT02800317) — a 13-center study across the Netherlands — who underwent baseline 18F-FDG PET/CT and received NST prior to surgery. Clinical, histopathological and imaging data were re-evaluated. Discriminative performance was assessed via odds ratios (OR) with 95% confidence intervals. This study was approved as a non-WMO declaration (METC 2020-2422).

Results

A total of 89 participants met the inclusion criteria, of whom 38 (42.7%) achieved axillary pCR. There was no significant difference in the maximum standardized uptake value (SUVmax) of the spleen between the two groups. The amount of tumor-infiltrating lymphocytes (TILs) was significantly different between the groups ($p=0.002$). Spleen SUVmax showed a weak but significant negative correlation with overall TILs ($\rho = -0.384$, $p=0.007$). Axillary pCR was predicted based on splenic SUVmax and stromal TILs in the primary tumor with ORs of 0.425 (95%CI: 0.208–0.869), $p=0.019$ and 2.245 (95%CI: 0.766–6.583, $p=0.141$), respectively.

Conclusion

Spleen SUVmax showed a weak inverse correlation with overall TILs and was a significant predictor of axillary pCR, unlike stromal TILs in the primary tumor.

Tailored treatment of functional dyspepsia with nortriptyline: a multi-centre, double-blind, placebo-controlled trial (TENDER)

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Introduction

Tricyclic antidepressants are often used to treat functional dyspepsia (FD), although high-quality remains limited. We studied the efficacy of nortriptyline in an escalating low dose regimen versus placebo in patients with FD following genotype-guided pre-selection based on cytochrome P450 2D6 (CYP2D6), the primary enzyme responsible for nortriptyline metabolism.

Methods

We performed a double-blind, placebo-controlled trial of patients with FD (Rome IV criteria) recruited from 11 Dutch hospitals. Slow, intermediate and ultrarapid CYP2D6 metabolisers were excluded from randomisation. Normal metabolisers were randomised 1:1 into nortriptyline in an escalating low dose regimen (10, 25 and 50mg) or placebo for a 12-week treatment period. Both participants and investigators were masked to the treatment allocation. Nortriptyline plasma levels were measured in the second week of treatment. The primary endpoint was symptom response in at least 50% of the last 10 weeks of treatment. At the end of the treatment period, patients were asked which treatment they believed to have received.

Results

Between October 2018 and September 2023, 86 participants were enrolled, of which 69 were randomised and included in the intention-to-treat analysis (median age, 39.0 years; female, 75%). There was no significant difference in response between nortriptyline in a low dose regimen compared to placebo (45% vs 58%; OR, 0.574; 95% CI, 0.211 to 1.560; $p=0.276$). Adverse events did not significantly differ between the nortriptyline and placebo group (mean [SD], 3.09 [2.59] vs 2.34 [3.40]; $p=0.237$). Responders showed significantly higher nortriptyline plasma levels compared to non-responders in the nortriptyline group (median, 13.0 $\mu\text{g/L}$; IQR, 12.0-16.0 vs median, 9.0 $\mu\text{g/L}$; IQR, 8.0-10.5; $p=0.003$). The belief to have received nortriptyline resulted in a higher response rate than the belief to have received placebo (77% vs 36%; OR, 11.439; 95% CI, 2.138 to 61.201; $p=0.004$), regardless of the actually given treatment and occurrence of adverse events.

Tailored treatment of functional dyspepsia with nortriptyline: a multi-centre, double-blind, placebo-controlled trial (TENDER)

Conclusion

Nortriptyline was not more effective than placebo in reducing FD symptoms in participants pre-selected based on CYP2D6 genotype, although a biological effect of nortriptyline cannot be ruled out. However, effects related to participants' belief appear to be stronger. These results necessitate further research into placebo/nocebo effects in clinical management of FD.

Myosteatoses in Chronic Pancreatitis is Associated with Major Complications after Surgery: A Pooled Analysis

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Introduction

Background: Chronic pancreatitis (CP) is a progressive fibro-inflammatory disease of the pancreas characterized by persistent pain, malnutrition, and impaired quality of life. Surgery is the cornerstone of treatment in patients with obstructive CP and refractory symptoms. However, despite standardized interventions, postoperative outcomes vary widely. Recent studies in malignancy and critical illness suggest that systemic inflammation and malnutrition induce cachexia and sarcopenia, which may impair surgical resilience and recovery. To date this remains unexplored in CP.

Objective: To investigate the association between preoperative CT-based body composition metrics and clinical outcomes after pancreatic surgery for CP.

Methods

Methods: This retrospective study pooled patient data from two prospective multicentre studies: the ESCAPE randomized controlled trial and a subset of the PORSCHE stepped-wedge trial. Inclusion criteria were adults with CP who underwent pancreatic surgery and had high-quality preoperative abdominal CT imaging. Skeletal muscle, visceral adipose tissue, and subcutaneous adipose tissue were quantified at the L3 vertebral level using the deep learning-based segmentation software MosaMatic.

The primary outcomes were (1) major postoperative complications (Clavien–Dindo grade $\geq$ III), and (2) the PANcreatic surgery Composite Endpoint (PACE), which includes clinically relevant fistula, haemorrhage, or reintervention. Secondary outcomes included ICU admission, reintervention and hospital as well as longitudinal changes in pain (Izbicki score) and health-related quality of life (SF-36) up to 18 months postoperatively.

Results

Results: Among the 117 patients, 29 (24.8%) developed major complications and 37 (31.6%) met the PACE composite endpoint. In multivariable analysis, each one-standard-deviation increase in skeletal muscle radiation attenuation was independently associated with a 52% reduction in the odds of major complications (OR 0.48, 95% CI 0.24–0.93; $p=0.033$). Similarly, the odds of meeting the PACE composite endpoint were 48% lower per SD increase in muscle attenuation (OR 0.52, 95% CI 0.28–0.94; $p=0.033$).

Conclusion

Conclusion: This study demonstrated that lower preoperative skeletal muscle radiation attenuation, a marker of poor muscle quality and myosteatoses, is independently associated with significantly increased risk of major postoperative complications. Incorporating body composition metrics may facilitate the identification of high-risk patients and inform targeted interventions, such as nutritional and physical prehabilitation, to improve surgical resilience and outcomes in chronic pancreatitis.

Push-PEG Reduces Costs While Maintaining Postoperative Outcomes Compared to Pull-PEG: a Retrospective Cohort Study

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Introduction

One-step percutaneous endoscopic gastrostomy (push-PEG) is safe and feasible compared to standard percutaneous endoscopic gastrostomy (pull-PEG) in pediatric patients. The literature suggests that push-PEG reduces hospital costs as it avoids a second procedure requiring hospitalization. However, the financial consequences of perioperative and postoperative outcomes are not taken into account. Therefore, the current study aims to test the hypothesis that push-PEG is associated with lower costs compared to pull-PEG while maintaining postoperative outcomes. Furthermore, perioperative outcomes and type of PEG-related complications were compared.

Methods

This retrospective, single-center cohort study was conducted at the Maastricht University Medical Center. Patients (0 – 18 years) who underwent push-PEG or pull-PEG between January 2015 and November 2024 were assessed for eligibility. Clinical and financial data were extracted from electronic medical records between December 2024 and March 2025. Data analysis was performed using the Chi-Square, Fisher's exact, or Mann-Whitney U test when appropriate. Sensitivity analyses using generalized linear models and a binary logistic regression were conducted. Statistical significance was set at $p < 0.05$.

Results

Statistically significant differences were found between push-PEG (N=129) and pull-PEG (N=50). Push-PEG reduced PEG-related costs by 35% ($\text{Exp(B)}=0.650$, 95% CI 0.548 – 0.770, $p < 0.001$). No statistically significant differences were found in total postoperative complications ($\text{Exp(B)}=1.262$, 95% 0.774 – 2.057, $p=0.350$) and postoperative complications within 90 days ($\text{Exp(B)}=0.629$, 95% CI 0.282 – 1.406, $p=0.259$). Furthermore, push-PEG reduced operative time, anesthesia time, and length of hospital stay by 34%, 41%, and 50%, respectively ($p < 0.001$).

Conclusion

This retrospective cohort study shows that push-PEG is associated with statistically significantly lower PEG-related costs while maintaining postoperative outcomes. Furthermore, push-PEG reduces operative time, anesthesia time, and length of hospital stay. These findings support the assumption that push-PEG is more cost-effective than pull-PEG and encourage the switch to the increasingly used push-PEG as the standard PEG procedure in pediatric patients.

*Genomineerd voor
de Pélerin
onderzoekersprijs
2025*

Semi-continuous disinfection of sinks with UVC on a haematology-oncology department for prevention of nosocomial infection

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Introduction

Patients with haematological and oncological diseases are highly susceptible to infections due to immunosuppression. Two outbreaks of multi-resistant bacteria linked to contaminated water sources on our haematology ward caused infections in patients and prompted interventions such as siphon replacement and intensified disinfection. Despite these interventions, gram-negative bacteria reappeared in sinks several months later, posing a persistent risk for new outbreaks and suggesting that conventional disinfection methods are insufficient for long-term control. The objective of this study is to assess the effectiveness of semi-continuous UVC disinfection of siphon water in reducing microbial contamination in sink drains, drain pipes and subsequent patient colonisation on the haematology ward of Maastricht UMC+.

Methods

We conducted a quantitative clinical intervention study assessing the impact of CLARA UVC® self-disinfecting siphons in a haematology-oncology ward. This device uses UVC light to disinfect the p-trap liquid with at least six 60-minute cycles daily. The study comprised a seven-week baseline phase, followed by installation of CLARA UVC siphons in 28 sinks across 13 patient rooms, and a subsequent 22-week post-measurement phase with weekly water and drain sampling. The control group comprised two subgroups: one in which the siphon was replaced with a new standard siphon and one in which the siphon was not replaced (each 3 rooms, 7 sinks). The data were obtained from May to December 2023.

Results

Forty-two samples were taken weekly. Binary logistic regression model on high or low colony count on p-trap water showed that, compared to no intervention, there was a positive effect of sink replacement by a new one (OR 1.65, 95% CI 1.05-2.56), but replacement by the UVC siphon had a larger effect (OR 4.01, 95% CI 2.23-0.23). No significant positive effect was found for the ESBL colonization of drain pipes and the possible colonization of patients in SDD cultures.

Conclusion

In conclusion, the study demonstrated that UVC disinfection of p-trap liquid in siphons is effective in reducing the bacterial load in the water, but no effect on the bacterial load in drainpipes and patient colonization could be demonstrated.

The role of the subthalamic nucleus in decision-making and reward processing

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Introduction

Deep brain stimulation (DBS) of the subthalamic nucleus (STN) is a standard treatment method for improving Parkinson's disease (PD) motor symptoms. However, the effects of DBS on cognition and behavior are less clear. To evaluate and improve this existing treatment option and its potential side effects, such as impulsivity and apathy, it is of high importance to disentangle the cognitive and neural mechanisms of reward processing in the STN.

Methods

We record neural activity in the STN during DBS stimulation ON and/or OFF using the Medtronic percept while PD patients (n=11) perform a computerized reward-processing task. Participants play a game of luck by stopping a spinning wheel, imagine receiving and rate a variety of rewards. Impulsivity is captured using the self-report Barrat Impulsiveness Scale.

Results

Preliminary behavioural results show potential differences between the DBS stimulation ON and OFF condition. Total response time is significantly lower during stimulation ON compared to stimulation OFF ($t=-2.50$, $p<0.05$). Impulsivity is further negatively correlated to time taken until stopping the spinning wheel ($R=-0.49$, $p=0.10$). On top of that, impulsivity is moderately positively correlated to selecting maximum positive and negative reward ratings during stimulation ON condition ($r=0.54$, $p=0.11$) but less strongly correlated to maximum ratings during the stimulation OFF condition ($r=0.15$, $p=0.68$).

Conclusion

Our preliminary results indicate that both deep-brain stimulation and impulsivity are related to behavioral outcomes captured in the reward processing task and the relevant cognitive processes. By analyzing the neural correlates during task performance in a next step, we hope to gain further insights into the effect of DBS on underlying neural processes related to reward processing and decision-making.

