All patients had coronary angiogram.
We compare diagnostic values of standard DSE and 3DDSE in comparison to results of coronary angiogram.

Results:

<table>
<thead>
<tr>
<th></th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>3DDSE</td>
<td>92</td>
<td>96</td>
<td>92</td>
<td>96</td>
</tr>
<tr>
<td>DSE</td>
<td>83</td>
<td>89</td>
<td>77</td>
<td>92</td>
</tr>
</tbody>
</table>

Conclusions: In identification of critically stenosed coronary artery, because of 3D real-time analysis, 3D dobutamine stress echo has better diagnostic parameters than standard 2D assessment even supported by strain rate analysis.

854
Comparison of real-time 3D echocardiography and tissue Doppler for identifying and locating mechanical delay dysynchrony: is it all in the eye of the beholder?
M.I. Burgess, J. Chan, C. Jenkins, TH. Manwick. University of Queensland, Department of Medicine, Brisbane, Australia

Background: Echo measurement of systolic dysynchrony (DYS) has been proposed for selecting responders to resynchronization therapy, using either tissue Doppler (TD) or real-time 3D echo (3D). We sought to compare TD and 3D in a group of 27 pts with ischemic cardiomyopathy (age 60±11 yrs, 85% male).
Methods: Regional ventricular time-volume curves were obtained with Tomtec software. Time to minimal regional volume was calculated and DYS expressed as the standard deviation of interval to minimal volume (SDI-3D). On the same day TD was performed to generate 12 segment myocardial velocity curves (6 basalmidio-cavity segments). The interval between QRS onset and maximal systolic tissue velocity was measured in each segment and the standard deviation between them calculated (SDI-TD). For comparison of regional mechanical activation the averaged intervals for segments of individual walls was calculated for each technique and referenced to the earliest segment.

Results: Adequate 3D images were obtainable in 20 (74%) pts (ejection fraction ≥45%, QRS duration 101±29msec). SDI-3D was 76±20msec and SDI-TD was 31±23msec (p<0.01). There was no significant difference in SDI-TD between the 8 pts with DYS by conventional criteria (SDI-TD=29msec) and the 12 pts without DYS (83±24msec and 72±28msec respectively). The correlation between SDI-3D and SDI-TD was weak (r=0.21). The table shows, by technique, the relative delay of each wall relative to the site of earliest activation. There was concordance between 3D and TD on the site of maximal delay in only 1 of the 8 (13%) pts with significant DYS, with more consistent lateral delay by TD than 3D.

Table

<table>
<thead>
<tr>
<th></th>
<th>Septal</th>
<th>Lateral</th>
<th>Interior</th>
<th>Anterior</th>
<th>Posterior</th>
<th>Antero-septal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay-TD (msec)</td>
<td>0</td>
<td>100</td>
<td>8</td>
<td>33</td>
<td>41</td>
<td>11</td>
</tr>
<tr>
<td>Delay-3D (msec)</td>
<td>89</td>
<td>24</td>
<td>23</td>
<td>0</td>
<td>21</td>
<td>73</td>
</tr>
</tbody>
</table>

Conclusion: Although 3D provides a conceptually attractive means of assessing LVD, offering potential advantages over TD, correlation between the two techniques is sub-optimal. There is frequently discordance in the site of maximal mechanical delay.

855
S. Kapelaris1, E. Ho1, S.P. Turner2, M.J. Monaghan2. King's College Hospital, Department of Cardiology, London, United Kingdom; 2King's College Hospital, Department of Cardiology, London, United Kingdom

Introduction: Non-invasive quantification of blood flow by standard echocardiographic techniques is widely used for quantification of vascular disease and shunt size. However these methods are limited by geometric assumptions. Real-Time 3D Echo provides an alternative method for flow quantification.
Methods: For in-vivo quantification we developed a flow phantom with viscosity and backscatter properties similar to blood. 4D 3D colour flow acquisitions were performed at a range of cardiac outputs (range: 1.8 - 5.5 L/min), at a range of different simulated heart rates (59 - 92 bpm) to calculate the cardiac output (CO).

