Atrial fibrillation remote patient monitoring in an outpatient clinic

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Background: Atrial fibrillation (AF) affects approximately 3–4% of the Swedish population and is associated with a reduced quality of life (QoL). As the number of individuals diagnosed with AF is expected to rise, remote patient monitoring (RPM) may offer a way to enhance patient engagement and self-management. This pilot study aimed to evaluate the impact of RPM on healthcare utilisation, QoL, and health literacy among patients with AF.

Design and methods: 20 patients with AF were randomized 1:1 to RPM or standard care and followed for 10 weeks. Patients in the RPM group actively participated in RPM using single-lead ECG (Zenicor), blood pressure monitoring and weight tracking along with a personalized health plan. Patients in the RPM group were offered next-of kin medical adherence coaching. Healthcare utilisation data was compared between groups. Patient QoL was compared using SF-36 and AF knowledge questionnaire was used to assess patient health literacy.

Results: No statistically significant differences in healthcare utilisation were observed between groups. The intervention was feasible and all patients in the intervention group followed the 10-week intervention. Patients with acute onset AF could be managed at home in the RPM group. Social functioning improved significantly in patients participating in RPM compared to patients receiving standard care ($p=0.013$).

Conclusions: No statistically significant differences in healthcare utilisation were observed between groups. We were able to successfully monitor AF patients with acute onset AF at home. When rate control was performed, we received direct feedback. We were also able to optimize blood pressures remotely. We observed that patients in the RPM group were able to receive feedback on their medical treatment faster and with more flexibility. Furthermore, patients participating in RPM reported higher social functioning compared to standard care. Further studies are needed to confirm and extend these findings.

Screening for atrial fibrillation in patients with cognitive impairment

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Introduction

Atrial fibrillation (AF) increases the risk for dementia. Large register studies have suggested that oral anti-coagulation treatment is associated with a 30-50% reduction of dementia development. There are no studies investigating the prevalence of AF in patients with cognitive decline.

Purpose

We studied the incidence of silent AF in patients being referred for symptoms of cognitive impairment.

Method

In this multicenter study, patients ≥70 years of age, referred from primary care for cognitive investigation at a memory clinic, were invited to undergo continuous two-week ECG using an ECG-patch (Philips ePatch). Patients with a known diagnosis of AF, with pacemaker or who were on anti-coagulation treatment were excluded. Participants with detected AF (>30 seconds) were referred to a cardiologist for follow-up. Oral anti-coagulation treatment was initiated according to clinical guidelines.

Results

1023 patients were examined for symptoms of cognitive impairment. Of those, n=232 (23%) had known AF, n=2 (0.2%) had oral anti-coagulation treatment for other reasons and n=3 (0.3%) had a pacemaker. Of the patients eligible for inclusion n=501/786 (64%) agreed to participate. The median age was 79 (IQR 75-83) years and median CHA_2DS_2-VA score 3 (IQR 3-4). Cognitive testing resulted in a median MMSE score of 24 (IQR 20-27). Dementia was diagnosed in 62%, minimal cognitive impairment was found in 36% and 2% had normal results. Long-term ECG was recorded for a median of 13.5 (IQR 12.3-13.9) days. Silent AF was detected in 5% (n=26/501). With silent AF, AF prevalence in patients referred for cognitive investigation increases to 25% (258/1023), with an absolute increase of 2.5% (26/1023). All participants with new AF were initiated on oral anti-coagulation.

Conclusion

The prevalence of AF is high in patients with symptoms of cognitive impairment. AF screening using a 14-day ePatch was well tolerated and may supplement cognitive impairment testing in this group.

Out-of-hospital management of patients with pacemakers: an investigation of telehealth acceptability from a patient perspective

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*Background: Patients with cardiac implantable electronic devices (CIED) require monitoring of device function and arrhythmia occurrence to ensure treatment optimization. With Remote Monitoring (RM), such follow-up assessments can be performed from the patient's home . A few observational studies have reported high levels of patient satisfaction with RM when used in combination with regular in-clinic follow-up visits, but knowledge of patients' acceptance of RM-only is lacking. This study aims to explore patients' reported acceptance of pacemaker follow-up by RM-only, replacing annual visits.

*Methods: RM-only acceptability is measured using a Swedish translation of the Service User Technology Acceptability Questionnaire (SUTAQ). SUTAQ analyses acceptability through six dimensions; (i) enhanced care – beliefs that the kit improves care, (ii) increased accessibility – beliefs that the kit can facilitate the reception of care, (iii) privacy and discomfort – concerns about how the kit impinges upon them and the safety of the information monitored by the kit, (iv) care personnel concern – beliefs about the skills of the personnel, (v) kit as substitution – beliefs about how the kit can be an alternative to regular care, and (vi) satisfaction – beliefs indicating acceptance and satisfaction with the kit. All sub-scales are interpreted such that a higher value reflects a higher degree of agreement. All patients with RM-only follow-up at Karolinska University Hospital (n = 445) have been invited to participate. To date, 268 patients have completed the questionnaire. Data collection will be completed at the end of January 2026.

*Results: Demographics, clinical variables and SUTAQ dimensions will be analysed with descriptive statistics.

*Conclusions: Our study advances the understanding of pacemaker patients' acceptance of RM-only follow-up, an area where evidence remains scarce. This insight is critical for fostering treatment adherence and for designing telehealth interventions that are both patient-centered and effective.

Health-care professionals' experiences of atrial fibrillation screening in Swedish health care: a mixed-methods study

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Background: Screening for atrial fibrillation (AF) is both controversial and a topic of growing research interest. However, the perspectives of health-care professionals involved in systematic population (PS) and opportunistic (OS) AF screening have not yet been adequately explored. The aim was to explore health-care professionals' experiences of PS and OS, and to identify their feasibility in clinical practice.

Methods: Health-care professionals representing the PS and OS groups were invited to semi-structured group interviews. Transcripts were analysed using qualitative content analysis and a succeeding survey was constructed and distributed to health-care professionals involved in the STROKESTOP III project.

Results: Qualitative content analysis revealed a complex relationship between health-care professionals' desire to contribute to preventive screening efforts and their experience of feeling limited by organizational factors and available resources, such as time, administrative systems, and health economic evaluations. AF screening was perceived meaningful, but results highlighted the importance of peer support and collaboration making the screening process feasible in routine practice. The OS group further highlighted the perceived value of direct patient contact to immediately address potential concerns and questions when required.

Nineteen health care professionals responded to the survey (response rate 40%). Based on current organization and resource availability, most respondents (58%) consider PS to be the most feasible method to use in clinical practice. However, OS was perceived as the most feasible method to reach the largest number of participants, regardless of available resources (74%). Most respondents confirm the lack of available resources as a barrier for clinical implementation (63%), while expressing a desire to engage in screening, provided sufficient resources (84%).

Conclusions: Health-care professionals are willing to engage in AF screening, but clinical implementation depends on availability of resources and peer collaboration, highlighting the need for targeted organisational strategies to facilitate the screening process.

Subclinical systolic and diastolic dysfunction associates with systemic inflammation in Idiopathic Inflammatory Myopathy beyond known cardiac disease

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Background: Idiopathic inflammatory myopathies (IIM), often referred to as myositis, are autoimmune disorders with frequent subclinical myocardial involvement, detectable by cardiovascular magnetic resonance (CMR). The impact of systemic inflammation on myocardial strain in IIM is unknown; therefore, we evaluated the association between systemic inflammation and myocardial strain.

Methods: Forty-three patients with myositis (acute: n=33; chronic: n=10) were consecutively enrolled at Karolinska University Hospital (2017 -2021). CMR examination was performed at 3T, and cine images were analyzed using feature-tracking. Myocardial deformation (strain) and deformation rate (strain rate) were quantified with global left-ventricular longitudinal, circumferential, and radial strain rates in both systolic and diastolic phases. Groups were compared by acute vs chronic disease phase, steroid-treated vs untreated acute patients, and presence of cardiac disease. Multivariable linear regression adjusted for age, sex, acute/chronic status, steroid treatment, late gadolinium enhancement, leukocyte count, and pre-existing cardiac disease assessed associations with strain parameters.