Risk factors of sural nerve axonal degeneration using clinically relevant thresholds in context of glucose metabolism: The Maastricht Study

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Introduction

Distal symmetric polyneuropathy (DSP) is characterized by axonal degeneration. The most sensitive and specific parameter to detect axonal degeneration in DSP is the sural nerve sensory nerve action potential (SNAP) amplitude. Examination of sural nerve axonal degeneration, which can represent both clinical and preclinical changes, can contribute to a better understanding of the pathogenesis and implementation of interventions at an earlier stage.

The aim of this study is to examine the prevalence and risk factors of axonal degeneration from a clinically relevant perspective by using the sural nerve SNAP amplitude threshold. In particular, the differential contribution of risk factors in subgroups defined by diabetes status will be examined, as there is a complex interplay between glucose metabolism and other factors leading to axonal degeneration.

Methods

In 7242 participants (aged 40 – 79 years) of The Maastricht Study, axonal degeneration of the sural nerve was defined as absent responses in addition to amplitudes below the 2.5th percentile ($<2.3\mu V$). Associations between axonal degeneration and anthropometric, cardiometabolic, lifestyle, and sociodemographic factors were determined using logistic regression analysis in the total population and after stratification for diabetes status. Analyses were adjusted for age, sex, height and body mass index (BMI).

Results

Axonal degeneration in the sural nerve was observed in 741 participants (10.2%). Crude analysis showed an increased odds of having axonal degeneration for almost all factors. After adjustments, type 2 diabetes (T2DM), sex, age, height, and BMI were significantly associated with axonal degeneration. After stratification, age, height, and BMI remained significantly associated with axonal degeneration in all subgroups. Associations were strongest in prediabetes, followed by T2DM. Higher odds for women were significant in the non-T2DM group only.

Conclusion

This study shows that individuals that are older, taller, and with higher BMI had increased likelihood of having axonal degeneration. Notably, the increased odds for height and BMI were stronger in those with T2DM and prediabetes respectively. Axonal degeneration occurs more frequently in women. Although only a few robust risk factors remained and these have limited intervention possibilities, this study emphasizes the importance of preventive lifestyle measures targeting BMI in those with prediabetes.

Beyond the pixels: Redefining CT image quality assessment

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Introduction

Sufficient diagnostic image quality (IQ) of CT scans is essential for accurate diagnosis while minimizing radiation dose, requiring a careful balance between IQ and radiation dose. Traditionally, radiologists assess IQ subjectively using a 5-point IQ scale, i.e. Likert scale. However, this is prone to interobserver variability and may not reflect subtle but clinically important differences between images because they are categorized into few quality classes. On the other hand, objective measures like signal-to-noise ratio (SNR) or contrast-to-noise ratio (CNR) do not fully capture the diagnostic IQ as perceived by the radiologist. As a result, IQ assessment can benefit from more advanced methods. Therefore, the goal of this study was to evaluate and propose more reliable subjective and objective methods to assess diagnostic CT IQ.

Methods

The approach included three parts:

- 1) A novel subjective IQ assessment method was developed and evaluated based on pairwise image comparisons where observers directly compare two CT-scans and select the one with superior quality (Figure 1). This was compared against traditional Likert-scale assessments across multiple observers.
- 2) A structured literature review was conducted on existing advanced objective IQ assessment methods, beyond conventional approaches measuring SNR and CNR.
- 3) Automated IQ assessment algorithms are being developed combining mathematical measurements and machine learning approaches to objectively assess perceived diagnostic IQ.

Results

- 1) The pairwise comparison method demonstrated improved inter- and intraobserver agreement and greater sensitivity to image differences than traditional Likert scale assessment.
- 2) The literature review identified 35 relevant studies with advanced objective IQ assessment methods and forms a reference tool for researchers and radiologists in selecting appropriate IQ assessment methods.
- 3) Preliminary results from the automated objective analysis indicate promising accuracy in predicting the nuanced preference of the radiologist CT IQ, allowing large-scale IQ assessment.

Conclusion

Our findings suggest that integrating refined subjective assessment techniques and advanced objective techniques can enhance CT image quality assessment. This offers a more reliable framework to support protocol optimization and quality assurance in clinical imaging.

Enhancing Cardiac Surgery Risk Stratification: Integration of Preoperative Physical Fitness into EuroSCORE II for Predicting Postoperative Complications and Recovery of Physical Functioning

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Introduction

Prehabilitation targeting modifiable risk factors may improve outcomes in cardiac surgery, but evidence is inconsistent, possibly due to inadequate stratification by baseline physical fitness. However, existing risk models like EuroSCORE II do not incorporate physical fitness parameters despite their prognostic relevance.

This study aimed to develop and internally validate two prediction models incorporating physical fitness parameters to estimate the risk of postoperative complications and delayed recovery of physical functioning after elective sternotomy-based cardiac surgery, and to evaluate whether including these modifiable parameters improves the predictive performance of EuroSCORE II.

Methods

This single-center retrospective cohort study included adults (≥ 18 years) undergoing elective sternotomy cardiac surgery at Maastricht University Medical Centre (April 2023–August 2024). Patients underwent standardized preoperative assessments of cardiorespiratory fitness (FitMáx), handgrip and inspiratory muscle strength, frailty (Edmonton Frailty Scale), and BMI. Two models predicting postoperative complications and delayed recovery of physical functioning (mILAS=0 >5 days) were developed and internally validated using EuroSCORE II, BMI, and physical fitness parameters.

Results

Among 287 patients (median age 66 years; 23% female), 25% had complications and 26% delayed recovery. EuroSCORE II, FitMáx (VO_2peak), frailty, and BMI were identified as independent predictors. The model predicting complications showed acceptable discrimination (AUC 71.1%), similar to EuroSCORE II alone (AUC 71.0%). The model predicting delayed recovery showed improved discrimination (AUC 75.0%) versus EuroSCORE II alone (AUC 70.3%).

Conclusion

Incorporating physical fitness parameters improved prediction of delayed recovery but not complications. These findings support using modifiable fitness measures to better identify patients who may benefit from prehabilitation.

Inflammation diminishes muscle regeneration induced by mitochondrial impairment

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Introduction

Chronic obstructive pulmonary disease (COPD) is often accompanied by muscle weakness, reduced muscle mass, and mitochondrial dysfunction, partly due to the spillover of inflammatory and oxidative stress-related mediators from the lungs to skeletal muscle. Muscle-damaging insults such as mitochondrial dysfunction normally evoke a muscle regenerative response, though muscle regeneration appears blunted in COPD. With this study, we aim to investigate how mitochondrial dysfunction and systemic COPD-associated stressors inflammation and hypoxia affect skeletal muscle regeneration in COPD. To test this, we aim to (I) determine whether mitochondrial dysfunction triggers muscle regeneration and (II) evaluate the impact of inflammation (TNF- α) and hypoxia (4% O₂) on this response. We hypothesize that the systemic disease factors inflammation and hypoxia impair muscle regeneration triggered by mitochondrial dysfunction.

Methods

To test our hypothesis, we used Cre/LoxP-based mouse skeletal muscle fusion reporter cell lines to assess muscle regeneration via conditional luciferase expression upon fusion between precursor cells (myoblasts) and muscle fibers (myotubes), a crucial step in muscle regeneration. Healthy or mitochondrially impaired myotubes (by pretreatment with mitochondrial uncoupler CCCP) were co-cultured with healthy myoblasts. Co-cultures were exposed to inflammatory marker TNF- α (10 ng/mL) and/or hypoxia (4% O₂) and compared to their respective controls. Luciferase activity was determined as a measure of fusion.

Results

Mitochondrial dysfunction in myotubes, induced by pre-treatment with CCCP, strongly increased myoblast-myotube fusion (3-fold vs. control; $p < 0.001$). TNF- α reduced fusion in co-cultures with mitochondrially impaired (3-fold; $p < 0.001$) as well as naive myotubes (3-fold; $p < 0.01$). Hypoxia did not impact fusion in co-cultures with mitochondrially impaired myotubes, nor did it elicit an additional effect on fusion when combined with TNF- α vs TNF- α alone.

Conclusion

These results suggest that mitochondrial impairment triggers skeletal muscle regeneration, which is hindered by inflammation, but not by hypoxia. Future work will include more inflammatory cytokines (e.g. IL-1 β and IL-6) and other COPD-related factors (e.g. glucocorticoids), as well as more physiologically relevant conditions such as conditioned medium from COPD-stressed lung cells and patient sera. This will help to further elucidate the mechanisms of progressing muscle dysfunction in patients with COPD.

The Impact of Mastectomy on Arm and Shoulder Function: a Two-Year Follow-Up

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Introduction

Breast surgery is associated with impairment of the arm and shoulder function, which can negatively affect the quality of life. The aim of this study is to evaluate the impact on the arm and shoulder function after breast (reconstructive) surgery in a two year follow-up study.

Methods

This prospective multicenter study included patients who underwent unilateral mastectomy between 2017-2019. Patients were divided into two groups: Mastectomy and Reconstruction. The arm and shoulder function were measured preoperatively and at three and six months, one and two years postoperatively, using the Disabilities of Arm, Shoulder and Hand (DASH) questionnaire, grip strength and range of motion (ROM). Higher DASH scores indicate greater disability. ROM evaluated five movements: anteflexion, abduction, exorotation, retroflexion and endorotation. We analysed the changes over time in the overall group and the differences between the reconstruction group and non-reconstruction group using linear mixed models.

Results

A total of 128 patients were included of whom 49 (38%) had a reconstruction. The average DASH-score was 5.6 ± 1.1 at baseline and significantly increased to 10.6 ± 1.1 at one year and 8.6 ± 1.1 at two years. The reconstruction group had a significantly higher DASH-score at one year. The grip strength remained stable over time for both groups. All ROM-measures decreased significantly postoperatively, and only abduction returned to pre-operative values at two years. The reconstruction group showed a significant decline in retroflexion, in contrast to stable values in the non-reconstruction group.

Conclusion

Overall, arm and shoulder function declined two years after mastectomy, with no recovery to preoperative levels observed, except for grip strength, which remained stable postoperatively. Minor differences were observed between the reconstruction and non-reconstruction groups. These results highlight the importance of preoperative counseling on potential upper extremity functional limitations after surgery. If postoperative complaints arise, referral to a physiotherapist should be considered.

Inflammatory cues from the microbiome: Bacterial membrane vesicles produced in response to prebiotic and antibiotic intake

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Introduction

Introduction The microbiome plays a pivotal role in human health, and gut-borne inflammatory signaling (metabolic endotoxemia) is believed to be involved in the etiology of metabolic syndrome. Gut-bacteria produce factors such as bacterial membrane vesicles (bMV) that affect host physiology. These vesicles carry toll-like receptor (TLR) ligands with inflammatory properties. Dysbiosis of the microbiota yields abnormal vesicle repertoires. This study investigates the nature and characteristics of human gut-derived bMVs following microbiota disruption with the antibiotic vancomycin, and restoration through supplementation with the prebiotic 2'-fucosyllactose (2FL).

Methods

Methods Feces-derived bMVs were isolated from 37 participants with overweight/obesity (BMI 25-40 kg/m²) and normal glucose-tolerance who were randomised after a 7-day course of vancomycin, into two groups receiving either 2FL supplementation or placebo (maltodextrin) for 8 weeks. Fecal-bMVs were isolated before and after vancomycin and after the 8 week intervention, using (ultra)centrifugation and size-exclusion chromatography. Nanoparticle tracking analysis was used to assess bMV size and concentration. Human Toll-like receptor 2 and 4 (hTLR) reporters were employed to measure bMV-associated TLR-ligands such as peptidoglycan and lipopolysaccharide (LPS). Illumina sequencing of 16S rDNA was employed to characterize the bacterial nature of vesicle-associated DNA.

Results

Results: Vancomycin-induced microbiota disruption yielded bMV repertoires more effective at activating both TLRs. Absolute (by volume) and relative (per vesicle) TLR4 activation was most pronounced post-vancomycin. For TLR2 activation only an absolute increase was observed. A larger proportional abundance of *Escherichia-Shigella* and *Clostridia* VadinBB60 group Order was concomitant to increased TLR-activation potential. 2FL and placebo were equally efficient at restoring these parameters, as no differences in composition or TLR activation potential were observed between groups following 8 weeks of recovery.

