An Imaging Toolbox for Guiding Cardiac Resynchronization Therapy Implantation from Patient-Specific Computed Tomography and Body Surface Potential Mapping Data

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Technology description

Guiding Cardiac Resynchronization Therapy Implantation
Invention novelty:This method is for evaluating cardiac properties from Computed Tomography (CT) scan combined with Body Surface Potential Mapping (BSPM).
Value Proposition:
Heart failure is a major public health problem in the United States that affects 5 million people and contributes to an increasing number of hospitalizations and deaths. Advances in techniques delivered during cardiac resynchronization therapy (CRT) have provided non-pharmacological options for patients with moderate to severe heart failure. However, the non-response rate among patients who receive CRT devices remains high in the 30-40% range. The present technology is a method that would allow integration of information obtained non-invasively from standard CT and ECG exams which can be performed prior to CRT device implantation for planning and guiding the procedure. Other advantages include:
planning and guiding implantation more quickly, within minutes to hours
minimal user input is required decreasing the rate of human error
Technical Details:
Johns Hopkins researchers have developed a method for quantitative assessment and estimation of mechanical contraction patterns, tissue viability and venous anatomy from Computed Tomography (CT) scan combined with electrical activation patterns obtained from Body Surface Potential Mapping (BSPM) which can be acquired non-invasively during routine scans. In order to guide implantation of cardiac resynchronization therapy (CRT) pacing devices, the combined CT-BSPM method is capable of integrating electrical, mechanical, structural information about cardiac structure and function. The method recommends cardiac segments and routes to optimize implantation of the device. In addition, the method generates regional electro-mechanical properties overlaid with cardiac venous distribution and scar tissue.
Data Availability:Under CDA/NDA
Publication(s)/Associated Cases:Not at this time

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