Results: Circumferential systolic strain rate was significantly impaired in the acute (n=29) compared with the chronic (n=9) phase (-1.2 ± 0.3 vs -1.5 ± 0.3 1/s, p=0.03). Among patients without cardiac disease, circumferential diastolic strain rate was impaired in the acute (n=12) phase compared with the chronic (n=6) phase (1.2 ± 0.2 vs 1.4 ± 0.1 1/s, p=0.03). No differences were observed between steroid-treated and untreated acute conditions (all p>0.05). In multivariable analysis, higher leukocyte count was independently associated with impaired global longitudinal strain (GLS;n=36, β=0.38, p=0.03), longitudinal systolic strain rate (n=36, β=0.39, p=0.02), and circumferential diastolic strain rate (n=35, β= -0.36, p=0.04).

Conclusion: Both systolic and diastolic strain rates are impaired in the acute phase compared with the chronic phase of IIM. Total leukocyte count, reflecting systemic inflammation, was independently associated with both systolic deformation and diastolic strain rate, suggesting inflammation-induced subclinical myocardial dysfunction in IIM independent of known cardiac disease.

Decreasing myocardial edema correlate with functional recovery in Takotsubo syndrome

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Background: Takotsubo syndrome (TTS) mimics myocardial infarction, but coronary angiography typically reveals unobstructed coronary arteries and cardiovascular magnetic resonance imaging (CMR) shows myocardial edema. The relationship between the resolution of edema and recovery of cardiac function remains unclear. Therefore, the aim was to examine the relationship of native T1 compared to extracellular volume (ECV) with functional recovery at 6-months follow-up.

Methods: TTS patients (n=42, aged 60 [55-66] years, 39 (93%) female) from the SMINC-2 study underwent 1.5 T CMR at hospitalization and 6 months follow-up, including cine imaging, native T1 and ECV mapping.

Results: Global native T1 and ECV were elevated at baseline and normalized to follow-up and left ventricle (LV) ejection fraction, global longitudinal and circumferential strain (GLS, GCS) improved to follow-up. Native T1, ECV, LS and CS were progressively worse from base to apex at presentation, all improved to follow-up. There were moderate correlations between global native T1 and GLS (rs=0.39, p=0.01) and GCS (rs=0.47, p=0.002), basal native T1 and LS (rs=0.48, p=0.001), midventricular native T1 and CS (rs=0.65 p<0.001), apical native T1 and LS and CS (rs=0.41, p=0.007, and rs=0.36, p=0.02). There were no correlations between global, basal, midventricular or apical ECV and CS or LS (p>0.05 for all).

Conclusions: Patients with TTS exhibit global and regional myocardial edema and dysfunction at baseline, with overall improvements over 6-months follow-up. The resolution of myocardial edema and improvement in function correlate, primarily as detected by native T1, warranting further studies into the relationship between intra- and extracellular edema in TTS.

Subclinical edema and systolic dysfunction in MINOCA mimics

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Approximately 5-9% of all myocardial infarctions have non obstructive coronary arteries (<50% stenosis) and are subsequently classified as Myocardial Infarction with Non-Obstructive Coronary Arteries (MINOCA). Myocarditis is a known MINOCA mimic, characterized by edema, systolic dysfunction and myocyte damage. However, the relationship between edema and functional recovery in MINOCA remain partially unclear. Therefore, the aim was to evaluate the change in edema and function in MINOCA mimics.

Patients from the second Stockholm myocardial infarction with normal coronaries (SMINC-2) study, with the CMR diagnosis of myocarditis (n=25, aged 57 [47-61] years, n=12 (48%) female), or classified as 'normal' (n=34, aged 54 [49-61] years, n=21 (62%) female) were included in this study. Patients underwent CMR at a 1.5T scanner at index and 6 months later. Global and regional native T1, ECV and global longitudinal strain (GLS) and global circumferential strain (GCS) was acquired.

Patients with myocarditis had non-ischemic LGE at index (3±0.9 days from admission), which in 10 patients (40%) resolved at follow-up (200±35 days). Native T1 in the LGE area was elevated in patients (n=25, 100%) with myocarditis, which resolved at follow-up (n=25, 100%). At index, segments affected by myocarditis had higher native T1 and ECV compared to 'normals', Table 1. Patients with myocarditis decreased in native T1 in the affected segments at follow-up (p=0.01), however no change in ECV, GLS or GCS (p>0.05). In patients classified as normal there was increased left ventricular mass (p=0.03), GLS (p=0.02),GCS (p=0.04), and decreased global native T1 (p=0.012), Table 2.

In MINOCA mimics, patients with myocarditis have lower native T1 at follow up, however no change in ECV, GLS or GCS. In patients classified as normal there was a reduction in global native T1 values and increase in GLS and GCS at follow-up, suggestive of subclinical edema and systolic dysfunction in the acute phase.

Dissociation between PET-derived Amyloid Burden and CMR Extracellular Volume in Transthyretin Cardiac Amyloidosis

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Background. Cardiac magnetic resonance (CMR)–derived extracellular volume (ECV) is a validated marker of disease severity and prognosis in transthyretin cardiac amyloidosis (ATTR-CM). Amyloid-binding positron emission tomography (PET) tracers have been proposed to directly quantify myocardial amyloid burden and enable early disease detection. However, the relationship between molecular PET tracer signal and CMR tissue characterization (ECV) remains poorly defined.

Methods. Sixteen patients with ATTR-CM (14 hereditary V30Met, 2 wild type) underwent simultaneous hybrid PET-CMR using 18F-flutemetamol (18F-FLUTE) for amyloid deposition and 18F-sodium fluoride (18F-NaF) for microcalcification. All patients were DPD positive and treatment-naïve at the time of imaging. Myocardial tracer uptake was quantified using SUV metrics and tissue-to-blood pool ratios (TBR). Patients were stratified by CMR ECV (<35% vs ≥35%). PET parameters, echocardiographic indices, ECG markers, and bone scintigraphy grade were compared between groups.

Results. ECV displayed no association with TBR using either of tracers (Figure 1). No differences in sex, ECG parameters, echocardiographic measures of wall thickness, ejection fraction or global longitudinal strain were observed between groups ($p > 0.05$ for all comparisons). No differences in Perugini score were observed. Myocardial uptake of 18F-FLUTE and 18F-NaF (SUVmean, SUVmax, and TBRmax) did not differ between ECV groups (Figure 2).

Conclusion. In a pilot PET-MR study including well-defined ATTR-CM, ECV and myocardial PET uptake appear largely unrelated. This suggests that interstitial expansion may reflect not only amyloid burden but also other pathologies such as fibrosis, oedema and local inflammation beyond fibrillar deposition alone. Hybrid PET-CMR might provide complementary insights into disease biology, offering potential for early diagnosis, improved phenotyping and therapy monitoring. However, this needs to be tested in larger cohorts.

Stress-induced ischemia by CMR is a strong prognostic marker for event-free survival, independent of sex, in patients with suspected chronic coronary syndrome

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Background: To what extent sex-differences affect outcome in the presence of stress-induced ischemia and/or infarction by CMR is not completely understood. Therefore, the aim of this study was to assess sex-differences in outcome after stress imaging by CMR in patients with suspected chronic coronary syndrome (CCS).

Methods: This single-centre study included patients from the CMR arm of the CHOICE registry. All patients were referred for adenosine stress CMR at Skane University hospital in Lund, Sweden, during 2019-2022 due to suspected CCS. CMR findings of ischemia and/or infarction by late gadolinium enhancement were related to major adverse cardiac events (MACE), obtained from the Swedish National Board of Health and Welfare Registry. MACE was defined as a composite of cardiovascular death, acute myocardial infarction or revascularisation (CABG/PCI) during the follow-up period. Kaplan Meier curves for event-free survival analysis were used. Multivariable Cox regression analysis, including known risk factors as well as CMR findings, was performed to assess risk of MACE.

Results: In total 2 159 patients (947 females) were included in the analyses. Patient characteristics are shown in Table 1. A total of 195 MACE occurred (females n=56 and males n=139). Mean time to first event was 2.6±0.9 years and 2.4±1.0 years in females and males, respectively. Event-free survival in patients exhibiting ischemia or infarction did not differ between sexes (Figure 1). Age, left ventricular ejection fraction and presence of ischemia was associated with risk of MACE with no additional risk for male sex (Table 2).

Conclusion: Stress-induced ischemia by CMR is a strong prognostic marker, independent of sex. Thus, despite known sex differences in the development of coronary artery disease, CMR may have the potential to guide coronary care to equalize patient outcome between sexes.