Conclusion

Conclusion This study demonstrates, for the first time, how vancomycin alters the inflammatory properties and composition of human gut bMVs. These dysbiotic vesicles are more effective at activating the host innate immune system *ex vivo*, and could contribute to metabolic disease. Further research into the nature and functionalities of bacterial membrane vesicles allows insight into this intricate route of communication between microbe and host, to allow an improved understanding of diseases involving gut-borne inflammatory signaling.

Speeding up sepsis diagnosis: A DNA-based method for detecting bacterial bloodstream infections

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Introduction

Sepsis is the body's extreme response to infection and is responsible for 1 in 5 deaths worldwide. Diagnosis relies on blood cultures to identify bloodstream pathogens and guide antibiotic therapy. However, blood cultures take 2-5 days to grow pathogens, delaying targeted treatment. As a result, ICU patients suspected of sepsis are started on broad-spectrum antibiotics preemptively, which carries risks of adverse effects. Blood cultures may also remain negative in patients who have already received antibiotics or when pathogens are uncultivable. In this study, we assess a DNA-based method to detect bloodstream infections that bypasses the need for culture and delivers same-day results.

Methods

In the ongoing RADOS study, 274 blood samples were collected over time from 115 ICU patients, alongside routine blood cultures. Samples were first processed to remove human cells (Polaris®, Philips), then analyzed using a broad-range PCR method (Molecular Culture®, Inbiome) to detect and identify bacterial DNA in the bloodstream. Results were available within 6 hours and compared with blood cultures, other patient cultures, and clinical course for validation.

Results

The routine blood cultures detected a pathogen in 47/274 samples, while the DNA-based method detected bacteria in 63/274 samples. There was 84% concordance between both methods: 79% were direct matches from the same anatomical site and time; 3% were cases where the DNA-based method detected bacteria missed by the corresponding blood culture but confirmed by other patient cultures; and 2% were cases where blood cultures were positive but deemed contaminants, and thus considered negative. In the remaining 16% of cases, discrepancies were observed: in 5%, the DNA-based method failed to identify pathogens found by blood culture; in 1%, different pathogens were identified by each method; and in 10%, the DNA-based method detected additional bacteria not found in blood cultures. These additional detections appeared clinically relevant, aligning with symptoms such as fever and elevated CRP.

Conclusion

These findings underscore the potential of DNA-based methods to significantly reduce the time needed to diagnose bloodstream infections from days to hours. Additionally, the DNA-based method may help identify infections in septic patients whose bloodstream infections are missed by conventional blood cultures.

Inzendingen zonder nominatie

Effect of novel biologicals and small molecules on subjective disease control in IBD

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Introduction

In recent years, several new treatment options have been approved for managing inflammatory bowel disease (IBD). Their efficacy have been studied in large registration trials. However, study populations may differ from the real world situation and separate evaluation of the drug effectiveness is warranted. Given the increasing number of available treatments, subjective control and risk for infections play an increasing role in drug selection. In this study, we aim to explore the real-world use of novel medications for IBD, with a focus on patient experiences and overall well-being using the IBD-Control questionnaire, a patient reported outcome measure developed to assess disease control from the patient perspective.

Methods

In this study, we describe interim analysis of an ongoing multicentre prospective observational cohort study. Patients starting vedolizumab, ustekinumab or tofacitinib included in the remote monitoring care-path with myIBDcoach in the participating centres were eligible for inclusion. Via the myIBDcoach, patients filled out questionnaires every 16 weeks during a follow-up of 48 weeks. The validated IBD-control questionnaire, Monitor IBD At Home questionnaire, and the Patient Reported Infection questionnaire were used to assess subjective disease control, clinical disease activity and infectious complications, respectively. The effectiveness of treatment over time was assessed with linear mixed models for both Crohn's disease (CD) and ulcerative colitis (UC). Both models were corrected for disease duration and disease activity at baseline.

Results

Data from two Dutch centres were included in the analyses. In total, 111 patients were included, of which 63 patients started ustekinumab, 39 patients started vedolizumab and nine patients started tofacitinib. In CD, the IBD-control gradually increased with treatment duration for both ustekinumab and vedolizumab, with no statistical difference between groups (overall $P = 0.624$). In UC, IBD-control also gradually increased for ustekinumab, vedolizumab and tofacitinib, with no statistical differences between medication groups (overall $P = 0.937$). Infection rates were not different between medication groups.

Conclusion

None of the studied medication groups was superior over another, in terms of disease control from a patient perspective for both CD and UC. Future studies should include more patients starting tofacitinib to draw more firm conclusions on IBD control for this medication class.

Prevalence and outcomes of treatment ceilings in hip fracture patients: the role of orthogeriatric care

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Introduction

Hip fractures are associated with high mortality and complex care needs. In recent years, there has been growing recognition that surgery is not always the most appropriate option, especially in frail patients. This shift has led to greater clinical attention for treatment ceilings, such as Do-Not-Resuscitate (DNR), Do-Not-Intubate (DNI) orders and decisions to forgo intensive care unit (ICU) admission. However, data on their use and impact in hip fracture care remain limited. Therefore, this study aimed to (1) describe the prevalence and determinants of treatment ceilings, (2) evaluate their associations with length of stay (LOS) and mortality, and (3) assess the role of orthogeriatric care (OGC) in their implementation.

Methods

This retrospective cohort study included 1,120 hip fracture patients admitted to Maastricht University Medical Centre+ between 2017-2018 and 2021-2022. Patients received either usual care (UC) or OGC. Treatment ceilings were categorized into full treatment orders, limited orders (DNR, or optional ICU/intubation), or completely limited orders (DNR/DNI and no ICU). Multinomial logistic regression identified predictors of treatment ceiling category and Cox proportional hazard models assessed associations with mortality.

Results

Median age was 82 years (IQR 74–87) and 66.2% were female. Median Katz ADL index was 5.0 (IQR 2–6), and median age-adjusted Charlson Comorbidity Index was 5.0 (IQR 4–6). Prior to admission, 13.6% of patients resided in a nursing home. Treatment ceilings were present in 50% of patients and remained stable over time. They were more common in patients with higher age, comorbidity, dependency, ASA-classification, and nursing home residency. Completely limited orders showed the highest mortality risk (aHR 3.79 95%CI 2.79-5.16) and the longest LOS. While OGC did not increase the frequency of treatment ceilings, it was associated with significantly lower 1-year mortality across all ceiling categories (aHR 0.69, 95%CI 0.54-0.87).

Conclusion

Although the frequency of treatment ceilings did not increase, OGC improved survival across all treatment ceiling categories. These findings emphasize the need for structured decision-making, standardised definitions, and greater integration of geriatric expertise in the care of older patients with hip fractures. Treatment ceilings are not about doing less, they are about deciding better.

Optimizing screening intervals for at-risk family members of dilated cardiomyopathy carrying a TTN truncating variant: a multi-state model approach

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Introduction

Background: Cardiomyopathy guidelines recommend screening of at-risk family members for dilated cardiomyopathy (DCM) every 1-3 years, straining clinical resources. Truncating variants in Titin (TTNtv) are the most prevalent genetic cause, however the diagnostic yield of screening is low. Risk-based stratification could optimize screening intervals and resource allocation.

Objectives: This study examined the clinical predictors of DCM development in TTNtv family members.

Methods

Unaffected family members carrying a (likely) pathogenic TTNtv from seven international centers underwent cardiac and genetic screening. We defined three stages of DCM development: (1) phenotype negative (no echocardiographic abnormalities or symptoms), (2) borderline DCM (left ventricular (LV) dilatation >2SD OR LV ejection fraction (EF)<50%), and (3) DCM (LV dilatation >2SD AND LVEF<50%). Predictors for DCM diagnosis were tested by Cox proportional hazard regression. Utilizing Kaplan-Meier curves and the risk factors associated with DCM development, we established different risk profiles. The study's screening algorithm was developed using a continuous-time Markov chain model.

Optimizing screening intervals for at-risk family members of dilated cardiomyopathy carrying a TTN truncating variant: a multi-state model approach

Results

Among 413 unaffected family members, 301 family members had follow-up (median of 5.7 years); 24.6% developed borderline DCM, and 17.3% developed definite DCM. Family members with borderline DCM developed more often DCM phenotype as compared to the phenotype negative family members ($p < 0.001$) (Figure 1A). Based on the identified risk factors, age ≥ 30 years, male sex and borderline DCM, three distinct profiles were established: (1) family members with borderline DCM, (2) females ≥ 30 years and males, and (3) female family members < 30 years. A screening algorithm was developed, recommending intervals of 1, 3 and 5 years, respectively, optimizing the balance between safety and effectiveness (Figure 1B).

Conclusion

Unaffected family members carrying a TTN truncating variant (TTNtv) can be stratified into the three defined risk profiles based on age, sex, and echocardiographic parameters. Corresponding screening intervals of 1, 3, or 5 years are recommended for each group. Implementing genotype-specific risk stratification in family members enables more efficient use of clinical resources and more personalized follow-up.

SPEAKtoCOPD: a flashmob study to collect COPD speech

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Introduction

Recent studies suggest speech is an effective way of monitoring or diagnosing respiratory diseases. Speech analysis, performed with Machine Learning, requires large datasets to train models. SPEAKtoCOPD aspired to gather data through a website with a flashmob study around World COPD Day 2024.

The flashmob research methodology aims at collecting many data in little time to accelerate the entire research process. Three main teams are involved: (1) the core research team who are responsible for study set-up, campaign strategy and analysis, (2) the ambassadors who coordinate the study in their local site, (3) the “mob” which are the participants themselves.

Methods

Study website www.speaktocopd.com was available through participant’s own mobile devices. The site’s design was tested by people with COPD to ensure the study could be mostly performed independently by participants. Additionally, we provided subtitled instruction videos.

Around 20 demographic and health-related questions were posed on the site added to four speech tasks (sustain /a/ and /u/, repeat a sentence 3x and repeat the word “helicopter”). Post-hoc quality control was administered to test whether participants had completed the tasks as intended.

Promotion materials were spread online and throughout multiple sites in the Netherlands. Ambassadors from the Lung Foundation Netherlands and other hospitals aided in the dissemination of the study. Two main collection moments were the release of patient magazine ‘Longkracht’ and World COPD Day on the 4th and 20th of November respectively.

Results

Data from 1176 participants were gathered within a month of study launch, with the majority having a respiratory disease. 753 (64%) of the participants completed all four speech tasks correctly. Most mistakes were made in the repetition of the sentence, where people either repeated the sentence once (not 3x) or pronounced some words incorrectly. Recording quality was sufficient for 94.6% of the recordings and 110 recordings were labelled as ‘mis-clicks’, where the duration was <1s.

Conclusion

Flash mobs are an effective way to gather data and interest for research. An online platform that is tested by your intended audience can ensure a high success rate. Motivated ambassadors are key to achieving a targeted yet diverse data collection.

Assessing the Feasibility of Robotic-Assisted Microsurgical Lymphaticovenular Anastomosis in Breast Cancer-Related Lymphedema: Preliminary Results from a Randomized Controlled Trial

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Introduction

Breast cancer-related lymphedema (BCRL) is a common side effect of breast cancer treatment, significantly impacting patient's daily life (1). Lympho-venular anastomosis (LVA) is a possible treatment, connecting a lymph vessel and a vein, with an average diameter of 0.3mm- 0.8mm (2). Robotic assistance has emerged as a potential tool to improve surgical precision beyond the manual capabilities of a trained microsurgeon. The MUSA robot was designed in collaboration of microsurgeons of the Maastricht University Hospital (MUMC+) and technical engineers of the Technical University of Eindhoven. This pilot study explores the potential of the MUSA robot in performing the LVA in BCRL.

Methods

This ongoing randomized pilot trial includes 60 patients with BCRL in the forearm and hand. Thirty patients receive robot-assisted anastomosis and thirty receive anastomosis by hand. The main outcomes include anastomosis duration and quality, as well as clinical outcomes (LYMPH-ICF, UEL-index).

