Control Number: 2

Abstract Category: ACC Cardio-Oncology Section Activities

Title: Evaluation cardiac magnetic resonance imaging in detection of cardiotoxicity in patient with lymphoma treated with anthracyclines

ABSTRACT BODY

Background

Lymphoma treated with anthracyclines have survival rates of 86% at 5 years. However, cardiac toxicity of these drugs is common and usually leads to advanced heart failure. Current strategies for early detection of cardiotoxicity during chemotherapy are not yet fully established

Methods

From June 2017 to March 2019, patients with lymphoma planned to start chemotherapy with anthracyclines were evaluated by a cardiologist to check the eligibility criteria. At baseline (Time 1), at the end of 3° cycle (Time 2) and 30 days after the final cycle (Time 3), patients were evaluated through cardiac biomarkers, electrocardiogram and cardiac magnetic resonance (CMR). Strain, MapT1 and extracellular volume (ECV) were evaluated in all patients. Cardiotoxicity was defined as drop of the left ventricular fraction (LVEF) > 10% or LVEF decrease below 50%. A p value < 0.05 was considered statistically significant

Results

We included 48 patients, mean age was 45.32 (± 17.84) years-old and 25 (52.1%) were female. The prevalence of hypertension, diabetes and dyslipidemia was 18.8%, 10.4% and 10.4%, respectively. Cardiotoxicity was diagnosed in 13 patients (27%). At baseline, there was no difference between cardiotoxicity group (CT) and no cardiotoxicity group (nCT) in CMR diastolic volume, systolic volume, nativeT1 mapping and global longitudinal strain (GLS), respectively (116 [103.6 – 138.1]ml vs 136.3 [115.7-173.8], p= 0.069), (46 [38.0 – 58.5] ml vs 63.0 [44.5 – 74.2,p=0.069), (1540.6 [1478.3 – 1591.1]ms vs 1514.8 [1487.5 – 1786.3]ms, p= 0.568) and (-15.94 ± 2.91% vs -14.84 ± 2.65 %,p= 0.243). We resume CMR parameters in Table 1

Conclusion

Cardiotoxicity is a frequent complication in anthracycline treated patients. CMR evaluation, through analysis of volumes, ejection fraction and strain might early identify these patients

Clinical Implications

Early detection of cardiotoxicity aiming to initiate preventive strategies to avoid heart failure

Table

CMR parameters	Cardiotoxicity		
	No - 35 (73%)	Yes - 13 (27%)	p
RVEF Time 1	54.72 ± 8.14%	53.47 ± 8.61%	0.645
RVEF Time 2	50.12 ± 7.26%	51.45 ± 6.54%	0.579
RVEF Time 3	**53.41 ± 9.73%**	**46.29 ± 3.93%**	**0.002**
LVEF Time 1	59.57 ± 7.03%	59.15 ± 8.23%	0.861
LVEF Time 2	**59.75 ± 7.3%**	**53.72 ± 7.88%**	**0.021**
LVEF Time 3	**58.7 ± 5.69%**	**46.67 ± 8.12%**	**0.000**
LV Mass Time 1	77.37 ± 22.12g	85.69 ± 29.44g	0.296
LV Mass Time 2	69.06 ± 22.07g	82.2 ± 22.68g	0.086
LV Mass Time 3	**67.89 ± 19.33g**	**85.25 ± 28.72g**	**0.033**
GLS Time 1	-15.94 ± 2.91%	-14.84 ± 2.65%	0.243
GLS Time 2	-14.78 ± 2.07%	-10.47 ± 8.24%	0.100
GLS Time 3	**-13.92 ± 1.76**	**-12.44 ± 2.7** %	**0.043**
CS Time 1	-17.05 **± 2.71%**	- 15.35 **± 2.11** %	0.048
CS Time 2	-15.52 ± 2.15 %	-13.39 ± 3.05%	0.013
CS Time 3	-15.13 ± 1.98%	-13.64 ± 3.36%	0.097
Radial Time1	30.28 (25-38.57)%	26.06 (23.52 – 29.96)%	0.096
Radial Time2	25.14 (22.66 – 29.22)%	20.14 (15.58 – 28.25)%	0.066
Radial Time3	**22.9(21.18 – 27.43)%**	**19.84(17.12 – 21.73)%**	**0.017**
NativeT1 Time1	1540.61 (1478.26 – 1591.14)ms	1514.77 (1487.47 – 1786.32)ms	0.568
NativeT1 Time2	1537.75 (1493.76 – 1589.72) ms	1601.99 (1501.12 – 1673.44) ms	0.383
NativeT1 Time3	1538.43 (1479.03 – 1633.60)ms	1612.85 (1522.74 – 1638.34)ms	0.289
ECV Time1	25.85 (22.93 – 31.84)ms	25.28 (19.69 – 30.68)ms	0.487
ECV Time2	25.17 (23.62 – 32.83)ms	24.42 (22.75 – 27.47)ms	0.281
ECV Time3	27.5 (23.59 – 31.9)ms	27.2 (23.84 – 28.47)ms	0.529

Legend: CMR, cardiac magnetic resonance imaging; CS, Circumferential strain; ECV, extracellular volume; GLS, global longitudinal strain; LVEF, left ventricular ejection fraction, right ventricular ejection fraction