Blood pressure trajectories during graded exercise for the prediction of new-onset hypertension

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BACKGROUND Both peak systolic blood pressure (SBP) and work rate related SBP increase (SBP/Watt slope) from incremental exercise tests are associated with cardiovascular outcomes. Instead of relying on peak SBP or two-point slopes, each SBP recorded throughout the test could be considered to identify integrative SBP response patterns. We aimed to identify distinct exercise SBP trajectories and explore their clinical value for predicting new-onset hypertension.

METHODS We retrospectively analyzed raw SBP recordings from 3,486 consecutive patients referred for bicycle exercise testing (mean age 50.6 years; 44.5% female) with test duration 6-16 minutes, rate of perceived exertion ≥17 (Borg scale), no baseline cardiovascular disease or hypertension and BP before exercise <150/90mmHg. Test durations were rescaled (0-100%) to normalize SBP responses to time. For men and women separately, group-based trajectory modelling (GBTM) was used to identify distinct SBP trajectories. Associations between SBP trajectories with new-onset hypertension were evaluated using Cox regression, calculating hazard ratios (HR, 95% confidence interval) adjusted for age, body mass index, resting heart rate, diabetes, betablocker use, lipid-lowering drugs and anticoagulants.

RESULTS In both sexes, GBTM identified three distinct SBP responses during exercise (low, mid and high SBP response, Figure 1). Follow-up was 8.2±3.4 years. New-onset hypertension rose significantly from low to mid to high SBP response (Plogrank<0.0001, both sexes). As compared to a low SBP response, a high SBP response was independently related to higher risk for hypertension in men (HR: 2.08 [1.42-3.04]) and women (HR: 3.46 [2.18-5.50]). The independent association between high SBP response and hypertension persisted when additionally adjusting for either resting or peak SBP.

CONCLUSION In normotensive men and women, we revealed that distinct response SBP patterns were linked to the risk of future hypertension. Our findings suggest clinical relevance for time-series analysis of exercise SBP measurements to refine hypertension risk prediction in primary prevention.

When All Valves Speak: MGUS and the Tetravalvular Enigma

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Introduction:

Infiltrative cardiomyopathies present significant diagnostic challenges, particularly when associated with rare systemic conditions such as monoclonal gammopathy of undetermined significance (MGUS). Multivalvular involvement is uncommon and may mimic more prevalent conditions including infective endocarditis, rheumatic heart disease, or amyloidosis. This case is educational due to its atypical tetravalvular involvement, complex differential diagnosis, and fatal outcome, highlighting the importance of comprehensive valve assessment, multimodality imaging, and timely advanced diagnostics in patients with systemic disease.

Case presentation:

A male patient with longstanding MGUS and sensory polyneuropathy developed progressive cardiac involvement over several years. Initial findings included combined aortic valve disease and later atrial fibrillation complicated by cerebellar infarction. In 2023, he presented with exertional dyspnea and angina. Echocardiography revealed thickening and mobile deposits affecting all four cardiac valves, severe pulmonary hypertension, left ventricular hypertrophy, and suspected non-bacterial thrombotic endocarditis. Cardiac MRI demonstrated diffuse non-ischemic myocardial scarring, circumferential subendocardial late gadolinium enhancement, atrial wall infiltration, and intracardiac thrombi, consistent with myocarditis and infiltrative cardiomyopathy. Amyloidosis and restrictive physiology were considered unlikely. Differential diagnoses included cardiac sarcoidosis and paraneoplastic infiltration related to MGUS. Despite referral for tertiary evaluation with planned PET-CT and endomyocardial biopsy, the patient suffered sudden cardiac death shortly after discharge. Autopsy revealed an infiltrative storage disease with amorphous monoclonal IgM deposits occluding small myocardial vessels.

Conclusions:

This case highlights the diagnostic complexity of MGUS-related cardiac infiltration with multivalvular involvement and underscores the substantial risk of microvascular embolization and sudden cardiac death. Early recognition of infiltrative and paraneoplastic cardiomyopathies, combined with prompt multimodality imaging and timely endomyocardial biopsy, is essential. The definitive diagnosis established at autopsy emphasizes its enduring value in clarifying rare cardiac pathologies and in enhancing clinical awareness to improve future patient management.

One Deletion, Three Relatives: A Familial Loeys–Dietz Syndrome Case

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Introduction

Heritable thoracic aortic disease often remains unrecognized due to variable phenotypic expression and incomplete family history at presentation. This case highlights the educational value of genetic testing in patients with multisystem connective tissue manifestations and demonstrates how cascade genetic analysis can uncover familial aortopathy and directly influence clinical management.

Case Presentation

A 35-year-old woman presented with long-standing postural orthostatic tachycardia syndrome (POTS), generalized chronic pain, and marked joint hypermobility. Additional features included thin and extensible skin, easy bruising and scarring, arachnodactyly, lipedema, flat feet, and neurodevelopmental comorbidities (ADHD and autism).

Transthoracic echocardiography revealed a dilatation of the aortic root, 48–49 mm, unchanged since 2021, with a tricuspid aortic valve and preserved left ventricular function. The patient was the first family member to undergo genetic testing and was found to carry a heterozygous deletion on chromosome region 1q41 encompassing exon 1 of the TGFB2 gene. The analysis demonstrated only one copy of this genomic region, consistent with a loss-of-function variant associated with Loeys–Dietz syndrome type 4. Based on current guidelines for genetically mediated aortopathy, the patient met criteria for prophylactic aortic surgery and was accepted for operative management.

Cascade genetic testing was subsequently initiated. The patient's mother, with a history of hypermobility, scoliosis, periodontal disease and documented aortic dilatation, was confirmed to carry the same familial TGFB2 deletion. In addition, the mother's brother had previously undergone surgery for a thoracic aortic aneurysm measuring 52 mm; at the time of surgery, no familial aortopathy was known. He is currently undergoing genetic investigation.

Conclusions

This case illustrates how identification of a pathogenic TGFB2 deletion can reveal previously unrecognized familial Loeys–Dietz syndrome with variable expression across generations. Cascade genetic testing altered clinical management by enabling timely prophylactic surgery and targeted family screening, underscoring the critical role of genetics in preventing life-threatening aortic complications.

Performance of Pre-test Probability and Risk Factor-weighted Clinical Likelihood in Predicting Significant Coronary Artery Disease on Coronary Computed Tomography Angiography in Low-Risk Patients with Chest Pain and Dyspnea

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Background:

In 2024 risk factor-weighted clinical likelihood score (RF-CL) was introduced, to assess the risk of coronary artery disease (CAD) in patients with chest pain and/or dyspnea. This study aimed to evaluate the predictive performance of both pre-test probability (PTP) and RF-CL in a low-risk population to diagnose obstructive CAD on coronary computed tomography angiography (CCTA).

Methods:

The study included 240 patients, without prior diagnosis of CAD, who underwent CCTA 2023-2024 due to chest pain and/or dyspnea at an outpatient cardiology clinic in Stockholm. Obstructive CAD was defined as ≥50% stenosis on CCTA. Data on coronary angiography and cardiovascular risk factors (smoking, diabetes, hypertension, and hyperlipidemia) were collected. Logistic regression was used to assess the association of PTP and RF-CL, with and without coronary artery calcium score (CACS), with the likelihood of obstructive CAD on CCTA. Areas under the receiver operating characteristic curve (AUC) were computed to assess predictive performance.

Results:

The mean age was 59.9 years, and 55.4% of the cohort were women. Obstructive CAD was detected in 13.3% of the patients on CCTA, 10.4% underwent invasive coronary angiography and 7.5% had obstructive CAD. The mean PTP and RF-CL were 16.2 and 10.0, respectively. Both the PTP and the RF-CL model demonstrated similar predictive performance for obstructive CAD (AUC 0.77 vs 0.76; p=0,793). When CACS was added to the model, the predictive accuracy improved substantially for both the PTP (AUC 0.88; p<0.001) and the RF-CL model (AUC 0.88; p<0.001).

Conclusions:

In this predominantly low-risk population both PTP and RF-CL were effective predictors of obstructive CAD on CCTA, with superior performance when combined with CACS.

