

Title: Feasibility of Optimal Echocardiographic Myocardial Strain Imaging for Cancer Therapy Monitoring: the Community Health Network Experience

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Background:

The Community Health Network Cardio-Oncology Program is the first dedicated multi-disciplinary clinic in the state of Indiana that seeks to improve the care and outcomes of patients at-risk for cardiotoxicity from cancer therapies.

Objectives:

In view of growing evidence that subclinical cardiac dysfunction can be detected early using strain imaging, we aimed to describe our experience in evaluating echocardiographic myocardial deformation among patients referred to our program.

Methods:

Since the inception of our clinic, myocardial functional testing was transitioned completely from radionuclide ventriculography (MUGA) to echo. 2D, Doppler, as well as contrast and global longitudinal strain (GLS) imaging—when appropriate--was performed on all patients. Using speckle tracking, GLS images were obtained from 3 apical views. The average GLS was examined and reported by 1 of 3 experienced cardiologists using the EchoPAC work station (GE Healthcare). Continuous training and feedback were provided to echo technologists to improve

GLS imaging including tracing of endocardial borders, positioning of speckle tracking points, timing of aortic valve closure, and real time review of GLS quality.

Results:

A total of 409 patients had complete echoes, among whom 70% had optimal GLS imaging. The patient characteristics are shown in the Table (initial echoes only).

	Optimal GLS n = 286	Suboptimal GLS n = 123
Age, y (mean)	58	60
Females, %	84	66
Left ventricular (LV) hypertrophy		
Mild, %	9	23
Moderate-severe, %	3	11
LV ejection fraction (biplane), % (mean)	64	62
LV end-diastolic volume, mL	76	88
LV end-systolic volume, mL	29	34
LV diastolic function		
Grade I dysfunction, %	45	63
Grade II-III dysfunction, %	2	1
Indeterminate	9	24
GLS, % (mean)	21	NA
RV function		
Abnormal, %	1	2

Conclusions:

Based on the first year experience of a one-network, multi-center Cardio-Oncology program, we were able to acquire and interpret GLS on 70% of total echoes performed. Continuous training and feedback exchange among echo technologists and cardiologists can ensure high quality GLS imaging, which in turn impacts potential sound decision-making in the care of cancer patients.