Biomarker panel for Predicting Patient Response to Cardiac Resynchronization Therapy

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Technology description

Inventors have identified a specific and unique set of biomarkers that can be developed into a point of care (POC) diagnostic to predict those patients with a high probability of responding to cardiac resynchronization therapy (CRT). Biomarkers have been identified to support the clinical decision of whether CRT will be a meaningful course of treatment. The biomarkers include CRP, SGP-130, sIL-2R, sTNFR-II, IFNG, BNP, sST2, MMP-2, MMP-9, TIMP-1, TIMP-2, and TIMP-4.
Overview:Cardiac resynchronization devices (CRDs) are implantable medical devices that deliver an electrical stimuli to targeted tissue via a lead wire (“stimulation lead”) or a catheter with one or more electrodes disposed at the target tissue. Cardiac resynchronization therapy (CRT) aims to fix delay in contractions between left and right ventricles through stimulation of multiple chambers of the heart. Unfortunately, all clinical studies and outcomes analysis suggest that only 50% of patients respond to CRT, and the other population does not respond of actually get worse with CRT – but this cannot be detected with conventional measures. Biomarker panel data obtained from patients can assists in predicting the likelihood of response to CRT therapy. Current methods can identify patients with a positive response to CRT, but cannot predict CRT response. Clinicians are not currently able to reliably predict which patients will benefit the most from CRT. CRT is an invasive therapy and associated with a median incremental cost of $107,800, with around 600,000 CRDs being implanted annually. CRT should be avoided in patients in whom there is no benefit. Currently, the reimbursement model is fee for service. As healthcare moves towards a patient-based reimbursement model, where reimbursements are provided for outcomes and quality, then the current approach will not be sustainable. The use of an inexpensive, POC test for predicting CRT response fits the evolving health care delivery strategies and can be integrated into most health care management system programs.
Cardiac resynchronization therapy, pacemaker, biomarker, panel, point of care, diagnostic, cardiovascular, ventricle

Application area

Cardiac resynchronization therapy, congestive heart failure
Utilizing biomarker panel data to predict response to CRT

Institution

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Inventors

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