Detection of constrictive pericarditis: the value of serial echocardiographic measurements

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BACKGROUND AND PURPOSE: Constrictive pericarditis can be difficult to distinguish from heart failure with preserved ejection fraction (HFpEF) due to overlapping clinical and echocardiographic features. This study aimed to assess whether longitudinal changes in echocardiographic measurements differ between constrictive pericarditis and HFpEF and whether such changes may aid diagnostic differentiation.

METHODS: Seven consecutive patients diagnosed with constrictive pericarditis between 2010 and 2024 were identified and matched in a 1:2 ratio with HFpEF controls based on age and sex. Baseline and follow-up echocardiographic examinations were analyzed for chamber dimensions, atrial volumes, stroke volume, and cardiac output. Changes from baseline to follow-up were compared between groups using fitted mixed-effects models.

RESULTS: A total of 21 patients were included; 15 (71%) were male, with a median age of 70 years. The mean interval between baseline and follow-up echocardiography was 18 months in the constrictive pericarditis group and 28 months in the HFpEF group. Compared with HFpEF, patients with constrictive pericarditis demonstrated greater reductions over time in left ventricular end-diastolic diameter (−13.9 mm, 95% CI −22.4 to −5.47), left ventricular end-systolic diameter (−9.71 mm, 95% CI −18.2 to −1.26), and ejection fraction (−8.86%, 95% CI −17.3 to −0.40). Greater reductions were also observed for right atrial volume index (−10.9 ml/m², 95% CI −20.4 to −1.36) and indexed stroke volume (−9.84 ml/m², 95% CI −18.7 to −0.926). No significant between-group differences in longitudinal changes were observed for cardiac output, left atrial volume index, or right ventricular dimensions.

CONCLUSION: In this small, exploratory cohort, constrictive pericarditis was associated with greater longitudinal reductions in left ventricular dimensions and stroke volume compared with HFpEF. Such changes on serial echocardiography may raise suspicion of constrictive pericarditis and provide complementary diagnostic information. These findings should be considered hypothesis-generating and warrant confirmation in larger studies.

Atrioventricular coupling as prognostic marker in cardiac resynchronization therapy

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Background

Left and right ventricular (LV, RV) global longitudinal strain (GLS), and left and right atrial (LA, RA) strain from feature-tracking (FT) cardiac magnetic resonance (CMR) have each shown prognostic value in heart failure (HF). However, the prognostic value of combined four-chamber assessment and atrioventricular coupling (AVC) remain unexplored.

This study investigated the prognostic value of LV, RV, LA, and RA strain, as well as AVC, in patients with HF.

Methods

Sixty-five patients with HF referred for cardiac resynchronization therapy (CRT) underwent CMR with FT strain analysis in all four cardiac chambers. AVC was assessed using left and right atrioventricular coupling index (LACI and RACI), calculated as the ratio of atrial and ventricular volumes at ventricular end diastole. AVC was additionally estimated by the slope of time-aligned ventricular-to-atrial strain diagrams (LA-LV and RA-RV strain slopes). Patients were followed for five years, and the primary endpoint was major adverse cardiac events (MACE).

Results

During follow-up, 53 (82%) patients received CRT and 23 (35%) experienced MACE. There was no difference in outcome between patients receiving CRT and those who did not (p=0.2). Patients with events had worse LV-GLS (-7±3% vs -9±4%, p<0.05), LA reservoir strain (12±7% vs 18 ±8%, p<0.01), and RA reservoir strain (15±8% vs 20±9%, p<0.01) compared with those without events. Patients in the worst tertile of LV-GLS and LA reservoir strain had higher event probability (Figure 1). Higher LACI, LV-LA strain slopes and RACI were also associated with MACE (Figure 2).

In univariable analyses, LV, RV, LA, and RA strain, and AVC were associated with MACE. In multivariable analysis adjusted for risk factors, only LA conduit strain was independently associated with MACE (Table 1).

Conclusions

Four-chamber myocardial strain and AVC were associated with prognosis in HF. After adjustment for known risk factors, LA conduit strain was an independent prognostic marker.

Plasma neurofilament light as a risk marker of cardiovascular disease in healthy elderly

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Background:

Plasma levels of the neuron-specific biomarker neurofilament light (NFL) have been linked to an increased risk of stroke and other cardiovascular (CV) events in patients with atrial fibrillation (AF). However, the significance of NFL as a risk marker for adverse events in healthy elderly individuals remains unknown.

Methods:

NFL was measured in venous blood samples collected at baseline from 806 community-dwelling 75-year-olds in the Prospective Investigation of the Vasculature in Uppsala Seniors (PIVUS) study. NFL was analyzed in plasma with an electrochemiluminescence assay. Associations between NFL and subsequent adverse events including ischemic stroke, myocardial infarction, CV death and all-cause death were assessed by Cox-regression models assuming linear association adjusted for clinical risk factors (sex, body mass index [BMI], diabetes mellitus, and heart failure) and other biomarkers (creatinine, NT-proBNP).

Results:

The median NFL concentration was 21.3 (interquartile range 16.7-27.6) pg/mL. Higher NFL levels were most strongly associated with lower BMI and renal dysfunction.

Over a median follow up of 10 years, there were in total 55 ischemic strokes, 48 myocardial infarctions, 52 CV deaths, and 188 all-cause deaths.

Adding NFL to the fully adjusted model improved discrimination for all-cause death (c-index increased from 0.693 to 0.707, $p<0.001$).

Conclusions:

In healthy elderly individuals, higher NFL level was related to lower BMI and lower renal function and independently associated with higher all-cause death, but not with

ischemic stroke.

Pulmonary blood flow eccentricity measurement in pulmonary arterial hypertension: a novel non-invasive CMR-based tool for personalised pathophysiological characterization

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Background

Pulmonary arterial hypertension (PAH) is a progressive disease characterized by increased pulmonary vascular resistance (PVR) leading to alterations in pulmonary artery blood flow. We aimed to investigate whether the blood flow profile eccentricity in the main pulmonary artery reflects underlying hemodynamic changes and offers novel pathophysiological information.

Methods

We conducted a retrospective observational study including cardiovascular magnetic resonance (CMR) data from 38 adult patients with PAH and 12 age and sex matched healthy controls. Pulmonary arterial flow was analysed using CMR-derived 2D-flow sequences with single-direction velocity encoding; time-delineation of the pulmonary artery was performed manually. Flow eccentricity was quantified using a dedicated novel software tool as the percentage displacement of the point of maximal antegrade flow from the anatomical centre of the vessel. The flow eccentricity was measured at four time points during the cardiac cycle: early systole, systolic peak flow, systolic notch, and late systole.

Results

Flow eccentricity was higher in early systole among patients with PAH (median 73%) compared to controls (median 51%, p=0.048). Flow eccentricity did not differ between patients with PAH and controls in the remaining systolic phases.

Notably, flow eccentricity decreased from early to peak systole by 19% in patients, whereas it increased by 7% in controls (p=0.012).

Using data from right heart catheterization, a moderate correlation between flow eccentricity in late systole and invasively measured PVR (Spearman ρ=0.431, p=0.021) was observed in patients with PAH.

Conclusions

Compared with healthy controls, patients with PAH show higher blood flow eccentricity in the pulmonary artery at early systole and opposing systolic trajectories with decreasing eccentricity from early to peak systole in PAH versus increasing eccentricity in controls. Together with the association between flow eccentricity and PVR, this supports the potential use of pulmonary artery flow eccentricity to characterise pathophysiological features of patients with PAH.

Early Clinical and Biochemical Manifestations in Hereditary Transthyretin Amyloidosis: Influence of Inheritance Pattern and Fibril Type in a Swedish Cohort

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Background: Hereditary transthyretin amyloidosis (ATTRv) is a rare, progressive disorder caused by misfolded transthyretin forming amyloid fibrils that accumulate in multiple organs, especially in nerves and heart, leading to organ failure. Fibril composition (type A or B) has been linked to cardiac and neurological phenotypes, but the role of inheritance pattern and early clinical signs remains unclear. The aim of this study was to evaluate early disease manifestations in Swedish ATTRv in relation to inheritance pattern and fibril types.

Methods: We retrospectively analysed medical records of Swedish ATTRv patients with confirmed fibril typing (n=152) diagnosed between 2006–2024. Data included inheritance pattern, age at onset, initial clinical manifestation (patient reported), diagnostic delay (time between first symptoms and diagnosis), and biochemical markers (albumin, creatinine, eGFR, NT-proBNP, troponin T).

