Heart Failure (HF) Edition

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Central hemodynamics and arterial health research insights

394 papers and abstracts
published between 2000-2023*

Here are some of the highlights.

Prospective, Double | November 2021
Blind, Randomized Controlled Trial

Effect of Empagliflozin on Ketone Bodies in Patients with Stable Chronic Heart Failure

Robert Pietschner and colleagues at University Hospital Erlangen evaluated the effect of empagliflozin, an SGLT2 inhibitor, on blood ketone body concentration in patients with stable chronic heart failure (CHF). The study found that treatment with empagliflozin led to an increase in fasting serum ß-OHB levels, as well as improvements in blood pressure and vascular stiffness. However, a greater increase in ß-OHB was associated with less improvement in central blood pressure and 24-hour ambulatory blood pressure, suggesting that the increase in ketone bodies may not have a beneficial effect on the cardiovascular system.

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HF Risk Stratification | August 2023

Rising Arterial Stiffness with Accumulating Comorbidities Associates with Heart Failure with Preserved Ejection Fraction

A study sponsored by University Hospitals Coventry & Warwickshire NHS Trust examined rising arterial stiffness with accumulating comorbidities associates with heart failure with preserved ejection fraction (HFpEF). The research team led by Danish Ali found that arterial stiffness increased as vascular comorbidities accumulated, with HFpEF exhibiting the highest levels. The finding suggests that pulse wave velocity to be a useful tool in identifying at-risk individuals before the onset of HFpEF.

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Personalized Medicine | February 2018

Aortic Waveform Analysis to Individualize Treatment in Heart Failure

A team led by Peter Wohlfahrt from the Mayo Clinic conducted the first longitudinal trial in heart failure with reduced ejection fraction (HFrEF) patients where changes in central hemodynamics were tracked and related to serial changes of submaximal exercise capacity. The finding suggests the use of central aortic waveforms to be a more robust and sensitive assessment of cardiac load, and tailoring vasoactive medicines based on an individual's arterial afterload may improve clinical outcomes in heart failure.

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*As of October 2023, results from PubMed Central using "SphygmoCor" as the search term.

CONNEQT Health

Gender Differences in HF | December 2021

Arterial Stiffness and Vascular Load in HFpEF: Differences Among Women vs Men

A research team led by Emily Lau from Massachusetts General Hospital examined the association between arterial stiffness and left ventricular diastolic function during exercise in men and women with heart failure with preserved ejection fraction (HFpEF). The team found women with HFpEF have higher arterial stiffness compared to men, and this stiffness is associated with abnormal increases in pulmonary capillary wedge pressure during exercise.

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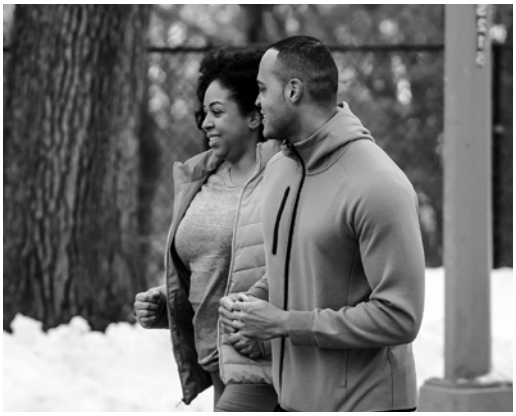

Vascular Remodeling | October 2022 in Chronic HF

Is Vascular Remodeling in Patients with Chronic Heart Failure Exaggerated?

A group at the University Hospital Erlangen led by Robert analyzed vascular remodeling and function in chronic heart failure (CHF) patients with an ejection fraction ≤49%. The study found that CHF patients, despite having lower pressure and better lipid profile, had increased pulse wave velocity and central augmentation index compared to patients without CHF. The findings highlight the importance of assessing arterial stiffness and vascular function beyond blood pressure and lipid panel.

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Organic and Inorganic | May 2017 Nitrate in HF Treatment

Effects of Organic and Inorganic Nitrate on Aortic and Carotid Hemodynamics in Heart Failure and Preserved Ejection Fraction

A research group led by Julio Chirinos assessed effects of organic and inorganic nitrate on patients with heart failure with preserved ejection fraction (HFpEF). The team found that nitroglycerin caused vasodilation and reduced blood pressure, while inorganic nitrate consistently reduced wave reflections without affecting blood pressure, suggesting that central hemodynamic differences are likely related to the differential clinical effects of these agents on HFpEF patients.

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HF Outcomes Prediction | June 2022

The Analysis of Arterial Stiffness in Heart Failure Patients: The Prognostic Role of Pulse Wave Velocity, Augmentation Index and Stiffness Index

Fabio Anastasio and colleagues evaluated the relationship between arterial stiffness and survival in 199 hospitalized HF patients. Over a median follow up of 437 days, the team found higher aortic pulse wave velocity, augmentation index, and stiffness index to be associated with increased risk of death or re-hospitalization. The study suggests the evaluation of arterial stiffness values before discharge to be useful in predicting outcomes in HF patients.

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Exercise and Heart Failure | March 2022

Exercise Blood Pressure in Heart Failure with Preserved and Reduced Ejection Fraction

A group led by Mayooran Namasivayam at Harvard Medical School report that the assessment of blood pressure during exercise can reveal changes that associate with adverse hemodynamic response and outcomes in HF patients. Exercise testing can provide insight into the pathophysiology of heart failure by unmasking physiologic abnormalities not present during rest. This study evaluated blood pressure pulsatility with exercise in heart failure with preserved ejection fraction (HFpEF) and compare it with heart failure with reduced ejection fraction (HFrEF).

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