

## MP2-17

### Early Detection Of Myocardial Dysfunction After Anthracycline Treatment in Asymptomatic Pediatric Cancer Patients: Comparison Of Left Ventricular Global Strain Measured With Triplane and 2D Speckle Tracking

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**Objective:** Two-dimensional (2D) speckle tracking echocardiography (STE) are more useful to determine subclinical dysfunction than conventional methods as they enable global and regional evaluation of left ventricle in which patients exposed to anthracyclines. We firstly aimed to determine the left ventricular strain of pediatric cancer patients with normal ejection fraction treated with anthracycline using the 2D STE. We also compared global longitudinal strain values with using conventional 2D-STE and Triplane-STE in patients receiving anthracyclines.

**Methods:** This study included 23 cross-sectionally enrolled pediatric cancer patients receiving anthracycline chemotherapy (median age: 14 years, range 6-19) and 17 controls matched for age, gender and body surface area. Patients had received a median cumulative dose of 150 mg/m<sup>2</sup> (range 60-360 mg/m<sup>2</sup>). In all children standard 2D, M-mode, Doppler and 2D-STE and triplane-STE imaging data were obtained.

**Results:** In patient group after anthracycline exposure some of the changes in cardiac parameters were demonstrated: 1. Patient group had a higher heart rate when compared with controls (p=0.016). 2. Despite having a normal ejection fraction and shortening fraction values from "Pulsed" Doppler based measurements only pulmonary vein flow ratio showed a significant difference between two groups (p=0.018). 3. Measurements were taken from the base of the interventricular septum; ETs values were significantly decreased and MPIs values were significantly increased in patients; measurements are taken from the base of the left ventricular free wall; <sub>m</sub>S velocities were showed statistically significant difference (respectively p= 0.022, p=0.042 and p=0.001). 4. Following anthracycline exposure, pediatric cancer patients had a lower longitudinal and circumferential myocardial deformation of the left ventricle (respectively p= 0.003, p=0.01). 5. Longitudinal strain values measured with Triplane method was significantly reduced in anthracycline group. Correlation between Longitudinal strain values measured with 2D and 3P STE were also demonstrated in anthracycline group (Table 1).

**Conclusion:** Systolic and diastolic functions are considered in asymptomatic patients with normal ejection fraction after chemotherapy. This study confirms the subclinical LV dysfunction in patients after receiving anthracyclines with using Doppler and STE methods. We also exhibit the feasible and reproducible use of the triplane STE analysis for assessment of global LV function in the pediatric population.

**Table 1.** Global Longitudinal Peak Strain values of patient versus control group

GLPS (%)	Patient group		P value	Control group		P value
	2D	Triplane		2D	Triplane	
A4CH§	-18,5±2,8	-18,1±3,1	0,655	-20,1±2,1	-19,8±1,7	0,659
A3CH§	-18,6±3,0	-17,9±3,1	0,547	-21,3±2,5	-21,6±2,7	0,294
A2CH	-18,6±1,8	-18,8±3,4*	0,020	-19,3±2,3	-19,4±2,4	0,904
Avg§	-18,5±2,1	-18,3±2,7*	0,021	-20,3±1,4	-21,4±1,7	0,543

A3CH, apical 3 chamber view; A4CH, apical 4 chamber view; A2CH, apical 2 chamber view, Avg, global average GLPS; GLPS, global longitudinal peak systolic strain

Data are expressed as mean ±SD.

§P<0.05 between the patient and control group

\*P< 0.05 between 2D and Triplane approach