Results: Among the 152 patients (67% males), 57% had type-A and 43% type-B fibrils; 116 had mapped inheritance (48% maternal, 52% paternal). Neuropathy was the predominant initial reported symptom (77%). Significantly more patients with Type-B fibrils had early-onset disease (≤50 years: 44% vs. 2% in type-A, $p<0.001$) and higher eGFR at diagnosis (median 91 vs. 79 mL/min/1.73m^2 for type-A, $p<0.001$). Inheritance pattern showed no significant association with age at onset or phenotype, though maternal inheritance tended toward shorter diagnostic delay. Elevated cardiac biomarkers (NT-proBNP and troponin T) were frequent early in the disease course, irrespective of fibril type or clinical presentation.

Conclusions: Our findings confirmed that fibril type, but not inheritance pattern, influences age at onset and renal function in ATTRv. Early elevations of cardiac biomarkers despite predominantly neuropathic presentation suggests subclinical cardiac involvement, underscoring the importance of combined cardiac and neurological clinical assessment in endemic and non-endemic regions for early detection and diagnosis.

Atrial fibrillation burden over a 14-day period using a single lead ECG device: A comparison between the initial 48 hours versus the overall 2-week monitoring

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Background

Atrial fibrillation (AF) is the most common cardiac arrhythmia and is associated with increased risk of stroke, cardiovascular disease, and all-cause mortality. Paroxysmal AF can be challenging to detect due to its sporadic and often asymptomatic nature. Therefore, choosing an appropriate monitoring strategy is crucial to accurately assess AF burden and optimize clinical outcomes and resource utilization. This study aimed to compare AF burden during the initial 48 hours versus the overall 14 -day period using a single lead ECG device.

Methods

This sub-study is part of the larger PRAY (Progression of Atrial Fibrillation in Young) cohort study, including 300 patients under 50 years of age diagnosed with AF. From the cohort, 100 patients were randomly selected and monitored using patch ECG for 14 days. AF burden during the first 48 hours was compared to the entire monitoring period.

Results

AF was detected in 32 of the 100 patients during the 14-day continuous ECG monitoring period. One of these patients (3%) had a higher AF burden during the initial 48 hours, whereas 23 patients (72%) demonstrated a greater AF burden over the full 14-day period. Eight patients had continuous AF throughout the monitoring period. No AF was detected in 68 of the 100 patients (68%). The difference in AF burden between the two time periods was statistically significant ($p < 0.001$).

Conclusion: Short-term monitoring may underestimate true AF burden. Extended monitoring provides a more accurate assessment and improves diagnostic yield.

Impact of regular physical activity on heart rate variability in middle-aged women

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Background: Heart rate variability (HRV) is a non-invasive marker of cardiac autonomic function and has been associated with cardiovascular health and physical fitness. Although regular physical activity is known to improve autonomic function, sex-specific data on HRV responses to regular exercise in women remain limited. The aim of this study was to compare HRV parameters between physically active middle-aged women and age-matched women who do not engage in regular structured exercise.

Methods: In this cross-sectional study, HRV was assessed in 37 physically active women and 36 inactive women. HRV was recorded using 48-hours ambulatory electrocardiogram (ECG). Inter-group differences were evaluated using the Independent-samples t-test and a p-value <0.05 was considered statistically significant.

Results: During 48-hours of ECG monitoring the physical active women had significantly higher maximal heart rate (p 0.013) and lower average and minimal heart rate (p<0.001) compared to the inactive women. Measures of heart rate variability, including SDNN, RMSSD and pNN50 were all significantly higher in active women (p<0.001), see table.

Conclusions: Engaging in regular physical activity appears to enhance cardiac autonomic function in middle-aged women, reflected by higher HRV, a well-established indicator of cardiovascular health and general fitness.

Changes in mitral regurgitation after alcohol septal ablation in hypertrophic obstructive cardiomyopathy: a retrospective cohort study

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Background

The primary mechanism of mitral regurgitation (MR) in hypertrophic obstructive cardiomyopathy (HOCM) is systolic anterior motion (SAM) of the mitral leaflets due to septal hypertrophy narrowing the left ventricular outflow tract (LVOT), influencing leaflet movement and closure. Among patients undergoing percutaneous alcohol septal ablation (ASA) to reduce the interventricular septum, the impact on MR and the underlying mechanism of MR reduction remains less studied. Therefore, we aimed to determine the prevalence of MR before and changes in MR severity after ASA, and analyze echocardiographic (ECHO) parameters associated with MR changes.

Methods

All patients who underwent ASA at Karolinska University Hospital in Stockholm, Sweden, 2009-2021, were included in this retrospective cohort study, with follow-up until mid 2025. ECHO parameters were collected before ASA, at 1-year follow-up and at the latest follow-up registered. Linear and logistic regression models were used to assess the association between ECHO parameters and the direction of change in MR at follow-up.

Results

154 patients were included with mean follow-up time 4.0±3.9 years. 13.6% (n=21) had at least moderate MR at baseline, of which 90.1% (n=19) decreased and 9.9% (n=2) had persistent moderate MR at the last follow-up. The patients with decreased (n=19, 12.3%) or persistent grade of MR (n=71, 46.1%) showed significant reduction of median basal septal wall thickness and LVOT peak pressure gradients (decreased MR: 20.0mm to 14.0mm, p<0.001, 137.5mmHg to 4.8mmHg, p<0.001, persistent MR: 19.0mm to 16.0mm, p<0.001, 95.0mmHg to 25.0mmHg) between the baseline and the last follow-up ECHO. In contrast, no significant differences were seen in the patients with increased MR grade (n=7, 4.5%, 21.0mm to 18.0mm, p=0.251, 57.0mmHg to 51.0mmHg, p=0.336).

Conclusion

In most patients with at least moderate MR prior to ASA, MR decreased at follow-up, as a supposed effect of septal reduction, and reduced SAM.

Reduced kidney function and leukopenia in the first year after heart transplantation

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Background:

Chronic kidney disease (CKD) and leukopenia are frequently observed after heart transplantation (HTx). CKD may result in elevated drug concentrations and increased risk of adverse effects due to the polypharmacy in transplant recipients. There is limited literature on leukopenia following solid organ transplantation, and the association between renal dysfunction and leukopenia after HTx remains unclear.

The aims were to evaluate the prevalence of CKD and severity of leukopenia early post-transplant, and to assess whether leukopenia is more prevalent among patients with impaired renal function.

Methods:

130 HTx recipients at the Heart Transplantation Center, Karolinska University Hospital, between 2012 and 2022 were retrospectively analyzed. Clinical and laboratory data were extracted from the medical records and analyzed statistically with Mann-Whitney-U-test, $\chi 2$-test and Fisher's exact-test. Patient demographics and laboratory parameters were examined at one month, at the onset of leukopenia and at follow-up within the first post-transplant year. CKD was defined as estimated glomerular filtration rate (eGFR) <60 ml/min/1.73m2. Leukopenia was defined as a leukocyte count <3×10^9/L.

Results:

One month after transplant, 53% of recipients met the criteria for CKD. Within one year, 73% of all patients developed leukopenia, and 52% had recurrent episodes. Severe leukopenia (white blood cell count (WBCC)<1×10^9/L) was observed in 12% during the initial episode. The median time to onset of the first leukopenia episode was 67.5 days (IQR 54–108). The prevalence of leukopenia did not significantly differ between patients with reduced and preserved kidney function.

Conclusions:

Reduced renal function was present in half of HTx recipients one month post-transplant. Almost 75% experienced leukopenia the first year, often with recurrent episodes and of severe degree. Leukopenia was not found to be more common in patients with CKD. Given the limited sample size, there is a need for larger, multicenter studies of complications following Htx.

Right ventricular longitudinal function is associated with six-minute walk test and natriuretic peptides in patients with precapillary pulmonary hypertension, a multimodality imaging study.

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Background:

Right ventricle (RV) failure is a key determinant of outcomes in pre-capillary pulmonary hypertension (PHpre-cap). This study explores the relationships between RV functional parameters, functional capacity and N-terminal pro–B-type natriuretic peptide (NT-proBNP), since these associations remain unclear in patients with PHpre-cap.

