MYOCARDIAL VELOCITY IMAGING (DMI) – LV FUNCTION

973 Strain by tissue Doppler imaging associated with regression of cardiac remodeling and fibrosis after combination therapy of candesartan and spironolactone in patients with chronic heart failure

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Background: It is not known if strain by tissue Doppler imaging provides useful information on myocardial fibrosis in chronic heart failure receiving candesartan or in combination with spironolactone therapy.

Methods: 48 chronic heart failure patients with left ventricular ejection fraction (LVEF) <40% on standard therapy including ACEI for more than six months were randomized to candesartan 8 mg daily plus spironolactone 25 mg daily (C+S group, N=23) or candesartan 8mg daily alone (C group, N=25) for one year. Cardiac MRI and echocardiography with TDI were done at baseline, 6 and 12 months. Mean systolic and diastolic myocardial velocities of six LV basal segments were measured by TDI (Sm, Em). Mean strain of six-basal segments, cyclic variation of integrated backscatter (CVIB) and standard deviation of time to peak systolic myocardial systolic velocity of 12 segments (TS-SD) were assessed.

Results: The 2 groups had comparable demographic data, LVEF by MRI and echo variables at baseline. LVEF by MRI for C+S significantly improved in the C+S group compared to C group (54±19% vs D 9±5% p<0.01); LV mass by MRI significantly reduced in the C+S group, but increased in the C group (D 11±4% vs D 7±4%, p=0.002) at one year. Meanwhile, the C+S group showed a significant increase in strain (13±1% vs 16±1%, p<0.05), Sm (3.4±0.2 vs 4.0±0.3 cm/s, p<0.05), CVIB (11.2±0.7 vs 13±1, p<0.05), and decreased in diastolic filling pressure E/Em (33±5 vs 20±2, p<0.01) from baseline to one year. Ts-SD trended to decrease in C+S group (43±3 vs 37±4 ms, p=0.05). However, there was no change in the C group for strain, Sm, CVIB, E/Em and Ts-SD from baseline to one year follow-up.

Conclusion: Strain by TDI provides useful information in improving LV contractile function and reversing LV remodeling in combination therapy of candesartan and spironolactone with chronic heart failure patients. It probably associates with reduction of myocardial fibrosis verified by CVIB.

LV FUNCTION – OTHER

974 The role of cardiological exercise testing in the evaluation of cardiac function in a group of lymphomas in adults

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Purpose: The authors conducted a study to assess parameters of the cardiovascular function in patients after a treatment for non-Hodgkin’s and Hodgkin’s diseases and to determine the influence of these parameters on patient’s performance status.

Patients and methods: The authors examined 106 patients (66 male and 40 female) aged 40±15 years 1 year after the treatment. The patients were examined by means of rest and dynamic stress echocardiography and car-

Results: The cumulative dose (CD) of doxorubicin (DOX) given was 240±70 (240 mg/m²). 64 patients (60%) experienced the fatigue after the treatment. 3 patients (3%) demonstrated decreased EF<50%, 34 (32%) impaired diastolic function, 14 (13%) decreased pVO2<20 ml/min/kg and 15 (14%) the value of pVO2 below the reference value, respectively. None of the patients exhibited clinical signs of heart failure. Apart from 3 patients with rest EF<50% all the other patients responded to stress echocardiography with an increase of EF>5%. The parameter pVO2 significantly correlated with stress EF (r=0.58, p<0.002) and with all parameters of diastolic function; to index E/A of diastolic filling (r=-0.67, p<0.0001), isovolumetric relaxation time (r=-0.56, p<0.001); to deceleration time (r=0.54, p<0.009); respectively. A negative relationship was found to age (r=0.74, p<0.0001), CD of DOX (r=0.53, p<0.003), and radiotherapy-involving mediastium (r=-0.44, p<0.04), respectively. Using multivariate analysis a significant relationship was found between DOX EF<50% and parameters of diastolic filling, age, female sex and CD of DOX, respectively (r=0.58, p<0.0001). Diastolic dysfunction correlated with age, CD of DOX and radiotherapy-involving mediastium, respectively (r=0.51, p<0.01).

