A high-speed echocardiographic system that can assess cardiac function in real-time

Unmet Need

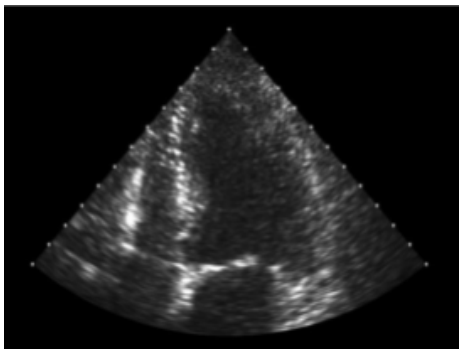
Since its inception in the mid-1970s, real-time echocardiography employing phased array principles has had a significant impact on the practice of medicine particularly in cardiology. The real-time or live nature of image formation is one of the principal advantages of echocardiography next to its portability to the patient bedside and relatively low cost as compared with MRI and CT. Currently, live 2-D image scan rates of typical echocardiograms of 80° to 90° fields of view are 30 to 60 per second. These scan rates are adequate for many cardiac anatomical and functional diagnoses but are inadequate for studies of electromechanical coupling events in the heart. There is a need for technologies capable of live image formation suitable for cardiac clinical imaging.

Technology

Inventors have duke have developed a real-time high-speed echocardiographic system intended to be utilized for assessing cardiac function. Specifically, images are acquired at rates up to 1000 per second for adult cardiac applications and are stored in computer memory. Images can then be played back in slow motion or frame by frame to analyze cardiac motion at the millisecond time scale. This technology has been demonstrated using clinical scans of 70 patients with the T5 Duke University Phased Array Scanner at rates of 240 to 1000 fps and was found to provide image quality suitable for diagnostic purposes.

Advantages

- Expands capabilities of live cardiac clinical imaging
- Could lead to earlier diagnosis of diseases,



improved noninvasive assessment of treatment success, improved placement of pacemaker wires, and enable the noninvasive evaluation of coronary artery blood flow
- Demonstrated to offer diagnostic-quality live images

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Meet the Inventors

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Publication(s)

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External Link(s)

• From the lab of Dr. Olaf von Ramm