



UMEÅ UNIVERSITET

Umeå University Medical Dissertations, New Series No 2348

INSIGHTS INTO CARDIAC FUNCTION BY ECHOCARDIOGRAPHY IN ADVANCED HEART FAILURE AND HEART TRANSPLANTATION

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Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för avläggande av medicine doktorsexamen framläggs till offentligt försvar i Biblioteket på Medicin, målpunkt B41 våning 4, NUS, torsdagen den 27 mars, kl. 9.00-13.00.

Avhandlingen kommer att försvaras på engelska.

Fakultetsopponent: Professor Ana Djordjevic Dikic, University Clinical Center of Serbia, Belgrade (Serbia)

Organization

Umeå University
Department of Public Health
and Clinical Medicine

Document type

Doctoral thesis

Date of publication

6 March 2025

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Title

Insights into cardiac function by echocardiography in advanced heart failure and heart transplantation.

Abstract

Background: Heart failure (HF) is a clinical syndrome caused by structural or functional cardiac abnormalities. Despite advances in therapy, up to 10% of HF patients progress to advanced HF (AdHF), characterized by severe symptoms and frequent hospitalizations. Right heart catheterization (RHC) is used to assess pulmonary pressures, while heart transplantation (HTX) remains the gold standard treatment. Post-HTX complications include rejection and cardiac allograft vasculopathy (CAV). Echocardiography is crucial for monitoring cardiac function, with advanced techniques like Speckle Tracking-derived Myocardial Work (MW) showing promise. **Objectives:** This thesis explores echocardiography's role in AdHF and HTX, focusing on: Comparing echocardiographic estimates of pulmonary arterial pressure (PAP) with RHC (Paper 1). Evaluating the prognostic value of MW in AdHF (Paper 2). Defining MW reference values in HTX patients versus healthy controls (Paper 3). Analyzing NT-proBNP trends post-HTX and their predictors (Paper 4). **Methods:** We retrospectively screened AdHF and HTX patients at our hospital. Paper 1 compared echocardiographic PAP estimates to RHC. Paper 2 assessed MW indices in relation to HF outcomes. Paper 3 compared MW indices in HTX patients with healthy controls. Paper 4 analyzed NT-proBNP trends post-HTX. **Results:** Paper 1: Peak tricuspid regurgitation velocity >2.4 m/s predicted PH with 100% PPV. Paper 2: Higher MW indices correlated with reduced HF hospitalization risk. Paper 3: HTX patients had lower MW indices than healthy controls. Paper 4: NT-proBNP levels stabilized one year post-HTX, predicted by pulmonary pressures and kidney function. **Conclusions:** Echocardiography is vital in AdHF and HTX, aiding diagnosis, risk stratification, and follow-up.

Keywords

Advanced heart failure; heart transplantation; echocardiography; prognosis; diagnosis; natriuretic peptides.

Language

English

ISBN

print: 978-91-8070-626-1
PDF: 978-91-8070-627-8

ISSN

0346-6612

Number of pages

71 pages + 3 papers