Conclusion: The diastolic dysfunction was the most affected parameter of cardiac function in cancer survivors. This parameter negatively influenced cardiological performance and stress and significantly correlated with the cumulative dose of doxorubicin given and radiotherapy on mediastium. Despite a high number of patients who experienced fatigue, the study demonstrates that only a relatively small number of patients showed a depressed pVO2 on cardiological stress test and other cardiac abnormalities.

975 Echocardiographic evaluation of valvular cardiomyopathy using tissue doppler imaging in chronic severe aortic regurgitation

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Background: Postoperative prognosis of patients with severe aortic regurgitation (AR) is favorable if LV contractility is preserved. But in some cases the irreversible changes develop despite of normal preoperative LV EF and lack of symptoms. The aim of this study was to reveal non-stress eco-

Material and methods: 28 pts (21 men, 7 women, aged 48±5.4) with severe chronic AR and LV EF >55% and LV ESD <55 mm have been examined. 8 pts were in NYHA class I; 12 - class II and 8 - class III. Echo-examinations using TDI study of lateral mitral annulus kinetics for LV longitudinal contrac-

Results: In late postoperative period the mean LV EDD decreased from 7.1±1.46 cm to 5.4±1.21 cm (p<0.01) and mean LV EF did not change significantly (69±6 vs 69±7, p=0.49). But in 7 pts LV remained dilated with depressed LV EF in 5 of them. In 2 other pts LV EF became lower than 50% despite of LV size normalization. These 9 pts created the Group A. 19 pts with LV size change and LV size and contractility created the group B. All investigated preoperative systolic TDI parameters differed significantly between the groups (table 1). Also, pts from the group A was older and classified to more advanced functional class. Velocity of systolic movement (Vmax) correlated with difference of preoperative and late postoperative LV EDD (r=-0.66) and with final LV EF (r=-0.44).

Conclusions: Longitudinal LV contractility indexes obtained by TDI could be reliably used for prediction of postoperative LV dysfunction in pts with severe chronic AR.

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Table 1. Preoperative Echo parameters

<table>
<thead>
<tr>
<th>Age % of pts in NYHA class I-II</th>
<th>LV EDD (cm)</th>
<th>LV EF (%)</th>
<th>Sm (cm/s)</th>
<th>PCTm (ms)</th>
<th>Sm/Em</th>
<th>CTm (ms)</th>
<th>PCTm/CTm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>56 ± 2.4</td>
<td>22</td>
<td>73 ± 2.9</td>
<td>60 ± 4.0</td>
<td>85 ± 0.2</td>
<td>99 ± 6.0</td>
<td>224 ± 4.8</td>
</tr>
<tr>
<td>Group B</td>
<td>44 ± 1.9</td>
<td>95</td>
<td>70 ± 1.7</td>
<td>63 ± 3.5</td>
<td>61.4 ± 0.6</td>
<td>79 ± 4.8</td>
<td>201 ± 3.8</td>
</tr>
<tr>
<td>Value</td>
<td>&lt; 0.01</td>
<td>&lt; 0.05</td>
<td>NS</td>
<td>&lt; 0.001</td>
<td>&lt; 0.05</td>
<td>&lt; 0.01</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

976 Changes of regional myocardial function and myocardial hypertrophy in patients with severe aortic stenoses during long term follow-up after aortic valve replacement

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The purpose of this study was to investigate the change in left ventricular (LV) hypertrophy and regional myocardial function in patients with severe aortic valve stenoses at baseline and during follow-up after aortic valve re-

Methods: 17 patients with severe aortic stenoses were studied by conven-

Results: For radial function a significant increase of systolic SR could be seen already after 2 weeks (baseline = 1.2±0.3 s-1; 2 weeks = 1.7±0.5 s-1; 9 months = 1.7±0.5 s-1). In contrast, systolic longitudinal SR increased only after 9 months significantly (Figure). For diastolic SR no change in the fol-

Conclusion: The diastolic dysfunction was the most affected parameter of cardiac function in cancer survivors. This parameter negatively influenced cardiological performance and stress and significantly correlated with the cumulative dose of doxorubicin given and radiotherapy on mediastium. Despite a high number of patients who experienced fatigue, the study demonstrates that only a relatively small number of patients showed a depressed pVO2 on cardiological stress test and other cardiac abnormalities.