

Advanced cardiac imaging technics in early recognition of heart failure

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Hear failure (HF) is a progressive process and has gradually increased disease since lifetime has been increased worldwide by developed effective medical treatment. Left ventricular remodeling initiated by hypertrophy (LVH) in HF is an adaptive process and early determination of this progressive process may contribute to prevention of adverse outcomes.

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We recently have detected as the first time prospectively that "Focal hypertrophy of LV septal base is the early imaging biomarker of hypertrophy in physiologic and pathologic stress using microimaging." In this study, ventricular hypertrophy is noted earliest on LV septal base during development of both physiologic and pathologic stress.

Heart morphology during LV remodeling due to pressure overload may have regional LV myocardial differences. The findings by novel cardiac imaging methods supports that LV base regionally may be affected by stress induction earlier and may become more severely dysfunctional since relatively greater stress is anticipated compared to the midapical region in disease process. We previously documented "predominant myocardial LV base and diminished regional LV basal cavity volume in LVH" using real-time three-dimensional echocardiography.

Yalcin F, Shiota T, Odabashian J, et al. Comparison by real-time three-dimensional echocardiography of LV geometry in HCM versus secondary LVH. *Am J Cardiol*. 2000;85:1035-1038. Microimaging has become a very important method to image cardiovascular structures. Barisione C, Charnigo R, Howatt DA, et al. Rapid dilation of the abdominal aorta during infusion of angiotensin II detected by noninvasive high-frequency ultrasonography. *J Vasc Surg*. 2006; 44:372-376.

In conclusion, the determination of early imaging biomarker of LVH by "the recognition of regional involvement of LV septal base in progressive remodeling process may contribute to early diagnosis and may prepare a base for further research in this field of HF"

Biography

Fatih Yalcin, Fulbright Visiting Professor, Johns Hopkins Medical Institutions, USA. His research interest is on Novel Cardiovascular Imaging, Tissue Doppler Imaging, Live 3 DE, 3rd Generation Microscopic USG, and cardiac MRI. Editorial Board Membership: World Journal of Cardiovascular Surgery, Datasets International, Radiology.

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