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Use of Biomarkers for Assessing Differential Risk for Developing Heart Failure Phenotypes

Summary

Left ventricular (LV) hypertrophy (LVH), most commonly due to chronic hypertensive heart disease, is associated with increased risk of developing depressed LV systolic function, heart failure (HF) and death. Routine cardiac imaging to screen for LVH in hypertensive patients is not recommended because of the low predictive value of LVH for HF. Researchers at UMB have demonstrated that the presence of elevated cardiac-specific biomarkers in the presence of LVH identifies subjects with a high risk of developing HF, particularly HF with reduced ejection fraction (HFrEF). This finding is significant because it identifies patients that would benefit from specific medical and lifestyle interventions.

Key Investigator

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Field

Diagnostics

Technology

Biomarker

Advantages

Predicts the progression to HF following asymptomatic LVH

Specifically associated with HFrEF, which can guide therapeutic interventions

Biomarkers may be developed as therapeutic targets

Status

Available for licensing and commercialization

Patent Status

U.S. Application 15/309,754

UMB Docket Reference

CD-2014-098

External Reference

Seliger SL et al. (2017) *Circulation*. 116.025505

Seliger SL et al. (2015) *JACC Heart Failure*. 3(6):445-455.

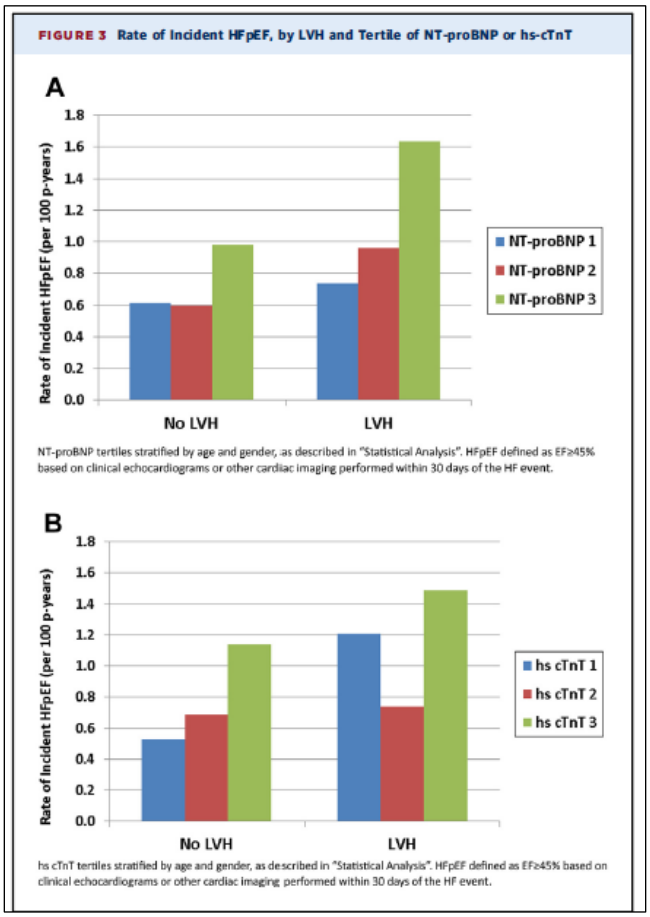
Neeland IJ et al. (2013) *J Am Coll Cardiol*. 61(2):187-195.

Market

The prevalence of LVH in the general population ranges from 9.1% for women and 14.9% for men, or approximately 35 million people in the US. HF is considered an emerging epidemic, with a US prevalence greater than 5.8 million people. There is currently no diagnostic that can be used to predict the risk of patients with LVH developing HF.

Technology

UMB researchers have shown that in individuals aged 65 or older with LVH and a significant, sustained increase in NT-proBNP *or* hs-cTnT levels have markedly higher rates of incident HF, in particular, HFrEF. Specifically, a significant, sustained increase in the N-terminal pro-b-type natriuretic peptide (NT-proBNP) and high-sensitivity cardiac troponin T (hs-CTnT) in patients exhibiting LVH, there was a 3-fold increase in the development of HFrEF. HFerEF occurs in approximately half of the patients that develop HF and is the only form of HF that is currently treatable. This discovery allows for the first time a diagnostic to identify patients with a high risk of developing HF. Predicting HF provides, for the first time, an opportunity to modify the treatment and lifestyle of high-risk patients to prevent disease.



Technology Status

This technology has been tested in clinical samples from the general population and adults without prior HF or myocardial infarction, at baseline and following 2-3 years.

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