730 Systolic mitral annular Doppler velocities immediately after dobutamine stress echocardiography predict left ventricular ischemia.
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Background: Longitudinal systolic left ventricular contraction is coincidental to radial perfusion and can be assessed by tissue Doppler imaging (TDI). Aims: Evaluation of the contribution of mitral annular systolic velocities using TDI after dobutamine stress echocardiography (DSE) in the assessment of coronary artery disease.

Methods: Fifty subjects with suspected coronary artery disease and chest pain were examined using DSE as well as TDI imaging of the mitral annuli at the septal, lateral, inferior, anterior, posterior regions and the proximal anteroseptal region from the apical views, before and immediately after DSE.

Results: 26 subjects had wall motion abnormalities (WMA) with wall motion score index (WMSI) of 1.16±0.21 at rest and 1.34±0.18 after DSE, while 24 were normal. In both groups systolic mitral annular velocity (Sa) at all 6 regions, increased after DSE by more than 40%, p<0.0002. The most prominent difference after DSE was in septal Sa, 19±3.8 in normals and 14.6±2.5 cm/sec in those with WMA, P<0.0003. A significant decrease in Sa occurred when WMSI exceeded 1.25. Septal Sa±17 cm/sec after DSE had a sensitivity, specificity and diagnostic accuracy for detecting WMA of 88%, 80%, and 86% respectively when these values for post/pre DSE Sa ratio<1.5 were 85%, 88% and 86% respectively.

Conclusions: 1) Systolic mitral annular velocities increase after DSE. 2) In patients with WMA the increase in these velocities are less than in normal subjects and can differentiate patients from normal subjects.

731 Mechanisms of symptom development during dobutamine stress.
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Background: Mechanisms of symptom development at peak stress in patients with heart disease remain unclear.

Methods: A. Duncan, C. Porter, D. Gibson, M. Henein. The Royal Brompton Hospital, Cardiology, Haila, Israel; 2Technion, Science and Technology, Haila, Israel

Aims: To determine diastolic time reserve in normal subjects and in patients with CAD, and to ascertain the relationship between diastolic time reserve and changes in stroke volume during stress.

Methods: 69 subjects were studied during dobutamine stress; 33 were normal controls and 36 had CAD (normal LV cavity size at rest: EDD 5.6±0.5cm, ESD 3.3±0.5cm). Relative filling time, expressed as a percentage of total diastole, was calculated by dividing LV filling time (LVT) by total diastolic time (measured as the interval between aortic valve closure and mitral valve closure). Stroke volume (SV) was measured using Doppler echocardiography at the level of the LV outflow tract. All measurements were made at rest and repeated at peak stress.

Results: In normal controls, relative filling time increased with stress (from 85±3% to 92±2%, p<0.001), suggesting the presence of diastolic time reserve (7%), and SV also increased (from 69±17mls to 96±19mls, p<0.001). In patients with CAD, relative filling time was not different from controls at rest, but shortened with stress (from 83±5% to 74±5%, p<0.001), representing a loss in diastolic time reserve of 9%, and SV failed to increase (rest: 76±20mls, stress: 74±16mls, p=NS). Stress-induced changes in diastolic time reserve correlated with changes in SV in patients with CAD (r=0.80, p<0.001), but not in controls.

Conclusions: In patients with CAD, stress-induced ischaemic dysfunction is associated with loss of diastolic filling reserve that determines stroke volume. This loss of early diastolic reserve may itself affect diastolic coronary artery filling, and consequently perpetuate myocardial perfusion instability.

733 Left ventricular geometry is the major component of abnormal mid-ventricular gradients during negative dobutamine stress echocardiography.
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Background: Dobutamine stress echocardiography (DSE) is a useful method to detect myocardial ischemia by increasing oxygen demand. Mid-ventricular systolic gradient (MSG) is primarily dependent on LV geometry.

Methods: 118 pts with normal standard (high-dose) DSE were included in this study divided into 2 groups according to the presence of MSG. Group A (with): 19 pts, 13 female, 56±9.6 years and Group B (without): 99 pts, 60 female, 61.8±12.2 years. For both groups LV wall thickness (WT), diameters (D), volumes and ejection fraction were obtained. Geometry was defined as the diastolic WTD ratio.

Results: MSG was observed in 19/118 pts (16%). There were no statistical differences for gender distribution (p=0.701) and age (p=0.059). Table shows the results for LV parameters.

<table>
<thead>
<tr>
<th></th>
<th>WT - cm</th>
<th>D - cm</th>
<th>WTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>0.99±0.15</td>
<td>4.66±0.39</td>
<td>0.22±0.04</td>
</tr>
<tr>
<td>Group B</td>
<td>0.88±0.14</td>
<td>5.04±0.81</td>
<td>0.18±0.04</td>
</tr>
<tr>
<td>P</td>
<td>0.002</td>
<td>0.048</td>
<td>0.0001</td>
</tr>
</tbody>
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Conclusion: MSG is a common finding in pts with negative DSE and strongly correlated with higher WTD ratio independently of LV hypertrophy.