Measuring Edema and Body Composition in Heart Failure Using EchoMRI

Title: Measuring Edema and Body Composition in Heart Failure

Invention: This invention is a method of utilizing NMR-MRI technology to assess and diagnose patients with heart dysfunction, heart failure (HF) and those at risk of developing heart dysfunction. It assesses a panel of biomarkers including edema and body composition that will then allow physicians to recommend personalized treatments in order to slow the progression of heart failure. Furthermore, this technology can also be utilized to track the success of treatment for a particular patient over time to determine if the medications being utilized are effectively slowing the progression of heart failure.

Background: Patients with HF are often all treated with the same medications, based on large randomized clinical trials. These trials homogenize individual differences, although it is widely known that HF has many etiologies and patients show differences in their biomarker profiles. Heart failure has many causes and progression is affected by various pathways. Current treatment solutions recommend therapeutics against angiotensin, aldosterone or nepriyisin, without proper assessment of these biomarkers. There remains a need for an individualized treatment of heart failure capable of identifying specific biomarkers, recommending personalized treatment, and following the success of these treatments on an individual level. This solution addresses the industry need as earlier diagnoses and classification of disease profiles allows physicians to conduct individualized targeted treatment.

Applications:

• Heart failure assessment/treatment
• EchoMRI
• NMR

Advantages:
• Non-physician dependent assessment of sodium and water overload
• Assessment of heart failure progression & prognosis
• Access edema in lungs and other locations
• Personalize therapy to prolong life
• Treat sarcopenia/cachexia associated with HF

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