Cardiovascular disease is a leading cause of death worldwide. However, current clinical approaches to diagnosis and treatment are unable to map the coupled electromechanics of the heart in vivo. This technology employs ultrasound images collected at ultra-high frame rates to diagnose and characterize arrhythmias. This non-invasive technique permits fast electromechanical mapping of propagation patterns in the heart. The generated maps may be used to design treatment strategies prior to invasive catheterization. Ultimately, the use of this technology could limit unnecessary cardiac procedures and lead to more targeted treatments, thus reducing the overall risk and cost associated with current methods.

Ultrasound enhances diagnostics through non-invasive, accurate electromechanical mapping of cardiovascular events

Rapidly collected ultrasound images are analyzed for their periodicity in order to generate electromechanical maps of the heart. High temporal resolution is achieved via ultra-high frame rates, which make it possible to accurately identify the arrhythmogenic origin. This diagnostic technique, which can be performed using currently employed ultrasound equipment, may provide important clinical information to help improve treatment strategies and outcomes. This technique has already been found to give accurate results for patients with heart irregularities.

Lead Inventor:

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Applications:

- Diagnostic imaging to determine presence of cardiac arrhythmias.
• Fetal cardiac monitoring.
• Imaging supplement for cardiac arrhythmia correcting procedures.
• Complementary tool to electrocardiography (ECG) for determining cardiac dysfunction.

Advantages:

• Non-invasive.
• Low-cost.
• Utilizes currently available equipment.
• Limits number of unnecessary procedures.

Patent information:

Patent Pending (WO/2014/059170)

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Related Publications:


Inventors

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