Results

All 60 patients have now undergone surgery: with 27 in the robotic group and 33 in the manual group. The mean time per anastomosis was 16 minutes and 56 seconds ($\pm 8:01$) in the robotic group versus 8 minutes and 1 second ($\pm 3:28$) in the manual group. A clear downward trend in anastomosis time was observed in the robotic group, indicating a learning curve and improving efficiency. Analysis of clinical outcomes is ongoing.

Conclusion

This study shows the feasibility of using the MUSA robot for treating BCRL, with a gradual decrease in robotic procedure times. As the study is ongoing, clinical outcomes data are not yet available.

Disclosure of negative sexual experiences to gynaecologists and midwives: A qualitative study of women's preferences

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Introduction

Negative sexual experiences are associated with various gynaecological complaints and obstetric complications. It is therefore essential for healthcare providers to be aware of negative sexual experiences to provide effective and trauma-sensitive care. Gynaecologists and midwives are motivated to address patients' sexual history, but often lack sufficient knowledge on how to do so. This qualitative study aims to establish how healthcare providers can best address negative sexual experiences by exploring women's preferences with disclosing negative sexual experiences to gynaecologists and midwives.

Methods

A cross-sectional qualitative design was used with a web-based questionnaire among women who disclosed their negative sexual experience to a gynaecologist or midwife. The questionnaire was distributed via the Dutch Sexual Assault Center, social media channels and outpatient clinics. A reflexive thematic analysis was conducted.

Results

Based on 147 responses, we generated three themes: (1) women's need for empathy and understanding of trauma response in healthcare providers. Empathy entailed a non-emotional stance, authenticity, validation after disclosure and sufficient time for a conversation. (2) Women's need for healthcare providers to take the lead in addressing negative sexual experiences. This entailed inquiring about negative sexual experiences proactively, informing women about possible connection between negative sexual experience and symptoms, addressing needs and options, and providing follow-up care. (3) Women's need to be in control over the narrative and care pathway. This entailed control over the level of detail women wish to share, the terminology used, medical records, and who is present during consultations.

Conclusion

The three identified themes of this study can be used to inform education and trauma-informed guidelines on how gynaecologists and midwives can best address negative sexual experiences in practice. By displaying an empathetic attitude and understanding of trauma responses, taking the lead in addressing negative sexual experiences and giving women control over the narrative and care pathway, healthcare providers may avoid further harm or re-traumatisation.

Dynamic impact of the COVID-19 pandemic on health-related quality of life and symptom burden of the Dutch dialysis population – a nation-wide registry study

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Introduction

Although public measures were essential during the coronavirus disease 2019 (COVID-19) pandemic, they may have significantly impacted the health-related quality of life (HR-QoL) of vulnerable populations, such as those receiving dialysis treatment. Existing data, however, is inconclusive and limited to early pandemic phases. We studied the HR-QoL and symptom burden of the Dutch dialysis population across early and late pandemic phases and explored indirect effects from lockdowns, COVID-19 infection and vaccination.

Methods

We collected SF-12 and Dialysis Symptom Index questionnaires nation-wide from routine dialysis care (Nefrodata). The SF-12 derived physical (PCS) and mental (MCS) component summary scores were calculated using algorithms by which 50 points reflect the average score in the general population. Scores range from 0 to 100 with higher scores indicating a higher HR-QoL. The symptom burden is the sum of 30 symptom severity scores and ranges from 0 to 120 with higher scores indicating a higher burden. Outcomes within the Dutch dialysis population were longitudinally analysed from the pre-pandemic year to pandemic periods using mixed models and negative binomial regression. Indirect mediating effects were estimated for COVID-19 infection and vaccination through mediation proportions. Lastly, we report on 30 symptom prevalences over time using generalized estimating equations.

Dynamic impact of the COVID-19 pandemic on health-related quality of life and symptom burden of the Dutch dialysis population – a nation-wide registry study

Results

We included 22,355 questionnaires from 5,495 dialysis patients. During the pre-pandemic year, mean PCS and MCS scores were 36 ± 10 and 48 ± 10 , and the median symptom burden was 17 [9–28]. PCS scores improved in the first lockdown (+1.12 [95%-CI 0.47, 1.77]) but worsened during Omicron (-0.59 [-1.05, -0.14]). MCS scores worsened during Delta (-1.25 [-1.77, -0.73]) and Omicron periods (-1.46 [-1.97, -0.96]). During lockdowns, the symptom burden improved (first: -11.7% [-18.2, -4.7], second: -6.9% [-12.0, -1.5]) and coughing was consistently less prevalent throughout the pandemic. COVID-19 infection and vaccination mediated 75% and 57% of the PCS decreases observed during Delta and Omicron periods.

Conclusion

The HR-QoL and symptom burden of dialysis patients fluctuated throughout the pandemic, with outcomes improving during lockdowns but declining during phases with emerging variants and relaxed restrictions. In future pandemics, vulnerable populations may benefit from the sustained use of mitigating interventions, like vaccination, protective measures, and rehabilitation.

Implementation of energy saving measures for operating room heating, ventilation, and air conditioning systems: a multi-centre interview and focus group study

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Introduction

There is an urgent need to decrease the environmental impact of healthcare, including in the operating room (OR). Heating, ventilation, and air conditioning (HVAC) systems are a major source of energy consumption, accounting for 70–90% of the OR's energy use. The implementation of HVAC-related energy saving measures varies greatly across Dutch hospitals, with equivocal evidence of underlying causes. The purpose of this study was to identify key determinants influencing the local implementation of HVAC-related energy saving measures.

Methods

We performed a multi-centre interview and focus group study, using purposive sampling to recruit clinicians, technicians, managers, and infection prevention specialists with relevant experience in Dutch academic and general hospitals. Phase 1 employed semi-structured interviews based on the Consolidated Framework for Implementation Research (CFIR). We compiled findings into a shortlist of potential barriers and facilitators for implementation of HVAC-related energy saving measures. Phase 2 employed focus groups, wherein participants individually ranked the importance of the shortlisted items and consequently discussed their collective scores. Focus groups were transcribed verbatim, coded by two researchers, and discussed for consensus using a CFIR-based deductive-inductive approach. We analysed key determinants using Thematic Analysis.

Results

We conducted 9 expert interviews and 8 focus groups in 5 different hospitals, including 40 participants in total. HVAC-related energy saving measures varied across centres, not including any centre which had implemented OR class differentiation. Perceived complexity – both organisational and technical, collaboration between disciplines, and individual drivers of implementation emerged as key themes determining implementation (Figure 1). Presence of a (clinical) champion was regarded as a key driver of implementation, yet not a decisive factor. Other factors were: trust and communication between relevant stakeholders, individuals' motivation, and organisational priorities, reflected in available resources. Strikingly, the current HVAC guideline was perceived as barrier and facilitator to implementation – influenced by individuals' knowledge/beliefs regarding HVAC and surgical site infections.

Conclusion

Implementation of HVAC-related energy saving measures in the OR appears acceptable, yet its feasibility is hampered by organisational dynamics, technical challenges, and individual knowledge gaps. Involvement of clinician champions, managerial priority, and close collaboration of internal stakeholders can catalyse successful local implementation.

The effect of neoadjuvant chemotherapy on ductal carcinoma in situ in triple-negative breast cancer patients: A nationwide analysis

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Introduction

Previously, ductal carcinoma in situ (DCIS) was considered unresponsive to systemic treatment, making its presence in invasive breast cancer patients a challenge for de-escalating breast surgery after neoadjuvant systemic therapy (NST). However, recent studies show that DCIS accompanying HER2+ breast cancer can be completely eradicated following NST in up to 52% of patients. We aimed to determine the pathologic complete response (pCR) rate of DCIS in triple-negative breast cancer (TNBC) patients treated with neoadjuvant chemotherapy (NACT) in a nationwide cohort and to assess clinicopathological variables associated with response. Furthermore, the impact of DCIS on surgical treatment was investigated.

Methods

Women diagnosed with TNBC, treated with NACT followed by surgery, between 2010 and 2020, were selected from the Netherlands Cancer Registry. Pre-NACT and postoperative pathology reports were obtained from Palga, the Dutch nationwide pathology databank, to determine presence of DCIS. Clinicopathological factors associated with DCIS response were investigated using uni- and multivariable logistic regression analysis.

Results

In total, 4494 patients were included. A DCIS component was present in the pre-NACT biopsy of 442 (9.8%) patients. In 53.6% (237/442), a pCR of the DCIS component was achieved. In univariable logistic regression analysis, the presence of calcifications in the pre-NACT biopsy was associated with a lower chance of DCIS response (OR 0.52, CI 95 % 0.27–0.98, $p = 0.04$). No statistically significant associations were found in multivariable analysis between DCIS response and clinicopathological variables. A pCR of the DCIS component was achieved significantly more often in case of a pCR of the invasive component compared to residual IBC (70.6 % vs 40.0 %, $p < 0.001$). Mastectomy rates were higher in case of IBC + DCIS compared to IBC without DCIS (53.4 % vs 40.1 %, $p < 0.001$).

Conclusion

pCR of DCIS after NACT occurred in 53.6 % of TNBC patients. Therefore, the presence of DCIS in TNBC patients should not necessarily diminish the eligibility for breast-conserving surgery. Future studies are required to be able to predict DCIS response based on clinicopathological variables and imaging.

Respiratory EMG and dyspnea during exercise in COPD patients

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Introduction

Exertional dyspnea is the main symptom of COPD. Based on the positive relationship between the levels of dyspnea (Borg score) and the electrical activity of respiratory muscles (electromyogram, EMG) during an incremental cardiopulmonary exercise test, it has been suggested that respiratory EMG can provide a physiological biomarker for dyspnea. This study aimed to characterize the relationship between dyspnea and EMG during exercises simulating daily activities.

Methods

Surface EMG was measured at 2 locations on the chest of 28 COPD patients while they were performing constant-work rate cycling tests and walking/cycling exercises that were part of their rehabilitation program. Simultaneously, the level of dyspnea was assessed using the Borg score at several timepoints throughout the exercise sessions, along with respiration rate (RR) and heart rate (HR). Patients completed each up to 10 such study visits during their 8-week stay at the rehabilitation center (CIRO, the Netherlands).

Results

In total, 1981 Borg-dyspnea scores with associated EMG measurements were recorded during 263 study visits. A linear mixed model was used to assess the relation of the Borg-dyspnea score with EMG while controlling for RR, HR, (type of) exercise, age and sex. Random effects for patient and visit were included to account for correlation in the measurements. EMG had a highly significant association with the Borg-dyspnea score ($p < 0.0001$).

Conclusion

Respiratory EMG and Borg-dyspnea score showed consistent positive correlations, of which the magnitude varied between patients. These results indicate that respiratory EMG can provide a physiological biomarker for dyspnea during activities of daily living in COPD patients.

Pediatric Inguinal Hernia Repair with Laparoscopy (PIHRL)-trial: A multicenter study comparing extra-corporeal Percutaneous Internal Ring Suture (PIRS) and intra-corporeal purse-string suture for inguinal hernia

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Introduction

Techniques for inguinal hernia repair (IHR) in children are continuously being improved. Open repair is increasingly giving way to laparoscopy, with two possible approaches for laparoscopy: extra-peritoneally (Percutaneous Internal Ring Suturing, PIRS) or intra-peritoneally (conventional laparoscopy with purse-string suture). The aim of this trial is to compare outcomes, e.g. recurrence and anesthesia times, of PIRS with intra-corporeal laparoscopy using a purse-string suture (LIHR).

Methods

Subjects were prospectively included in the 'Pediatric Inguinal Hernia Repair with Laparoscopy' (PIHRL)-trial, to undergo surgery with PIRS or LIHR. Follow-up was conducted one year after surgery. Data concerning post-operative complications and anesthesia times were collected. Parents were asked to complete two questionnaires (POSAS and TAPQoL/TACQoL) to assess cosmetic results and quality of life.

Results

177 subjects were included (PIRS n=126, LIHR n=51). There was a baseline difference in age between the groups from the different centers. Total anesthesia time was significantly shorter with PIRS (62.1+24.6min vs. 84.7+21.7min, p=0.001). One readmittance within 30 days occurred in the LIHR group due to hemorrhage. This resolved spontaneously without the need for intervention. There was a significant difference in recurrence rate (PIRS n=2, LIHR n=4, p=0.038). One patient in the PIRS group suffered from testicular atrophy (p=0.523) and five re-interventions were necessary after PIRS due to wound complications (p=0.984).