Methods:

Patients with pre-capillary pulmonary hypertension underwent assessment of functional capacity using six-minute walk test (6MWT), NT-proBNP, invasive right heart catheterization (RHC), and evaluation of right ventricular (RV) function by echocardiography: tricuspid annular plane systolic excursion (TAPSE), free wall strain (FWS), fractional area change (FAC), TAPSE/sPAPECHO (where sPAPECHO denotes systolic pulmonary artery pressure derived from echocardiography), and right ventricular stroke work index (RVSWi), as well as by cardiac magnetic resonance (CMR), including volumes, ejection fraction (EF), atrioventricular plane displacement (AVPD), FWS, and FAC. For association analyses, the coefficient of determination (R2) was applied in linear and multiple linear regression.

Results:

Forty-nine patients (69% women, median age 62 [IQR: 52–74] years) were included. 6MWT was reduced (315 m), NT-proBNP was elevated (1078 ng/L), and RV function was altered (RVEFCMR 41%, FWSECHO -15%, and FACECHO 30%) (Table 1 and 2). When adjusted for age and sex, 6MWT showed a moderate association with RV longitudinal function parameters (measured by echocardiography and CMR) and TAPSE/sPAPECHO (R^2=0.33-0.51), all $p < 0.001$ (Fig. 1 and 2). When adjusted for mRAPRHC, NT-proBNP was moderately influenced by RV longitudinal function (echocardiography and CMR) and TAPSE/sPAPECHO (R^2=0.16–0.40, $p < 0.05$) (Fig. 4 and 5).

Conclusion:

Impaired right ventricular longitudinal function, assessed by echocardiography and CMR, was moderately associated with reduced exercise capacity, independent of age and sex, and with elevated NT-proBNP levels, irrespective of right heart filling pressure. RV function at rest may not fully reveal the extent of impairment in these patients, highlighting the need for studies evaluating RV performance during exercise in patients with PHpre-cap.

Refinement and psychometric evaluation of the Thirst Distress Scale in Heart Failure

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Background

Thirst is a frequent and distressing symptom in patients with heart failure, adversely affecting quality of life. The 8 item Thirst Distress Scale in HF (TDS HF) is used to measure thirst distress. TDS-HF has been translated and validated in several languages, but prior evaluations have relied solely on classic test theory and have not accounted for the ordinal nature of the data, leaving potential gaps in understanding the scale's psychometric performance. There is also a need to explore whether refinement of the scale could enhance its clinical applicability. The aim of this study was to refine the original Thirst Distress Scale in Heart Failure and evaluate its psychometric properties.

Methods

Secondary data from the Fluid REStriction in Heart failure vs liberal fluid UPtake (FRESH-UP) study was used. The TDS-HF was evaluated using ordinal confirmatory factor analysis (CFA) and with the polytomous Rasch model (partial credit model). The scale will further be assessed through an iterative process to possibility refine the scale.

Results

Data from 502 participants of the FRESH-UP study was included in both the CFA and Rasch analysis. Preliminary analysis showed that the CFA improved from poor fit to good fit after refinement, with strong factor loadings and acceptable error variances. Internal consistency was high (ordinal $\alpha = 0.93$; $\Omega = 0.87$), and item level correlations were adequate. Rasch analysis showed acceptable model fit, with two items displaying disordered thresholds. Unidimensionality was supported, though local dependency appeared in two item pairs. Targeting was limited at extreme scores. Reliability was good (Person Separation Index = 0.78). No differential item functioning was detected for sex, age or diuretic use.

Conclusion

The initial analysis demonstrates good psychometric properties and reliability of the 8-item TDS-HF. The analysis is ongoing, and the refinement process will be presented at the congress.

Primary care nurse actions using a clinical decision-making algorithm in remote dielectric sensing guided heart failure program: A feasibility study

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Background: Remote Dielectric Sensing (ReDS) technology non-invasively quantifies lung fluid content. A nurse-led, ReDS-guided heart failure (HF) management programme incorporated a clinical decision-making algorithm based on ReDS values to guide follow-up scheduling, diuretic adjustments, and symptom monitoring (Table 1). The study aimed at describing a primary care nurse´s actions using an algorithm in the ReDS-guided HF program.

Methods: Data from a feasibility study of 18 patients (mean age, 81±6 years, male 47%, NYHA III/IV 67%) from one primary care centre was analysed. A total of 36 ReDS measurements were performed (baseline and at one month follow-up). The primary care nurse´s actions were examined through intervention notes and interview data.

Results: Mean ReDS values were 34±6 at baseline to 35±5 at one month. ReDS measurements and nurse's actions are summarised in Table 2. Hypervolemic status (>41%, n=5): One patient visited a hospital-based HF clinic. In other cases, the nurse´s actions included diuretics adjustment, additional follow-up by a primary care physician and a home-visit nurse, telephone follow-up and weight monitoring support. No actions were taken for one case. Possible hypervolemic status (36-41%, n=11): Some algorithm-recommended actions, such as diuretic adjustments and support for weight monitoring were provided. Weekly repeated ReDS measurements, recommended by the algorithm, were not performed. Instead, the nurse opted for telephone follow-ups. In five cases, no action was taken. Optimal fluid range (25-35%, n=20): For these cases, no additional actions were taken.

The reasons of why the nurse took other actions included uncertainty on interpreting ReDS values, especially when high values indicating congestion was not confirmed by other signs or symptoms.

Conclusions: The algorithm recommended actions for ReDS values were not always implemented as the nurse relied more on conventional clinical judgement. Further support in understanding ReDS technology and improvement of the algorithm is necessary to enhance the implementation.

Fear of graft rejection and its relationship to psychological general well-being: a longitudinal five-year follow-up after heart transplantation

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Background: Heart transplantation is a treatment for advanced heart failure, prolonging life and improving quality of life. However, the risk of graft rejection is always present. This risk can be perceived as a serious threat that might have an impact on heart recipients' psychological well-being.

Aim: to explore fear of graft rejection longitudinally, evaluate changes over time and the relationship with psychological general well-being.

Methods: A nationwide, multi-center longitudinal cohort study followed heart recipient from pre-transplant to five years post-transplantation. Data were collected at out-patient clinics by transplant nurses at eight time points using two instruments: The Perceived Threat of the risk of Graft Rejection (PTGR) – comprising three domains, and The Psychological General Well-Being (PGWB).

Results: In total 73 heart recipients (57 men, 16 women; mean age 52 ±13 years) were followed until five years (Table). Median PTGR scores remained low (4-8) across all domains during follow-up indicating low concern (Figure). The proportion perceiving a serious threat of graft rejection varied between 11.5% to 24.5%, with no significant change over time. Intrusive anxiety was overall low with 8.2 % experiencing severe intrusive anxiety after three months, significantly decreasing after one year. Perceived lack of control regarding graft rejection varied between 10.6% to 21,9% during follow-up. Heart recipients with poor psychological well-being reported significantly stronger intrusive anxiety, which explained over 85% of the psychological well-being after four years. They also reported less control at several points, and after five years, more graft related threat. Intrusive anxiety was an issue also among those with good well-being after three years, explaining 70% of the variance.

Conclusion(s): Fear of graft rejection is not a prominent problem the first five years after heart transplantation. However, for those affected by the fear the problem must be approached, specifically among those with poor psychological well-being.

Health-related quality of life and experiences of exercise training within cardiac rehabilitation after infective endocarditis – an ongoing descriptive mixed method study.

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Background:

Infective endocarditis can affect anybody, but the risk increases with valvular disease, implanted material and high age (1). Recovery after endocarditis is worse than after ischaemic heart disease and valve surgery (2). Patients in Sweden is cared for in Infectious Disease departments and rarely offered cardiac rehabilitation (CR). High degree of fatigue symptoms and weight loss is reported (3). Data is lacking on the recovery phase the first year after endocarditis and if it is possible to improve health with exercise training (ET) within CR (4).

The aim of the study is twofold: (i) to describe recovery during the first year after infective endocarditis in relation to health-related quality of life, physical capacity, and participation in ET within CR; and (ii) to explore patients' experiences of health, recovery, and exercise training, as well as to identify obstacles and opportunities for implementing ET within CR.

Methods:

This is a quasi-experimental pilot study with a mixed method design. An intervention with ET within CR in a new patient group will be studied with a feasibility perspective. The population is patients treated for infective endocarditis by the Department of Infectious Diseases, Region Halland from September 2024. Quantitative data are collected using questionnaires and physical tests, and qualitative data through individual interviews. The timing of data acquisition and the intervention is presented in Table 1.

