Abstract

**Purpose:** Heart failure (HF) with preserved (HFpEF) and reduced ejection fraction (HFrEF) are conditions associated with poor prognosis and poor quality of life. While HFrEF shows a decreasing incidence and has effective HF treatment, HFpEF is increasing with no established therapy. PREFERS Stockholm is an epidemiological study performed within the 4D HF project which aligns improved clinical care with better prerequisites for good clinical research. We aim to include patients with incident HF (1000/year) in Stockholm (population of 2 million inhabitants). The goal is to find targets for new drug developments in HFpEF (https://internwebben.ki.se/en/project-4d-bridging-gap-between-healthcare-and-research).

**Methods:** Patients will be characterized at baseline and at a one year follow-up visit by clinical characteristics entered into standardized electronic medical records including echocardiography and ECG standardized protocols transferred online to a database. Patients will be characterized into a) Heart failure with reduced ejection fraction, HFrEF, b) preserved ejection fraction, HFpEF and in a subset of patients undergoing elective coronary bypass surgery (n=200) normal versus abnormal diastolic function. Blood samples will be stored in a biobank and myocardial biopsies from the right atrial appendage and the right and left ventricles as well as central and peripheral blood will be collected during surgery. A subset of patients will undergo magnetic resonance imaging.

**Results:** The purpose is to characterize and compare new onset HFpEF and HFrEF patients by using high quality clinical and imaging data, by new blood and cardiac biopsy markers through Science for Life Laboratory platforms of genomics, transcriptomics and proteomics as well as established biomarkers of fibrosis, inflammation, hemodynamics, hemostasis and thrombosis. All these data will be explored by state-of-the-art bioinformatics methods to investigate gene expression patterns, sequence variation, DNA methylation, posttranslational modifications and systems biology approaches including pathway and network analysis.

**Conclusions:** In this large-scale epidemiologic study of both HFpEF and HFrEF, with an initiating phase of biopsy studies, we hope to identify new biomarkers of disease progression and to find pathophysiologic mechanisms to support explorations of new treatment regimens for HFpEF.

References