In-vivo quantification of flow was performed in 49 normal subjects to compare the CO at the mitral valve and left ventricular outflow tract. The same quantification was performed in 78 patients with mitral regurgitation and a 3D regurgitant fraction was derived. This was compared with the 2D area method and PISA calculations where possible.

Results: In all data sets, 3D CO was calculated in < 45 sec. Cardiac output derived 3D flow quantification showed excellent correlation with pre-defined CO in the in-vitro model (R = 0.98, average difference 0.02 L/min with 95% CI -0.03 to + 0.07 L/min, n = 42). In normal subjects, there was excellent correlation between CO at the mitral and LVOT positions (R = 0.96 n = 49) and regurgitant fraction showed excellent correlation with the 2D area method (R = 0.88 n = 78). In patients with mitral regurgitation, PISA calculations were possible only in 18% and demonstrated only moderate correlation.

Conclusions: 3D flow quantification is a rapid and accurate technique which will be valuable in assessment of valvular regurgitation.

856
3D real time echo vs mean strain in assessing hemodynamic effects of left ventricular dysynchrony caused by VVI pacing
P Scivo1, J. Koshanowski2, D. Kosior2, G. Gopalsky2, 1 Warsaw Medical University, Dept of Cardiology, Warsaw, Poland; 2 Warsaw, Poland

The lead in classical VVI pacing is placed in non-physiological site – in right ventricle apex. Using 3D real time echo we assess the haemodynamical costs of this type pacing.

We studied 47 pts admitted for routine VVI pacemaker assessment 1 year after implantation because of tachycardia-bradycardia syndrome. All pts with history of For the study we qualified pts who had sinus rhythm (SR) during test. For 3D real time echo examination we used Philips IE33 system with advanced 3DQ software. We analyzed 3D global left ventricular contractility and mean strain during sinus rhythm and pacing. In real time 3D segmental analysis we analyzed EF measured by 3D and compared each segment synchrony delay time (SDT) acquired from apical view, for strain analysis the acquisition was done in apical 4, and 2 chamber view.

Results: see table

<table>
<thead>
<tr>
<th></th>
<th>SR</th>
<th>VVI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean strain delay (msec)</td>
<td>22.2±3.9</td>
<td>40.9±4.6</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Mean SDT RT3D (msec)</td>
<td>23.8±4.4</td>
<td>57.6±10.4</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>EF global</td>
<td>49±11</td>
<td>27±5</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Conclusion: Non-physiological VVI pacing site is the reason for LV dysynchrony assessed by the mean segment synchrony delay time which cause 3D LV EF worsening. Because of 3D analysis echo 3DRT is a better method for the left ventricle synchrony assessment than strain.

857
Global and regional left ventricular function evaluated with real time 3D echocardiography in patients with an isolated left bundle branch block
J. Van Dijk, H.F.J. Miraerts, C. Vaset, O. Kamp. VU University Medical Center, Cardiology Dept., Amsterdam, Netherlands

Introduction: Real time three dimensional echocardiography (RT 3DE) provides reliable information about global left ventricular (LV) function and mechanical asynchrony. Little is known about global LV function and mechanical asynchrony in patients with underlying cardiac disease or signs of heart failure, with a LBBB. Therefore, we studied the relation between global LV function and mechanical asynchrony in isolated LBBB patients compared to controls and patients with heart failure.

Hypothesis: Isolated LBBB patients do have an intermediate global LV function and mechanical asynchrony compared to controls and heart failure patients.

Methods: RT 3DE was performed in 21 patients with an isolated LBBB, 21 patients with a LBBB with heart failure and 14 healthy controls. Global ejection fractions LV end-diastolic and end systolic volumes were measured. Measurements for me-