Results:

The inclusion process is shown in Table 2. So far, 21 patients of 50 planned, have been included, and 3 have completed the study. Of the five patients tested pre- and post ET, all showed increased physical capacity (Table 3).

Conclusion:

Infective endocarditis is cared for outside the cardiology field. Patients may need supportive follow-up within CR and evaluations of how to design the rehabilitation plan to reach the intended patient population is needed.

Exploring the proteomic landscape of spontaneous coronary artery dissection: insight into pathophysiology and potential biomarker candidates

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Background: Spontaneous coronary artery dissection (SCAD) is a non-atherosclerotic cause of acute coronary syndrome that predominantly affects women. Genomic studies suggest associations between SCAD and connective tissue disorders such as fibromuscular dysplasia. Other reports have implicated inflammation, hormonal exposures and endothelial dysfunction as possible mechanisms underlying SCAD. The circulating protein landscape in SCAD has not been characterized specifically. Defining a SCAD-specific proteomic profile may provide novel insights into disease mechanisms, markers of susceptibility and potential therapeutic targets. This study therefore aimed to investigate how protein abundance differs between SCAD patients and healthy sex and age matched controls.

Methods: Patients with angiographically confirmed SCAD without atherosclerotic disease were enrolled during hospitalization for acute coronary syndrome in Sweden. Blood samples were drawn two months after the event. Healthy age and sex matched controls were recruited using the Swedish population register. Plasma proteomic profiling using the Olink Reveal panel, consisting of 1034 proteins, was conducted. Mann-Whitney U-test was used to compare cases and controls in terms of biomarker levels.

Results: Plasma samples from 47 SCAD patients and 94 controls were analysed. The study population consisted of 94% women with mean age 53 ± 9.3 years. Participant self-reported characteristics are presented in table 1. Significant biomarker differences between the groups were found for 220 proteins (figure 1), with the five most significant proteins being PRDX6, PKD2, FAF2, MAP3K5 and IRAG2 (adj $p < 0.001$).

Conclusions: This is one of the first exploratory proteomics studies conducted on SCAD patients. Several significant proteins have been identified with mechanistic connection to the immune system, oxidative stress and multiple intracellular processes. These pathways could be involved in pathophysiological mechanisms of SCAD. Further studies are required to both validate and translate these results into clinical practice.

Snus use is associated with elevated levels of Troponin I among younger individuals

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Background

Snus is marketed as a less harmful alternative to cigarettes. Its safety is questioned with studies showing detrimental cardiovascular effects associated with snus use. Troponin I (TnI) is a known marker of myocardial injury.

This study aimed to investigate the relationship between snus use and elevated levels of TnI.

Methods

The study population was derived from the MONICA cohort in northern Sweden. Ages ranged from 25 to 80 years old. Serum TnI >5 pg/mL was defined as elevated. Individuals with history of cigarette use, missing data on tobacco exposure, or outcome were excluded. The study population was divided into ever snus users (n=899) and never snus users (n=4264). The population was stratified by age into groups: ≤35, 36–50, 51–65, and >65.

Results

Never users were older and more burdened with cardiovascular comorbidities compared to ever users. In non- and sex-stratified analyses no difference was observed between the two groups when examining those with TnI >5pg/mL. No difference in prevalence of cardiovascular comorbidities was observed between ever- and never users in respective age group, though the prevalence of cTnI >5pg/mL among ever users ≤35 years, and 51-65 was higher than never users. Crude regression analysis showed a relationship between snus use and TnI >5pg/mL in the group ≤35 years old, which remained in an adjusted analysis (OR 1.82, CI: 1.10 - 3.00).

Conclusion

Snus use was shown to be associated with elevated levels of TnI among young individuals. The results suggest that snus use might have a negative effect on myocardial muscle cells. Further studies are needed to determine the longitudinal implications of snus as a substitute for cigarettes.

Psychological Distress and Health-Related Quality of Life in Spontaneous Coronary Artery Dissection Patients: A Comparison with Type 1 Myocardial Infarction Patients and Healthy Controls

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Background: Spontaneous coronary artery dissection (SCAD) is a potentially life-threatening cause of myocardial infarction (MI) mainly affecting young to middle-aged women. This study aimed to assess anxiety and depressive symptoms, perceived stress, and Health-Related Quality of Life (HRQoL) in SCAD patients, in comparison to type 1 MI patients and healthy controls.

Method: A cross-sectional study of 188 SCAD patients, recruited from seven Swedish hospitals and the SWEDEHEART registry, 219 age- and sex-matched type 1 MI patients, recruited via SWEDEHEART and 94 age- and sex-matched healthy controls, recruited via the Swedish population registry. Validated questionnaires RAND-36, Perceived Stress Scale (PSS-14), and Hospital Anxiety and Depression Scale (HADS) were used.

Results: Mean age±SD for SCAD patients, type 1 MI patients and healthy controls were 55.9±9.8, 60.9±9.4 and 55.5±9.1 years, respectively, and 86.2, 72.1 and 93.6% were women. Median years (IQR) since MI was 4.0(4.3) and 4.0(3.0) for SCAD and type 1 MI patients, respectively. Perceived stress was higher in SCAD patients in comparison with both type 1 MI patients and healthy controls, (mean±SD: 21.9±9.3 vs 18.5±8.7, $p<0.001$; vs 17.7±7.9, $p=0.001$). A greater proportion of SCAD patients scored ≥8 points on the HADS-A subscale, indicating clinically relevant anxiety, in comparison with both type 1 MI patients and healthy controls (36% vs 20%, $p<0.001$; vs 12%, $p<0.001$). SCAD patients scored lower on the mental component summary (MCS) of RAND-36, than both type 1 MI patients and healthy controls (mean±SD 67.2±22.4 vs 73.7±22.0, $p=0.004$; vs 82.0 ±16.6, $p<0.001$).

Conclusions: SCAD patients report significantly higher levels of perceived stress and anxiety, and poorer mental health aspects of HRQoL, in comparison with both type 1 MI patients and healthy controls. This is important to consider when forming future SCAD rehabilitation programs.

Comparing Cox regression and machine learning models for risk prediction in chest pain patients

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Background

Cox regression analysis is commonly used for time-to-event analysis in cardiac cohorts. However, linear models may miss complexity when high-dimensional clinical data is added. We hypothesized that Random Survival Forest (RSF) models would outperform Cox regression when integrating 10 years of registry data on cardiac risk factors and procedures.

Methods

From a clinical database 2,239 patients with chest pain referred for perfusion CMR were identified. 80 were excluded due to missing data. Predictors included demographics (age, sex, BMI), 10□year prior national registry data (ICD-coded diagnoses and KVÅ-coded procedures related to cardiovascular disease), and CMR variables (LVEF, indexed LVEDV/LVESV/LV mass, infarct, ischemia). Major adverse cardiovascular events (MACE) consisted of cardiovascular death, myocardial infarction, unstable angina, or coronary intervention. Risk prediction was done using Cox and RSF models with 5□fold stratified cross□validation and two feature sets: CMR and demographics, as well as CMR, demographics and registry data. Discrimination was assessed using the C□index.

Results

In the study cohort (n=2159) mean age was 65.4±12.2 years; 44% women; BMI 27.6±5.1 kg/m². Over 2.5±1.0 years of follow□up, MACE occurred in 9.1%. Using data from CMR and demographics only, Cox and RSF were similar (C□index 0.807 [95% CI 0.780–0.833] vs 0.793 [0.765–0.820]). Adding registry data, Cox declined to 0.765 (0.729–0.795; p<0.001), whereas RSF improved to 0.808 (0.780–0.834; p<0.05), yielding an RSF–Cox difference of 0.042 (0.021–0.063; p<0.001). RSF with registry data reached the same discrimination as Cox regression achieved using CMR and demographics alone (0.808 vs 0.807), whereas Cox performance declined when registry data were added.

Conclusion

Integrating 10□year registry history with CMR and demographics improved time□to□event risk prediction with RSF but not with Cox regression. This suggests registry history adds prognostic information that is better captured by non□linear models.