Conclusion

PIRS is safe and effective for pediatric IHR, with shorter anesthesia times and a lower recurrence rate compared to LIHR at one year follow-up. Longer follow-up and a larger sample size are necessary to confirm these results.

Ultrasound-Guided Vascular Access in Children: Psychomotor Expertise and Collective Competence in Practice

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Introduction

Establishing intravenous access in pediatric patients can be technically demanding and emotionally charged. While ultrasound-guided vascular access (UGVA) can significantly improve success rates, its effective application in – often anxious, non-cooperative – infants depends on more than technical proficiency and current educational design does not prepare trainees for real-world complexities. This study investigates the role of interprofessional collaboration and psychomotor expertise in pediatric UGVA to advance transfer of training into practice.

Methods

A video-reflexive ethnographic (VRE) approach was used to capture authentic pediatric UGVA procedures, performed at a tertiary pediatric hospital. Multi-angle video recordings were reviewed during reflexive sessions to co-create insights into expert performance together with participating healthcare providers. A reflexive thematic analysis was conducted to identify key processes related to psychomotor performance and team collaboration.

Results

Two overarching themes emerged. (1) Expert practitioners anticipated and demonstrated rapid, psychomotor adjustments in response to unexpected patient movement, integrating environmental factors, communicative cues, and emotional regulation strategies. (2) UGVA was characterized as a collective adaptive team performance. Not only healthcare professionals but also parents and the child actively contributed to a coordinated “team choreography”. Critical elements included nonverbal alignment, mutual trust, and adaptive teamwork.

Conclusion

Pediatric UGVA requires a combination of technical skill, adaptive psychomotor control, and collective competence. Training programs should move beyond isolated skill training to incorporate context-responsive procedural comfort strategies, cognitive load management, and interprofessional verbal and non-verbal communication. Integrating these components may enhance skill transfer to clinical practice and improve procedural outcomes in pediatric care.

The DOAC-FRAIL Study: Prevalence of Deviant DOAC levels in Frail Nursing Home Residents

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Introduction

Direct Oral Anticoagulants (DOACs) are increasingly preferred for managing atrial fibrillation and venous thromboembolism (VTE) due to their superior safety and efficacy compared to Vitamin K Antagonists (VKAs). However, their use in frail nursing home residents poses challenges due to multimorbidity, polypharmacy, and altered pharmacodynamics, potentially leading to suboptimal DOAC levels. This study aims to assess the prevalence of deviant DOAC levels in this population.

Methods

This prospective cohort study evaluates DOAC levels in nursing home residents receiving DOAC therapy. An additional blood sample was collected each time a routine blood test was ordered by the attending physician at the nursing home, which began on July 1, 2024 and is ongoing. Deviant DOAC levels were defined as a DOAC levels outside the expected ranges as described by the Dutch antithrombotic guideline (and in line with ranges proposed by Douxfil et al).

Results

Up until March 2025, a total of 88 nursing home residents were approached, with 73 providing informed consent. Blood samples were collected from 41 participants (mean age 83.8 ± 7.65 years, 41.5% male, mean BMI 23.5 ± 4.89 kg/m²). Of the participants, 82.9% were on DOAC therapy for atrial fibrillation, 7.3% for deep vein thrombosis, and 9.8% for pulmonary embolism. Among participants with known kidney function (85.4%), 48.57% had impaired renal function (eGFR <60 ml/min/1.73m²). Apixaban was used by 25 participants, edoxaban by 4 and rivaroxaban by 12 participants. Overall, 41.5% 58.5% of participants had DOAC levels within outside the expected range,, while 41.5% had levels outside this range, with 7.3% below the lower limit and 34.1% above the upper limit. Among apixaban users 44% had levels above the range. For rivaroxaban 25% had levels below the expected range and 25% had levels above. All edoxaban users had levels within the expected range.

Conclusion

The current study indicates that a significant proportion (41.5%) of nursing home residents exhibit DOAC levels outside the expected range. Deviations in DOAC levels were observed both above and below the expected ranges, potentially increasing the risks of bleeding and thrombosis. Larger, prospective studies are essential to investigate whether deviant DOAC levels are truly associated with an increased risk of thrombotic or bleeding complications.

The culture of (not) valuing teaching: the boundaries to growth in academic health professions education.

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Introduction

In health professions education, faculty members often combine teaching with other roles, such as research and patient care. Teaching is often undervalued, which may be related to the culture of an organization. So far, little is known about the organizational culture regarding the valuing of teaching. Such knowledge is important as high quality teaching is important for faculty's growth and development. Due to inherently contradictory priorities, organizations can be confronted with competing values. Based on this, Quinn et al. (2011) developed a competing values model to describe an organizational culture that consists of two main dimensions: a focus on control versus flexibility and an internal versus external focus. This results in four types of orientations: a collaborative orientation (internal/flexible), a control or efficiency orientation (internal/control), an innovation orientation (external/flexible) or an achievement orientation (external/control). The aim of this study is to explore how current and preferred valuing of teaching relates to organizational culture according to faculty members.

Methods

We conducted a qualitative study including 18 semi-structured vignette interviews with faculty members who are involved in teaching, besides research and/or patientcare. Quinn's competing values framework was used to explore the organizational culture. Interviews were transcribed and we combined an inductive and deductive approach to analyze the data.

Results

Teaching was voiced to be currently generally undervalued in comparison to research and patient care, mostly because department leaders prioritize the latter two. There was a general preference to being valued for teaching more. The current organizational culture around teaching was perceived to have a strong focus on efficiency and formal requirements, such as teaching hours. Participants also experienced an organizational focus on collaboration. They preferred a stronger focus on collaboration and professional development of teachers. Findings indicate differences among department leaders. Some leaders focus on teaching as fulfilling requirements, whereas others see teaching as being of value for the organization, offering faculty members opportunities for professional growth and high-quality education.

Conclusion

Participants prefer a stronger focus on collaboration and professional development in teaching. Finding a balance between a collaborative and control oriented organizational culture towards valuing of teaching seems to be challenging for leaders.

The Usefulness of the Modified Steep Ramp Test as a Practical Exercise Test for Preoperative Risk Assessment in Patients Scheduled for Pancreatic Surgery

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Introduction

The widespread implementation of a preoperative assessment of aerobic capacity requires a practical field test. This study investigated the validity of the modified steep ramp test (SRT) for evaluating preoperative aerobic capacity and to evaluate its usefulness for preoperative risk assessment in patients planned for pancreatic surgery.

Methods

Patients scheduled for pancreatic surgery who preoperatively performed cardiopulmonary exercise testing (CPET) and the modified SRT within 14 days were included. To assess its criterion validity, the correlation between the achieved work rate at peak exercise (WR_{peak}) at the modified SRT and oxygen uptake (VO₂) at peak exercise (VO_{2peak}) during CPET was determined. To evaluate the ability of the modified SRT to correctly classify patients as fit or unfit, receiver operating characteristic (ROC) analyses were performed based on the CPET VO_{2peak} cutoff 18.0 mL.kg⁻¹.min⁻¹ and VO₂ at the ventilatory anaerobic threshold (VAT) cutoff 11.0 mL.kg⁻¹.min⁻¹.

Results

Forty-eight patients (21 females) aged 68.7±7.6 years were included. Modified SRT WR_{peak} (W/kg) demonstrated a very strong correlation with CPET VO_{2peak} ($p=0.865$, $r=0.926$). The modified SRT WR_{peak} cutoff to most accurately classify patients as fit or unfit was 2.095 W/kg for the CPET VO_{2peak} cutoff (area under the curve (AUC) of 0.948) and the CPET VO₂ at the VAT cutoff (AUC of 0.814).

Conclusion

The modified SRT is a valid short-term practical exercise test to preoperatively assess aerobic capacity in patients undergoing pancreatic surgery. A modified SRT performance below 2.1 W/kg seems clinically most suitable to select candidates for further preoperative CPET evaluation and/or prehabilitation, given its positive and negative predictive value.

Bacterial Signatures in Glioblastoma: Fact, Artifact, or Insight?

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Introduction

Recent studies have suggested that bacteria may reside within solid tumors and influence tumor biology or treatment response. In glioblastoma (GBM), the presence and relevance of intratumoral bacteria remain controversial, partly due to the extremely low biomass and risk of contamination. This pilot study aimed to detect bacterial DNA in fresh GBM tissue using 16S rRNA gene sequencing via nanopore technology, while carefully controlling for background noise.

Methods

We included five patients undergoing surgery for primary GBM. Per patient, three samples were collected: (1) tumor tissue in sterile buffer, (2) a matched negative control tube processed identically but without tissue, and (3) an EDTA blood sample. DNA was extracted using the Qiagen DNeasy kit, and the full-length 16S rRNA gene was amplified and sequenced using the Oxford Nanopore 16S Barcoding Kit (V14) on an R10.4.1 flow cell. Sequence reads were processed and analyzed using a Galaxy-based pipeline (quality filtering, Kraken2 classification, Krona visualization). As an additional control, we analyzed the data using an in-house pipeline from the molecular diagnostics department. We explicitly reported read counts for each sample.

Results

Bacterial DNA was detected in both tumor and control samples. However, the number of reads in tumor samples was limited, and bacterial signals were frequently also present in negative controls. In several cases, control samples yielded high read counts, suggesting reagent or environmental contamination. Furthermore, the taxonomic resolution was low, and most bacterial sequences were considered non-specific or likely artefactual. Notably, our study contrasts with earlier research that used short-read Illumina sequencing targeting partial 16S fragments (300–400 bp), which are less specific. By using full-length 16S sequencing, we increased the likelihood that positive reads truly represent pathogenic bacteria.

Conclusion

This explorative study showed no robust evidence for the presence of intratumoral bacteria in glioblastoma tissue. Our findings emphasize the importance of methodological rigor and reporting of sequencing depth, and suggest that previous conclusions may be challenged when more comprehensive and controlled approaches are applied.

Comparison of postoperative breast sensation between different flap types for innervated autologous breast reconstruction

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Introduction

Sensory nerve coaptation enhances sensation after autologous breast reconstruction, significantly improving quality of life. While the Deep Inferior Epigastric Perforator (DIEP) flap is the gold standard, many patients require alternative options such as the stacked hemiabdominal extended perforator (SHAEP), lateral thigh perforator (LTP), superior gluteal artery perforator (SGAP), diagonal upper gracilis (DUG), and lumbar artery perforator (LAP) flaps. However, sensory recovery in these alternative flaps remains unstudied. Since breast sensation plays a critical role in the overall outcome of reconstruction, it is essential for patients to have realistic expectations regarding sensory recovery following innervated reconstruction. This study aims to address that gap by comparing breast sensation among different types of autologous breast reconstruction with sensory nerve coaptation.

Methods

A single-center, cross-sectional study included female patients aged 18 or older who underwent therapeutic or prophylactic mastectomy followed by innervated autologous free flap reconstruction at least 7 months postoperatively. Sensory testing occurred using Semmes-Weinstein Monofilaments (SWM), Pressure Specified Sensory Device (PSSD), and a thermostimulator for tactile and temperature thresholds. Multivariate linear regression analyzed breast sensibility across five flap groups, using DIEP as the reference, adjusting for postoperative time and BMI.

Results

A total of 58 patients (95 innervated breasts) were included: 15 DIEP (23 breasts), 8 DUG (14), 9 SHAEP (17), 10 LTP (17), 7 SGAP/Sc-GAP (12), and 9 LAP (12). LTP had the best sensory outcomes in both native and flap skin in SWM, while DUG had the poorest. Except for DUG, all groups outperformed DIEP. In static PSSD, DUG performed worst, while LTP and SGAP/Sc-GAP had lower thresholds, with LTP best. In dynamic PSSD, LTP performed best, and all groups, including DUG, surpassed DIEP. Tactile and temperature testing confirmed DIEP had the poorest protective sensation, while LTP and SGAP/Sc-GAP had the best.

