PROGNOSTIC VALUE OF STRAIN ECHOCARDIOGRAPHY IN PATIENTS UNDERGOING CHEMOTHERAPY

ACC Moderated Poster Contributions
McCormick Place South, Hall A
Saturday, March 24, 2012, 9:30 a.m.-10:30 a.m.

Session Title: Imaging: Echo Diastology
Abstract Category: 22. Imaging: Echo
Presentation Number: 1095-188

Authors: Ronald Mastouri, Shuja Rehman, Stephen Sawada, Harvey Feigenbaum, Indiana University, Indianapolis, IN, USA

Background: Cardiotoxicity is a known complication of chemotherapy. Left ventricular ejection (EF) fraction has been historically used to monitor cardiac function but fails to detect early signs of cardiotoxicity. Early data suggest that reduction in longitudinal strain may be a more sensitive marker of cardiotoxicity. The prognostic value of this technique in patients receiving chemotherapy is unknown.

Methods: Longitudinal global systolic strain (GSS) and basal systolic strain (BSS) were derived from speckle tracking of apical long axis, 4 chamber and 2 chamber views. BSS represents the average strain value of the basal 6 segments. Peak GSS and BSS were semi-automatically obtained in 131 patients receiving chemotherapy. Another 25 patients not receiving chemotherapy served as a control group. EF was measured in all patients. For simplicity, systolic strain, which is a negative number, was expressed as a positive value.

Results: Patients were followed for mortality for a mean duration of 14.6 months. GSS was 17.1 in patients receiving chemotherapy compared to 19.6 in controls (p = 0.002). BSS was 15.3 in patients receiving chemotherapy compared to 18.0 in controls (p = 0.009). Mortality was 17% in chemotherapy patients. Patients who died had both lower GSS (15.7 vs. 17.5, p = 0.04) and BSS (13.3 vs. 15.8, p = 0.03) than survivors. EF was not different between those who died and survivors (56.3% vs. 57.9% in survivors, p = 0.508). Mortality was 3.6 times higher in patients with BSS <17 compared to those with BSS >= 17 (25% vs. 7%, respectively, p < 0.009).

Conclusions: Longitudinal strain is reduced in patients receiving chemotherapy. Mortality is higher in patients with reduced GSS and BSS and reduced BSS identifies those with a more than 3 fold increase in mortality. EF was not predictive of mortality.