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Non Invasive Imaging

CAN WE MEASURE WITH STRAIN IMAGING THE AMOUNT OF CARDIAC FIBROSIS IN PATIENTS WITH HYPERTROPHIC CARDIOMYOPATHY?

Poster Contributions

Hall C

Sunday, March 30, 2014, 9:45 a.m.-10:30 a.m.

Session Title: Non Invasive Imaging: Left Ventricular Myocardial Strain Imaging-Clinical Applications

Abstract Category: 15. Non Invasive Imaging: Echo

Presentation Number: 1174-39

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Background: Hypertrophic Cardiomyopathy (HCM) is associated with myocardial fibrosis. Our aim was to compare 2D Speckled Strain Testing (2D-STE) derived longitudinal strain values with quantified delayed enhancement (DE) above a designated normal myocardium.

Methods: Of Patients who had DE on cardiac MRI (cMRI) and an Echocardiogram done within 90 days of one another, DE was manually quantified in 78 patients to date. The amount of DE was defined in amount of grams (g) at 2,3,4,5,6,8,10 Standard Deviations (SD) above a manually designated "normal" background on an average of 8 short-axis slices on cMRIs using Circle Cardiovascular Imaging 42 Software. This was then compared to Global Longitudinal (GLS), Basal, Apical, Anterior and Mid/Basal Strain values obtained using Echo-PAC software.

Results: Average age was 51.6 years (60% male). GLS, Mid and Basal strain values correlated well with DE 2, 3 and 4 SD above the designated normal myocardium as shown in the Spearman chart (table) on multivariate analysis. A GLS value of less than -13.2% had a sensitivity of 71% and a specificity of 80% to detect DE of 59g using the 2SD method. A Mid and Basal strain value of less than -13.92% had a sensitivity of 91.12% and specificity of 55% to detect 59 g of DE as quantified by the 2SD method.

Conclusion: Strain imaging offers a noninvasive method of estimating extent of delayed enhancement (and by extension- fibrosis) in patients with HCM

Spearman Multivariate Analysis				
	2SD-mass	3SD-mass	4SD-mass	5SD-mass
GLS	Spearman: .3937 P value: .0004	Spearman: .3248 P value: .0037	Spearman: .2459 P value: .0300	Spearman: .1314 P value: .2516
Basal	Spearman: .4423 P value: <.0001	Spearman: .3785 P value: .0006	Spearman: .3317 P value: .0030	Spearman: .2910 P value: .0097
Mid and Basal	Spearman: .4567 P value: <.0001	Spearman: .3790 P value: .0006	Spearman: .2982 P value: .0080	Spearman: .2114 P value: .0631