Conclusion

Despite the small sample size, this study showed that DIEP flaps had poorer sensory outcomes compared to other flaps. LTP and SGAP/Sc-GAP flaps demonstrated the best recovery. Interestingly, these findings contrast prior research, which favored DIEP for donor-site sensation.

Cost-effectiveness of lymphaticovenous anastomosis combined with complex decongestive therapy versus complex decongestive therapy alone for breast-cancer related lymphedema: results from a multicenter randomized controlled trial (the Dutch Lymph Trial)

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Introduction

Lymphaticovenous anastomosis (LVA) is an increasingly used microsurgical treatment for early-stage lymphedema that offers partial lymphatic reconstruction. However, its cost-effectiveness has not yet been evaluated in a randomized controlled trial (RCT). This study aims to evaluate the cost-effectiveness of LVA combined with complex decongestive therapy (CDT) compared to CDT alone for breast cancer-related lymphedema (BCRL).

Methods

Cost-effectiveness data were collected alongside 'the Dutch Lymph Trial', a non-blinded RCT comparing LVA combined with CDT to CDT alone. The study was conducted from January 2019 to January 2025 in two academic hospitals and one general hospital in the Netherlands. Patients with BCRL were randomized 1:1 to receive either LVA plus CDT or CDT alone. A societal perspective with a 2-year time horizon was adopted. Health-related costs and productivity losses were collected using the Medical Consumption Questionnaire (iMCQ) and the Productivity Cost Questionnaire (iPCQ), respectively. Quality-adjusted life years (QALYs) were calculated using the EuroQol-5D-5L. To address missing data, multiple imputation was applied, while uncertainty was assessed through bootstrapping and sensitivity analyses. The primary outcome was the incremental cost-effectiveness ratio (ICER), expressed as cost per QALY gained.

Results

One hundred female patients (mean age 59 years) were included. After two years, mean total costs were €16.234 in the LVA group and €14.293 in the CDT group, with an adjusted mean difference of €78 (95% CI, -€6.044; €6.200). Mean QALYs over two years were 1.636 (SE 0.003) in the LVA group and 1.579 (SE 0.002) in the CDT group, with an adjusted mean difference of 0.045 (95%CI, -0.021; 0.112). The ICER was €1.716 per QALY gained. The probability that LVA is cost-effective compared to CDT was 61% at a willingness-to-pay threshold of €20.000 per QALY and 71% at a threshold of €50.000 per QALY.

Conclusion

LVA combined with CDT was more costly than CDT alone, but differences in societal costs and effectiveness after two years were limited. LVA appears likely cost-effective, though with considerable uncertainty.

Activin Type II Receptor Blockade Impacts Muscle Wasting in Glucocorticoid-Treated Exacerbations of COPD

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Introduction

COPD is often accompanied by muscle wasting. Muscle wasting intensifies during exacerbations of COPD (ECOPD), partially driven by glucocorticoids (GCs) given as standard-of-care treatment. As GC-driven wasting partially relies on myostatin signaling, we hypothesized that blocking its receptor (with CDD866) would attenuate muscle wasting in GC-treated ECOPD.

Methods

Emphysema ('COPD') was induced in male C57BL/6J mice by intratracheal elastase followed by vehicle or lipopolysaccharide (LPS) instillation to evoke pulmonary inflammation, mimicking ECOPD. Dexamethasone (GC) was injected daily ('GC-ECOPD') and CDD866 (CDD, provided by Versanis Bio) once with the first GC dose. μ CT scans were made weekly to confirm development of emphysema, and before and 48h after LPS to measure muscle volume. Excised hindlimb muscles were weighed and used for gene expression analyses.

Results

Compared to control, body weight change of GC-ECOPD was lower (-6.4%, $p < 0.001$) whereas body weight change of GC-ECOPD/CDD866 was not. GC-ECOPD was not different from GC-ECOPD/CDD866. Muscle weight was reduced in GC-ECOPD compared to control (-6.7%, $p < 0.01$), but not in GC-ECOPD/CDD866. GC-ECOPD muscle weight was not different from GC-ECOPD/CDD866. Preliminary analysis of right hindlimb muscle volume change showed no significant difference of GC-ECOPD or GC-ECOPD/CDD866 compared to control (-6.6% and +0.7% respectively, compared to -1.8%). Compared to GC-ECOPD, muscle volume change of GC-ECOPD/CDD866 was significantly higher (+0.7% vs -6.6%, $p < 0.05$). Atrogene expression was not increased in GC-ECOPD compared to control but tended to decrease in GC-ECOPD/CDD866 compared to GC-ECOPD (Atrogin-1: $p = 0.053$; MuRF1: 0.076).

Conclusion

In conclusion, in this model of GC-ECOPD, CDD866 significantly increased hindlimb muscle volume and tended to reduce atrogene expression. These findings warrant further investigation of myostatin signaling blockade as an approach to prevent or restore GC-treated ECOPD-associated muscle wasting, thereby increasing the therapeutic efficacy of GCs.

Outcomes Following Exploratory Surgery Without Subsequent Resection in Perihilar Cholangiocarcinoma: A Nationwide Analysis

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Introduction

Definitive assessment of resectability in perihilar cholangiocarcinoma (pCCA) often requires surgical exploration. Limited data exist on whether surgical exploration without resection affects the chance of receiving subsequent systemic therapy and survival. This nationwide analysis aims to address this question.

Methods

Patients diagnosed with non-metastatic pCCA between 2012 and 2023 were selected from the Netherlands Cancer Registry and categorized as resected, explored (surgical exploration without resection), or non-explored (non-metastatic tumours without exploration or resection). Overall survival data was stratified by systemic therapy use.

Outcomes Following Exploratory Surgery Without Subsequent Resection in Perihilar Cholangiocarcinoma: A Nationwide Analysis

Results

The cohort included 2014 patients of which 490 patients (24.3%) underwent resection, 258 patients (12.8%) underwent surgical exploration without resection, and 1266 patients (62.9%) were not explored. Overall, 90-day mortality following exploration was 19.5%. Among explored patients, 38.0% (98/258) received systemic therapy compared to 10.6% (134/1266) of non-explored patients ($p < 0.001$). With systemic therapy, explored patients had a median overall survival (mOS) of 14.3 months (95% CI 12.7-18.2) from diagnosis compared to 12.8 months (95% CI 11.6-15.8) for non-explored patients ($p = 0.350$). With BSC, explored patients had a mOS of 8.1 months (95% CI 6.5-10.3) compared to 3.2 months (95% CI 2.8-3.7) for non-explored patients ($p \leq 0.001$).

Conclusion

Among patients with non-metastatic pCCA receiving systemic therapy, survival outcomes are comparable between those who undergo surgical exploration and those who do not. Despite a possible significant impact on quality of life, these findings suggest that surgical exploration does not hinder access to systemic therapy or negatively affect survival.

Randomized trial of three treatment approaches for Bowen's disease: long-term outcomes

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Introduction

Bowen's disease (BD) is an intra-epidermal neoplasm, usually treated by surgical excision. However, considering the superficial growth pattern and low malignant potential, non-invasive treatments may be justified. A recent randomized controlled trial (RCT) showed that 5-Fluorouracil (5FU) was non-inferior to surgical excision (SE) in patients with BD 1-year post-treatment. Evidence comparing long-term safety and efficacy of these treatments is lacking, as well as guideline recommendations about the preferred treatment.

Methods

In this RCT, we compared the long-term probability of tumor-free survival after 5FU and methylaminolevulinate photodynamic therapy (MAL-PDT), versus SE. A total of 250 patients, with histologically confirmed BD who had participated in a multicenter, non-inferiority RCT were invited for long-term follow-up within 3 to 5 years post-treatment. Patients had been randomly assigned to SE, 5FU, or MAL-PDT in a 1:1:1 ratio. The primary outcome was the long-term cumulative probability of tumor-free survival, at least 3 years post-treatment. A secondary finding was the long-term risk of cutaneous squamous cell carcinoma (cSCC) development within the treatment area.

Results

A long-term follow-up visit was conducted in 192 of the 250 randomized patients. During the first year of follow-up, a histologically proven residual or recurrent lesion was seen in 27 patients. In the period after the one year follow-up visit, only one additional patient developed a recurrence. This was 5 years after MAL-PDT treatment. The 4-year cumulative probability of tumor-free survival was 97.5% for SE (95% confidence interval (CI) 90.4-99.4), 86.2% for 5FU (95% CI 76.4-92.1) and 82.7% for MAL-PDT (95% CI 72.6-89.4). None of the patients developed an invasive cSCC in the treatment area.

Conclusion

Non-invasive treatment of BD with 5FU, remains successful after long term follow-up. During long-term follow-up, the additional risk of recurrence of BD after 5FU and SE was absent and the risk of developing an invasive cSCC from a treated BD was negligible.

Health-related quality of life in patients with basal cell nevus syndrome and high-frequency basal cell carcinoma

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Introduction

Multiple basal cell carcinomas (BCCs) can be caused by a genetic condition, such as basal cell nevus syndrome (BCNS) or develop without a known genetic predisposition, referred to as high-frequency BCC (HF-BCC). Multiple BCCs require frequent interventions, which may impact quality of life (QoL). Data on QoL in these patients and the influence of number of BCCs on QoL remain scarce. This study aims to evaluate QoL in patients with BCNS and HF-BCC and to investigate the impact of number of BCCs and patient characteristics on QoL.

Methods

Patients with BCNS (1) were recruited through MUMC+, other Dutch centers and a support group. Patients with HF-BCC (with ≥ 9 BCCs in 3 years or ≥ 6 in 10 years) (2, 3) were recruited from the MUMC+ and Catharina Hospital. Participants completed a standardized dermatologic QoL questionnaire (Skindex-29). Multivariate linear regression was performed to assess the differences in QoL between both patient groups, with adjustment for potential confounders. The effect of number of BCCs on the QoL scores within each patient group was also evaluated.

Results

75 patients with BCNS and 59 with HF-BCC were included. Patients with BCNS were often younger (median 48 vs. 74 years), more often female (61% vs. 34%) and often had > 100 BCCs (48% vs. 1%) compared to patients with HF-BCC. Patients with BCNS had higher QoL scores, indicating poorer QoL. The mean score exceeded the clinically relevant threshold of 24 on the Skindex-29 emotions scale (32.2 ± 20.8 vs. 15.5 ± 14.3). After adjustment for age and sex, the between-group difference in Skindex-29 total score was 10.0 (95%CI: 2.5-17.5). Among patients with BCNS, increasing number of BCCs was associated with poorer QoL, with significantly higher mean scores in patients with > 100 BCCs compared to < 30 BCCs. This trend was not observed in HF-BCC.

Conclusion

These findings highlight the impact of BCC burden on the QoL of patients with BCNS, particularly regarding emotional well-being. The trend towards poorer QoL with increasing number of BCCs, not seen in HF-BCC, suggests that number of BCCs is an indicator of disease severity. Additional characteristics might influence QoL in BCNS and future research should further clarify patient challenges to support tailored care.

Digital health literacy is impaired in liver cirrhosis patients with a lower education level: a cross-sectional multi-center study.

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Introduction

Although healthcare increasingly adopts digital technologies, the impact of digital health literacy in liver cirrhosis patients remains limited. This study assessed the digital health skills of liver cirrhosis patients using the Digital Health Literacy Instrument (DHLI) 2.0.

Methods

A cross-sectional, multicenter questionnaire study was conducted involving liver cirrhosis patients identified by ICD-10 codes at a secondary and tertiary medical center in the Netherlands. Eligible patients had a liver cirrhosis-related consultation in the past year. The DHLI 2.0 questionnaire was distributed through email. Non-responders and patients without a known email address were invited by regular mail. DHLI scores range from 1 to 4, with 4 indicating optimal digital health literacy. The questionnaire separately investigated digital device access and categorized education level as low (no education, primary school, or basic secondary education), middle (advanced secondary, or secondary vocational education), or high (bachelor's degree or higher). We collected patient demographics and disease characteristics from electronic patient records. Statistical analyses included non-parametric tests, Spearman's Rank Correlations, and generalized linear models.

