The role of first trimester ultrasound in the early diagnosis of congenital heart defects in an unselected Lebanese population

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Background

**Congenital Heart Disease**
- Most common major abnormality
- Incidence 8/1000 lb
- 50% major, 30% associated defects
- Contributes to >50% congenital anomaly-related deaths

**Risk Factors**
- Maternal or fetal risk factors: 10% detection
- >90% are without any risk factors  
  Allan LD 1995

**NT and CHD**

<table>
<thead>
<tr>
<th>NT mm</th>
<th>RISK OF CHD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5-3.4</td>
<td>x2</td>
</tr>
<tr>
<td>3.5-4.4</td>
<td>x4</td>
</tr>
<tr>
<td>4.5-6.4</td>
<td>x6.5</td>
</tr>
<tr>
<td>5.5-6.5</td>
<td>x14</td>
</tr>
<tr>
<td>&gt; 6.5</td>
<td>x26</td>
</tr>
</tbody>
</table>


**Benefits of Early Detection**
- Workup
- Options
- TOP Limitations
- Safety
- Psychological
- Obstetrical care
- Explain IUFD
- Natural Progression

Univentricle

Pentalogy of Cantrell

Heart
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**Objective**

To determine the ability of the 11-13 weeks scan using NT and 4CV in the early diagnosis of CHD in an unselected population

**Materials and Methods**

- 1370 patients 11-13 weeks
- Pediatric cardiology consulted
- Rescan: 20-23, 32-35 weeks
- Excluded: isolated EIF (10), VSD (6) not requiring surgery
- Postnatal follow-up at birth
- Echocardiography as indicated
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### Results

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>FH</th>
<th>GA</th>
<th>NT</th>
<th>4CV</th>
<th>Findings</th>
<th>Workup</th>
<th>Karyotype</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>37</td>
<td>-</td>
<td>12w2d</td>
<td>2.3</td>
<td>Abn</td>
<td>Univentricle</td>
<td>Cardio 15w4d</td>
<td>Refused</td>
<td>TOP</td>
</tr>
<tr>
<td>2</td>
<td>22</td>
<td>-</td>
<td>13w3d</td>
<td>8.0</td>
<td>Abn</td>
<td>HLH, VSD</td>
<td>Cardio 18w0d</td>
<td>45 XO</td>
<td>IUFD</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>-</td>
<td>12w6d</td>
<td>5.5</td>
<td>Abn</td>
<td>HRH, VSD</td>
<td>Cardio 15w0d</td>
<td>46 XY</td>
<td>TOP</td>
</tr>
<tr>
<td>4</td>
<td>33</td>
<td>+</td>
<td>12w2d</td>
<td>4.2</td>
<td>Ni</td>
<td>VSD 21w1d</td>
<td>Amnio</td>
<td>Trisomy 21</td>
<td>Operated</td>
</tr>
<tr>
<td>5</td>
<td>43</td>
<td>-</td>
<td>13w2d</td>
<td>3.4</td>
<td>Abn</td>
<td>VSD 14w2d</td>
<td>Amnio</td>
<td>Trisomy 21</td>
<td>TOP</td>
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<tr>
<td>6</td>
<td>25</td>
<td>-</td>
<td>13w0d</td>
<td>2.2</td>
<td>Abn</td>
<td>HRH</td>
<td>Cardio 16w0d</td>
<td>Refused</td>
<td>TOP</td>
</tr>
<tr>
<td>7</td>
<td>34</td>
<td>+</td>
<td>13w1d</td>
<td>4.2</td>
<td>Abn</td>
<td>HLH, VSD</td>
<td>Cardio 16w2d</td>
<td>Refused</td>
<td>TOP</td>
</tr>
<tr>
<td>8</td>
<td>41</td>
<td>-</td>
<td>13w6d</td>
<td>3.3</td>
<td>Ni</td>
<td>AV Canal 15w3d</td>
<td>Cardio 16wod</td>
<td>Refused</td>
<td>TOP</td>
</tr>
</tbody>
</table>

VSD 6, EIF 10, False Positive 1
Total Anomalies 25/1370 (1.8%), CHD 8/25 (32%), Aneuploidy 6/1370 (0.4%)

Abu-Rustums, Daou. JUM 2010; 29:817-821
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Limitations

- Sample size
- Type of anomaly

Conclusions

1. The 11-13 weeks scan can detect 75% of CHD
2. Combining the NT and the 4CV at 11-13 weeks can select a new high risk group for targeted cardiac scan in early pregnancy

Thank you from Lebanon...