Becoming Secure: Patients' Experiences of a Person-Centred, Nurse-Led Clinic for Atrial Fibrillation

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Background: Atrial fibrillation can negatively impact patients' physical health, emotional well-being, and daily life. Person-centred, nurse-led clinics may help address patients' needs for support. However, qualitative research exploring the patients' perspective remains limited. Therefore, the aim of this study was to describe patients' experiences of a person-centred, nurse-led clinic.

Methods: This qualitative study was conducted as a substudy within a larger randomized controlled trial at a university hospital in Sweden. Seven women and eight men, aged between 52 and 77 years old (median 67 years) who had been randomized to the intervention group (a person-centred, nurse-led AF clinic) were interviewed. The interviews were transcribed verbatim and then analyzed with qualitative content analysis inspired by Graneheim and colleagues.

Results: The qualitative analysis resulted in three themes; Feeling trust, Being involved and Gaining control. The analysis further generated a main theme that synthesized the participants' accounts, namely Becoming secure. Essential elements for becoming secure included feeling trust, the opportunity to talk about emotions, to be taken seriously, to meet a knowledgeable and reliable nurse and finally, to know who they could turn to if necessary.

Conclusion: Ensuring that patients with atrial fibrillation feel secure in managing their condition requires fostering trust, promoting active involvement, and enabling a sense of control. The relationship between the nurse and the patient is crucial for establishing trust in the care process. Implementing a person-centred, nurse-led clinic may represent an effective strategy to support these essential components.

Adherence to a Yoga Application for Persons with Heart Failure: A Mixed-Methods Analysis

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Background: Digital health tools, such as mobile apps, promote physical activity but adherence varies. In a previous RCT with a tele-yoga intervention, participation in live-streamed sessions was high, while app engagement was low. This study aimed to explore user experiences with the yoga app and examine associations between adherence, demographic factors, and patient-reported outcomes.

Methods: This mixed-methods study involved participants from an RCT on tele-yoga (NCT03703609). The intervention included twice-weekly 60-minute live-streamed group sessions and individual 10-minute app-based sessions five days per week over three months. App usage data were logged; demographic and patient-reported outcomes were analyzed using linear regression. User experiences were collected through interviews and analyzed using content analysis.

Results: 156 participants (51 women, mean age 64,2,) were included. Two-thirds did not meet the recommended app-usage of ≥40 minutes/week, while 10% were high-users, exceeding the recommendation by at least twofold. The highest recorded usage averaged 27 minutes/day. Women were significantly more adherent than men, with 48% of women using the app for ≥480 minutes, compared to 25% of men. Participants engaged in group yoga were more likely to use the app.

Participants were categorized into adherent (480-600 min, n=40), somewhat adherent (120-480 min, n=31), and non-adherent (0-120 min, n=54). Adherent users valued the app's technology and flexibility, established routines and experienced positive effects. Somewhat adherent users struggled with consistency due to the absence of schedules and group-support. Usage declined over time, particularly during holidays or hospital stays. Non-adherent users preferred group yoga, often practicing without the app. Some did not engage in yoga at all.

Conclusion: App usage was highest when integrated into daily routines and perceived as enjoyable. Women and those actively participating in group yoga exhibited greater adherence. Future research should focus on developing a co-designed yoga app incorporating user-driven features to enhance engagement and sustainability.

Self-care practice among patients after the implantation of a left ventricular assist device

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Background: Successful long-term support of left ventricular assist devices (LVAD) requires high levels of patient self-care. However, evidence on self-care behaviour and its associated factors in different healthcare contexts remains limited.

Aim: To describe self-care behaviour among patients supported with an LVAD in Israel and Japan and to identify factors associated with self-care behaviours.

Methods: A cross-sectional survey was conducted among adults with an LVAD between 2016 and 2021in Israel and Japan. Self-care behaviours were assessed using the 20-item LVAD Self-Care Behaviour Scale. Scores were standardized to a range from 0 to 100, with higher scores indicating better self-care. Multiple linier regression analysis was used to identify factors associated with self-care behaviours.

Results: Data from 117 patients (52 from Israel and 65 from Japan) were analysed. Mean age was 50±14 years and 83% were male. Nineteen patients (16%) were actively employed and were not on sick leave. Most patients (92%) were supported with an LVAD as a bridge to transplant, and 42 % had been living with an LVAD for over one year. Overall self-care behaviour was high, with more than 90% of participants reporting good performance in 18 self-care behaviours. The total score of the LVAD self-care scale was 87.2±9.4. Subscale scores for monitoring, HF self-care, and LVAD self-care were 89.6±13.7, 76.5±15.8, 92.1±9.5 respectively. Multiple linear regression analysis showed that having a bridge-to-transplant indication ($p=0.03$) and living with an LVAD for more than one year ($p<0.01$) were associated with poor HF self-care behaviours. Compared with patients from Japan, patients from Israel had a poorer self-care monitoring ($p<0.01$). Being employed either full-time or part time was independently associated with poorer LVAD-specific self-care ($p=0.03$).

Conclusions: Overall LVAD self-care was high. Tailored, long-term, and context-sensitive interventions are essential to support self-care in LVAD patients with risk factors associated with poor self-care.

Self-reported physical activity and kinesiophobia following cardiac surgery

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Background: Physical activity is essential for recovery after cardiac surgery, yet evidence on postoperative activity levels remains limited. This study assessed self-reported physical activity six months after surgery and examined the influence of pain and fear of movement.

Methods: Patients undergoing cardiac surgery at a Swedish university hospital were prospectively included. Preoperative and surgical data were retrieved from medical records. At six months, participants completed validated questionnaires on physical activity (Frändin-Grimby Activity Scale, Haskell Likert-scale, Patient-Specific Functional Scale, Exercise Self-Efficacy Scale), pain, dyspnea, fear of movement (Tampa Scale of Kinesiophobia), and health status (EQ-5D-3L).

Results: Seventy-one patients (mean age 68 ± 11 years, 82% male) completed follow-up. At six months, 52% reported a moderate activity level, and 42% fulfilled the World Health Organization (WHO) physical activity recommendations (≥150 min/week). Reported pain (0.5 ± 1.0, numeric rating scale) and dyspnea (median 1 [0–2]) were low. However, fear of movement was significantly higher in patients not meeting WHO recommendations (P = .025).

Conclusions: Six months after cardiac surgery, just over half of patients reported moderate physical activity, while fewer than half adhered to WHO guidelines. Pain and dyspnea were generally minimal, but fear of movement was associated with reduced adherence. These findings highlight the need for targeted postoperative interventions addressing barriers to optimize recovery and promote sufficient physical activity.

Anaesthetic depth is a risk factor for postoperative delirium after cardiac surgery

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Background: The aim of this study was to investigate whether prolonged exposure below a Patient State Index (PSI) threshold of 25—considered indicative of excessive anesthetic depth—is associated with postoperative delirium (POD) in cardiac surgery.

Methods: Single center, retrospective cohort study including patients who underwent cardiac surgery under cardiopulmonary bypass (CPB) at Linköping University Hospital between January 2021-February 2024. Anesthetic depth was assessed using processed electroencephalography via SedLine Brain Function Monitor.

Exclusion criteria included severe psychiatric illness, complex procedures, and major perioperative complications.

Primary outcome: POD within postoperative day 7, assessed via the Nursing Delirium Scale (Nu-DESC) and a validated chart-based instrument. Low- and high-risk threshold values for duration with PSI <25, corresponding to 90% specificity and 90% sensitivity for predicting POD, were identified. These two thresholds generated three potential risk groups (low/medium/high risk). The cumulative occurrence of POD was compared between groups using the ⟦Chi⟧ ^2 test. Unadjusted and adjusted logistic regression analyses were used to determine the odds ratio (OR) with 95% confidence intervals (CI) for PSI <25 in relation to POD.

Results: Among the 733 included patients (81% men), POD occurred in 18%. Median PSI <25 was 51 minutes (IQR 10.4-121). POD frequency differed from patients with low risk (PSI <25: <1.9 min, n=13, 12% POD), medium risk (PSI <25: 1.9 min-174 min, n=92, 17% POD) and high risk (PSI <25: >174 min, n=28, 32% POD), p <0.01. Results from adjusted and unadjusted logistic regression are described in table 1.

Conclusions: Duration under the recommended threshold of anaesthetic depth (PSI 25) is a significant risk factor for POD after cardiac surgery. These findings remained in analysis adjusted for multiple known individual and operation related risk factors.