Results

Of 331 invited patients, 87 participated (26.3%). Response rates were 19.3% for digital and 19.7% for paper questionnaires (27/140 vs. 60/304). Patients were predominantly male (71.3%), median age of 69.8 (IQR 64.1-75.6), treated in the tertiary center (65.5%), and had a low education level (32.2%). Alcohol (32.2%) and MASLD (27.6%) were the primary etiologies. The majority of patients were compensated (92.0%), with 77% Child-Pugh A. Access to internet (79.3%), a smartphone (72%), and a computer or laptop (60%) were frequently reported. The mean DHLI score was 3.1. Lower DHLI scores were associated with low education ($p = 0.015$), and lack of daily internet, smartphone, and computer access ($p = 0.007$; $p = 0.047$; $p < 0.01$). No statistically significant differences in DHLI scores were observed amongst liver cirrhosis etiologies ($p = 0.799$), disease severity scores ($p = 0.743$; $p = 0.847$), or age ($p = 0.956$).

Conclusion

This cross-sectional, multicenter study demonstrated lower digital healthcare literacy in liver cirrhosis patients with lower education levels and limited digital access. Future research is necessary to examine how this affects digital care implementation.

AI-assisted image recognition of cervical spine vertebrae in dynamic X-ray recordings.

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Introduction

Qualitative motion analysis revealed that the cervical spine moves according to a consistent pattern. This analysis calculates the relative rotation between vertebral segments to determine the sequence in which they contribute to extension, demonstrating a mean sensitivity of 90% and specificity of 85%. However, the extensive time that is required limits its applicability. This study investigated the feasibility of implementing a deep-learning model to analyze qualitative cervical motion

Methods

A U-Net architecture was implemented as 2D and 2D+t models. Dice similarity coefficient (DSC) and Intersection over Union (IoU) were used to assess the performance of the models. Intraclass Correlation Coefficient (ICC) was used to compare the relative rotation of individual vertebrae and segments to the ground truth.

Results

IoU ranged from 0.37 to 0.74 and DSC ranged from 0.53 to 0.80. The ICC scores for relative rotation ranged from 0.62 to 0.96 for individual vertebrae and from 0.28 to 0.72 for vertebral segments. For segments, 2D+t models presented higher ICC scores compared to 2D models.

Conclusion

This study showed the feasibility of implementing deep-learning models to analyze qualitative cervical motion in dynamic X-ray recordings. Future research should focus on improving model segmentation by enhancing recording contrast and applying post-processing methods. Improved segmentation accuracy will enable routine use of qualitative motion analysis in clinical research. The absence or presence of a motion pattern, or identification of new patterns has the potential to aid in clinical decision-making.

Inhibition of inflammation reduces hypofibrinolysis in severe COVID-19; a nested case-control study within the MaastrICht cohort

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Introduction

Critically ill COVID-19 patients have a hypercoagulable and hypofibrinolytic phenotype, which is related to inflammation as was shown by a prolonged clotting time and delayed clot lysis onset time and duration, based on ROTational TromboElastoMetry (ROTEM). The aim of this study is to investigate the effects of anti-inflammatory therapies, specifically dexamethasone and tocilizumab, on hypercoagulable and hypofibrinolytic phenotypes in critically ill COVID-19 patients.

Methods

In a nested-case control study selected from the Maastricht Intensive Care Covid cohort (MaastrICht), we matched three patient groups by sex and age: patients on dexamethasone, patients on dexamethasone and tocilizumab, and patients with no anti-inflammatory treatment. Clotting time was assessed using the EXTEM (CT-EXTEM). Lysis onset time (LOT) and its duration (i.e. lysis time (LT)) were assessed using the tissue plasminogen activated (tPA) ROTEM. ROTEM and biomarkers of inflammation, coagulation, and fibrinolysis were measured over the course of three weeks. We used linear mixed-effect models to compare trajectories over time between groups.

Results

Out of the MaastrICht cohort of 324 patients, 36 patients (i.e. 12 per group) were selected. Compared to patients with no anti-inflammatory treatment, CT-EXTEM was 23 seconds 95%CI [-52; 5] shorter in the dexamethasone group and 36 seconds [-65; -7] shorter in tocilizumab group. LT in the tPA ROTEM appeared lowest in the week after infusion of tocilizumab, which effect became less clear over the next two weeks. Compared to patients with no anti-inflammatory treatment, CRP was 235 mg/L 95% CI [-334; -137] lower in the dexamethasone group and 318 mg/L [-416; -220] lower in the tocilizumab group; and PAI-1 was 3.2 ng/mL [-9.9; 3.6] lower in the dexamethasone group and 9.3 ng/mL [-16.2; -2.4] lower in the tocilizumab group, while PAI-1 appeared lowest the week after infusion of tocilizumab and increased over the next two weeks. Additionally, anti-inflammatory therapy groups showed lower plasmin-alpha-2-antiplasmin complex and fibrinogen initially, while this effect became less clear for fibrinogen over the following two weeks.

Conclusion

In critically ill COVID-19 patients treatment with anti-inflammatory therapy, particularly tocilizumab, reduces PAI-1 levels, affecting the LT of the tPA ROTEM to become less hypofibrinolytic.

Challenges in TB Screening Prior to TNF- α Inhibitors: A Case Report Highlighting Gaps in Current Practice

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Introduction

Tuberculosis (TB) remains a significant global health concern, particularly among immunocompromised individuals. The use of tumor necrosis factor-alpha (TNF- α) inhibitors, such as infliximab, is associated with a substantially increased risk of reactivation of latent *Mycobacterium tuberculosis* infection. Although pre-treatment screening for TB infection (TBI) is recommended prior to the initiation of TNF- α blocking agents, consensus on the optimal diagnostic approach in clinical practice is lacking, and protocols vary considerably between institutions.

Methods

CT thorax: Extensive bronchiectasis with diffuse coarse consolidations and tree-in-bud patterns. Additionally, widespread fine nodular opacities with centrilobular and perilymphatic distribution.

Results

Case

We report the case of a 34-year-old Polish man with a history of axial spondyloarthritis and Crohn's disease, treated with TNF- α inhibitors, who developed fulminant pulmonary tuberculosis with probable cerebral involvement. The clinical course was complicated by a paradoxical reaction and life-threatening respiratory failure, requiring admission to the intensive care unit. Despite the severity of illness, the patient made a full recovery following prolonged hospitalisation and anti-tuberculous therapy.

Notably, prior to the initiation of TNF- α inhibitor therapy, the patient underwent screening with a chest radiograph and an interferon-gamma release assay (IGRA), which yielded a negative result. A tuberculin skin test (TST) was not performed, in accordance with the prevailing local protocol at the time.

Conclusion

This case underscores the considerable risk of TB reactivation associated with TNF- α inhibitor therapy and emphasises the importance of comprehensive screening for TBI prior to treatment initiation. It is increasingly recognised that IGRAs may yield false-negative results, particularly in immunocompromised individuals. Combining IGRA with TST may enhance diagnostic sensitivity. This dual-testing strategy is currently recommended in the most recent Dutch national guidelines for patients at risk of TBI, although its implementation remains inconsistent across clinical settings.

Face-to-face versus online hypnotherapy for the treatment of irritable bowel syndrome, according to a non-inferiority design: a multicentre three-armed randomised controlled trial (FORTITUDE)

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Introduction

Hypnotherapy is an evidence-based psychological therapy recommended by guidelines for the management of Irritable Bowel Syndrome (IBS). However, therapist-led sessions are costly and not easily accessible given limited availability of certified hypnotherapists. Therefore, we studied the effectiveness of online hypnotherapy versus face-to-face (f-t-f) hypnotherapy delivered by a therapist.

Methods

This multicentre, three-armed non-inferiority randomised controlled trial (RCT) recruited Rome IV IBS patients from seven Dutch hospitals between 8 July 2019 and 7 February 2024. Patients were randomised 1:1:1 to f-t-f hypnotherapy (bi-weekly protocol-based individual sessions), online hypnotherapy (the same exercises via a smartphone application), or online psychoeducation (control group, using an interactive web application) for a 12-week treatment period, with 4-week and 6-month follow-ups. The primary endpoint was abdominal pain response (per FDA definition, i.e., a $\geq 30\%$ reduction from baseline in weekly average of worst daily abdominal pain in at least 2 out of 4 weeks follow-up). The non-inferiority margin was defined as 10%. Secondary endpoints included ≥ 50 points IBS-symptom severity scale (SSS) reduction and treatment effect on comorbid psychological symptoms. The trial was registered with [Clinicaltrials.gov](https://clinicaltrials.gov) NCT03899779 and is closed for recruitment.

Face-to-face versus online hypnotherapy for the treatment of irritable bowel syndrome, according to a non-inferiority design: a multicentre three-armed randomised controlled trial (FORTITUDE)

Results

A total of 230 patients (mean±SD age 38.2±13.8 years, 70.4% female) were randomised (i.e., intention-to-treat population). FDA abdominal pain response rates at week 16 were 48% for f-t-f hypnotherapy, 33% for online hypnotherapy, and 22% for psychoeducation. Non-inferiority of online hypnotherapy to f-t-f hypnotherapy could not be shown (-14.7%, 95% CI [-29.3%, 0.9%]), but f-t-f hypnotherapy was superior to psychoeducation (OR 3.48, 95% CI [1.68, 7.20], $p<0.001$). IBS-SSS response rates were 69% versus 67% versus 46%, respectively, with both hypnotherapy groups superior to psychoeducation ($p=0.017$ and $p=0.007$). There were no significant treatment effects on comorbid psychological symptoms between groups.

Conclusion

This multicentre RCT showed that online hypnotherapy did not reach non-inferiority to f-t-f hypnotherapy in reducing abdominal pain (FDA responder definition). However, substantial response rates for online hypnotherapy in both FDA and IBS-SSS responder endpoints highlight its potential as a broad applicability and potential cost-effective alternative.

Dynamic Optical Coherence Tomography for Diagnosing Basal Cell Carcinoma: a diagnostic cohort study

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Introduction

Optical coherence tomography (OCT) provides a non-invasive diagnostic alternative to traditional biopsy for diagnosing basal cell carcinoma (BCC), the most common form of cancer. Dynamic OCT (D-OCT), a functionality integrated within OCT-devices, enables visualization of vascular shapes and patterns using speckle-variance. This diagnostic cohort study aims to evaluate whether D-OCT improves diagnostic accuracy for BCC detection and subtyping compared to conventional OCT. Secondly, this study aims to evaluate which vascular shapes and patterns are predictive for BCC presence and its subtypes.

Methods

Lesions clinically suspicious for BCC requiring biopsy were scanned using (D)-OCT. Clinically evident BCC lesions were excluded. An OCT assessor evaluated scans in a paired order alongside clinical photographs; first the conventional scan, subsequently with visualization of vasculature at three standardized depths (150µm, 300µm, 500µm). Diagnostic confidence was assigned on a five point confidence-scale and the presence or absence of vascular shapes and patterns, as well as BCC subtype was noted. Only the highest score (certain of BCC presence and subtype) was considered a positive test result, as in these cases biopsy could theoretically be omitted. Lower scores were considered negative test results. Histopathological examination of a biopsy specimen of the lesion served as the reference test.

Results

A total of 210 scans were included. D-OCT assessment resulted in a higher sensitivity for BCC detection compared to OCT (88.5% vs. 76.9%, respectively, $p < 0.001$), at comparable specificity (97.5% vs. 98.8%, respectively $p = 0.999$). For subtyping, only a slight improvement for detecting infiltrative subtypes was observed (65.0% vs. 76.0%, respectively $p = 0.419$). Vascular shapes and patterns with either positive or negative associations for BCC detection and subtyping were identified, elucidating their diagnostic value.

Conclusion

Visualizing vascular structures and patterns using D-OCT improves BCC detection whilst preserving specificity, when compared to conventional OCT assessment, and may further reduce the need for biopsy.

Perspectives, unmet needs and dilemmas in reproductive decision-making for genodermatoses: a qualitative interview study

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Introduction

Patients with various genetic disorders experience difficulties regarding reproductive decision-making, preferring biological unaffected offspring. Considering the impact of a genodermatosis on the patients' quality of life, it is conceivable that having a genodermatosis causes reproductive dilemmas. Currently little is known about this group.

This qualitative study sought an in-depth understanding of the reproductive decision-making process among couples/individuals with genodermatoses. We focused on the impact of these diseases on the desire to have children, knowledge of different options, experiences with counseling, and personal considerations.

Methods

Participants aged ≥ 16 years, diagnosed with a genodermatosis, and a reproductive motive (i.e., an active, (un)fulfilled or future desire to have children), were purposively sampled at Dutch specialized centres for genodermatoses and through patient associations. Semi-structured interviews conducted between January and November 2024 were recorded, transcribed, and analyzed using an inductive and reflexive thematic content approach.

Results

Thirty participants were interviewed, covering epidermal differentiation disorders ($n=11$), epidermolysis bullosa ($n=6$), ectodermal dysplasia ($n=5$), and basal cell nevus syndrome and CDKN2A pathogenic variant carriers ($n=8$). Two main themes and nine subthemes were identified, indicating that most participants preferred to avoid passing their genodermatosis on to their offspring, thereby complicating decision-making. This was influenced by negative experiences with their diseases, resulting in fear and uncertainty about severe manifestations in offspring. Furthermore, participants wanted to avoid becoming a caregiver instead of a parent to offspring. Often participants were not well informed about the available reproductive options and whether their genodermatosis qualified as an indication. Shortcomings in clinical practice were expressed, particularly the lack of reproductive counseling as a standard part of care. Notably, participants who had prior experience with reproductive counseling, generally perceived it as positive.

Conclusion

This study highlighted the substantial impact of genodermatoses in reproductive decision-making and importance of routine reproductive counseling in at-risk individuals. Important areas for improvement were identified.

Left atrial strain has prognostic value in dilated cardiomyopathy patients with recovered ejection fraction: A long-term echocardiography study.

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Introduction

In dilated cardiomyopathy (DCM), structural recovery based on conventional parameters (such as left ventricular ejection fraction (LVEF)) does not equal remission of DCM. Speckle tracking echocardiography (STE) strain looks at cardiomyocyte deformation. The role of left atrial (LA) strain to predict prognosis in DCM patients with recovered EF, remains unknown. Therefore, this study evaluated the prognostic value of echocardiographic LA strain in DCM patients with recovered EF.

Methods

DCM patients with recovered EF ($\geq 50\%$ and ≥ 5 EF point increase from baseline) and available follow-up echocardiogram were included. STE-strain parameters investigated were, LV global longitudinal strain (GLS), LA reservoir, conduit, and booster strain. Primary endpoint composited of mortality, heart failure (HF) hospitalization or life-threatening arrhythmias. Cubic spline analysis was performed to dichotomize all strain variables. Survival analysis was performed to determine the prognostic value of strain-derived parameters. Harrel's C-indexes and likelihood-ratio-test were performed to determine the value of LA strain in the multivariable model.

Results

A total of 201 DCM patients were included (age 58[47-63]years, 60% male). Thirty-nine patients (19%) reached the primary endpoint (follow-up 7 years). The cut-offs using cubic spline analysis for LV GLS and LA conduit strain were -17.5% and 22.15%. Based on univariable cox-proportional hazard analysis, LA conduit strain was a stronger predictor of outcome compared to reservoir and booster strain. LA conduit strain (HR:3.14, 95%-confidence interval [CI]:1.01-9.77, $p=0.048$), age (HR:1.10, 95%-CI:1.05-1.16, $p<0.001$), NYHA class ≥ 3 (HR:3.97, 95%-CI:1.49-10.57, $p=0.005$) and left ventricular massindex (LVMI, HR:1.03, 95%-CI:1.01-1.05, $p=0.002$) remained associated in the multivariable model. Adding LA conduit strain to other independent predictors (NYHA class ≥ 3 , age, and LVMI) significantly improved the calibration and accuracy of the prediction model ($p=0.03$). Kaplan meier survival analysis showed that abnormal LA conduit strain with/without abnormal LV GLS at the moment of recovery was associated with a significantly worse survival compared to normal LA conduit and LV GLS (p -value <0.001).

Conclusion

Recovered EF DCM patients with normal LA conduit strain and LV GLS at recovery have a significantly better prognosis than those with abnormal LA conduit strain, with or without impaired GLS. Assessing LA conduit strain should be considered in these patients to enhance risk stratification.

Prospective real-world experience with risankizumab in Crohn's disease: results from the ICC Registry

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Introduction

Risankizumab is a monoclonal antibody inhibiting the interleukin-23 p19 subunit. It is registered for the treatment of Crohn's disease (CD). We assessed the one-year effectiveness and safety profile of risankizumab in a real-world, prospective cohort of patients with CD.

Methods

Patients who started risankizumab as part of clinical care were and enrolled in the Dutch Initiative on Crohn and Colitis (ICC) Registry were prospectively evaluated. Effectiveness analysis was performed for patients with active disease at baseline. The primary outcome was corticosteroid-free clinical remission at W24. At baseline and week (W) 12, W24 and W52, clinical remission (Harvey-Bradshaw Index ≤ 4), biochemical remission (faecal calprotectin levels $\leq 250\mu\text{g/g}$), and systemic corticosteroids use were determined. Safety outcomes were determined in all patients.

Results

As of July 1st, 2025, 129 patients who had initiated risankizumab treatment for CD were included in the ICC Registry; 118/129 (91.5%) patients had active disease at treatment initiation. The majority were female (N = 71) and the mean age was 43.4 years (standard deviation = 16.2). At W12, 36 out of 74 patients (48.6%) were in corticosteroid-free clinical remission. At W24, 36 out of 70 patients (51.4%) were in corticosteroid-free clinical remission. Independent of corticosteroid use since the last visit, 40 out of 70 patients (57.1%) were in clinical remission; at the same time, one-third (23/69) of the patients were in biochemical remission. At W52, 18 out of 37 patients (48.6%) were in clinical remission. Regarding safety, 38 infections were reported in 27 out of 129 patients (20.9%). Eighty-seven other adverse events were reported in 46 out of 129 patients (35.7%). Five out of twenty patients (25.0%) discontinued risankizumab because of adverse events. Other reasons for discontinuation included primary non-response (N = 8, 40.0%), secondary non-response (N = 6, 30.0%) and loss to follow-up (N = 1, 5.0%).

Prospective real-world experience with risankizumab in Crohn's disease: results from the ICC Registry

Conclusion

Our results suggest that risankizumab is effective in patients with CD, including those with prior failure of several advanced therapies or history of bowel surgery. Moreover, no new safety issues were raised, encouraging the use of risankizumab in routine care, also for patients with difficult-to-treat CD.

Preserving Fertility in Classic Galactosemia: Window of Opportunity and Gene Therapy Solutions

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Introduction

Background: Girls and women with Classic Galactosemia (CG), an inborn error of galactose metabolism, invariably develop primary ovarian insufficiency and subfertility. While emerging therapies offer hope, the ideal age to initiate treatment to preserve ovarian function is unclear. This study aimed to identify the optimal timing for ovarian function preservation using our *galt* knockout (KO) zebrafish model.

Methods

Methods: RNA sequencing was performed to identify differentially expressed genes (DEGs) between ovaries from adult *galt* KO and wild-type (WT) zebrafish. Pathway enrichment analyses, follicle counts, quantitative polymerase chain reaction (qPCR) and immunohistochemistry (IHC) were used to assess and validate changes in the ovarian landscape and pathways of interest.

Results

Results: A total of 539 DEGs were identified. Among them, 280 were upregulated in KO ovaries and enriched for calcium and apelin signaling pathways, while 259 were downregulated and primarily associated with transcriptional regulation, cytokine-cytokine receptor interactions, and MAPK signaling. KO ovaries exhibited a higher fraction of late-stage follicles, with qPCR confirming the downregulation of folliculogenesis-related genes *smad3*, *foxo3*, and *ghrb*. IHC analyses demonstrated increased staining of the apoptosis marker *cCASP3*, especially in early-stage follicles.

Conclusion

Discussion: Our findings suggest that dysregulation of folliculogenesis-related pathways and elevated apoptosis disturb the balance between follicle dormancy and activation in CG. Ongoing studies using ER stress (BiP), intrinsic apoptosis (*cCASP9*), and proliferation (*Ki67*) markers aim to further detail the cascade of damage. The results we have gathered so far highlight the need for treatments that preserve early-stage follicles to improve fertility outcome. Building on this progress, our groups are currently developing *GALT* gene delivery nanoparticles targeting the granulosa cells in the ovary.

The incidence of diuretic associated sequential prescribing cascades: a feasibility study

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Introduction

Prescribing cascades occur when adverse drug reactions of a medication (index) are misinterpreted as new medical conditions and subsequently treated with additional medications (marker). They are associated with negative outcomes for patients and health care in general. Individual prescribing cascades involving a single index and marker medication are well documented in literature. In clinical practice however, patients may experience sequential prescribing cascades involving multiple index and marker medications (see Figure 1). Nevertheless, the occurrence of these sequential prescribing cascades remains largely unexplored in the literature. Therefore, the aim of this study was to explore the feasibility of analysing sequential prescribing cascades in large real-world prescription databases.

Methods

This retrospective cohort study used data from the Clinical Practice Research Datalink (CPRD) to identify patients aged ≥ 65 years who were newly prescribed a diuretic (primary marker) within 12 months of initiating a calcium channel blocker or gabapentinoid (index) between 2018-2022. The incidence of secondary markers prescribed within 12 months after diuretic prescription was determined. Secondary markers included antigout medications, urinary frequency and incontinence medications, and potassium salts and potassium-sparing agents (see Figure 1). Selection of index and marker medications was based on the level of evidence of individual prescribing cascades, prevalence of use, registered indications and anticipated prolonged treatment duration of medication. Descriptive data analysis was used.

Results

A total of 608,225 new index users were identified between 2018-2022, of which 28,240 patients (4.6%) were newly prescribed a diuretic within 12 months of their index prescription. Of these, 1,877 (6.6%) were subsequently prescribed one or multiple secondary markers within 12 months of diuretic prescription. Antigout medications were prescribed to 311 patients (1.1%), urinary frequency and incontinence medications to 518 patients (1.8%), and potassium salts or potassium-sparing agents to 1,090 (3.7%) patients.

The incidence of diuretic associated sequential prescribing cascades: a feasibility study

Conclusion

This study is the first to demonstrate that sequential prescribing cascades can be identified in large real-world prescription databases. Given the large number of different prescribing cascades observed in clinical practice, sequential prescribing cascades can affect a substantial amount of patients highlighting the importance of increased recognition, prevention and management of prescribing cascades in clinical practice.

Menstrual narratives and help-seeking: a qualitative exploration among Dutch people who menstruate

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Introduction

Symptoms such as heavy menstrual bleeding and dysmenorrhea can significantly impact quality of life. Due to limited knowledge and menstrual health literacy, women often wait a long time before seeking medical help. While new media offer opportunities to exchange (experiential) knowledge, the reliability of such information is often unclear. The aim of this study was to gain insight into personal experiences surrounding menstruation. The findings were used to develop a menstrual eHealth module for the website PratenOverGezondheid.nl. With this module, we aim to 1) provide informational support for people who menstruate and 2) offer healthcare professionals insight into their lived experiences.

Methods

A qualitative exploratory study was conducted, using 33 semi-structured in-depth interviews with a heterogeneous sample of Dutch people who menstruate. We included variation in demographic characteristics such as age (19–69 years), ethnic background (30% born abroad), gender identity (2 trans men), and types of menstrual complaints (including heavy bleeding, endometriosis and PMDD). Interviews were analyzed thematically.

Results

Analysis led to seven key themes and 29 subthemes, including “What is normal?”, “Taboo and shame,” and “Seeking help.” Participants had diverse ideas about what is considered “normal,” but noted that discussing menstruation can shift these perceptions. However, shame and the tendency to hide discomfort often prevent such conversations. Limited knowledge of treatment options and embarrassment also contributed to delayed help-seeking. Triggers for visiting a doctor included changing symptoms, new information, and encouragement from peers.

Conclusion

This study illustrates how social norms, shame, and limited menstrual health literacy shape how people interpret and respond to menstrual complaints. The resulting eHealth module offers experience-based information to support those who menstruate in recognizing their experiences, symptoms and considering care. For clinicians, these insights can improve awareness of the social barriers that patients face, enhance communication, and support shared decision-making in menstrual health care.