Management of Anticoagulation and Valvular Heart Disease in Pregnancy

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No Disclosures
Global Deaths in Women Ages 15-49 Years (2010)

Severe Maternal Morbidity During Hospitalization for Delivery

Near Miss Maternal Mortality

ZAHARA Predictors of Risk of Cardiac Complication During Pregnancy

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of arrhythmia</td>
<td>1.50</td>
</tr>
<tr>
<td>Cardiac medication usage pre-pregnancy</td>
<td>1.50</td>
</tr>
<tr>
<td>Baseline NYHA class ≥ II</td>
<td>0.75</td>
</tr>
<tr>
<td>Left heart obstruction (aortic valve area &lt; 1.0 cm², peak left ventricular outflow gradient &gt; 50 mmHg)</td>
<td>2.50</td>
</tr>
<tr>
<td>Systemic AV valve regurgitation (moderate/severe)</td>
<td>0.75</td>
</tr>
<tr>
<td>Pulmonary AV valve regurgitation (moderate/severe)</td>
<td>0.75</td>
</tr>
<tr>
<td>Mechanical valve prosthesis</td>
<td>4.25</td>
</tr>
<tr>
<td>Repaired or unrepaired cyanotic heart disease</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Risk Score | Cardiac Complications in % of Total Number of Pregnancies

<table>
<thead>
<tr>
<th>Risk Score</th>
<th>Cardiac Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 0.50</td>
<td>2.9</td>
</tr>
<tr>
<td>0.51 – 1.50</td>
<td>7.5</td>
</tr>
<tr>
<td>1.51 – 2.50</td>
<td>17.5</td>
</tr>
<tr>
<td>2.51 – 3.50</td>
<td>43.1</td>
</tr>
<tr>
<td>&gt;3.51</td>
<td>70.0</td>
</tr>
</tbody>
</table>

Risk Stratification

• Predictors
  1. Prior Cardiac Event or arrhythmia
  2. Baseline NYHA class > II or cyanosis
  3. Left Heart Obstruction
  4. Reduced LV EF

Pregnancy is a Pro-thrombotic State

- Tissue Factor
- Prothrombin $\xrightarrow{Xa} \text{Thrombin}$
- Fibrinogen $\rightarrow \text{Fibrin}$
- Protein S

Fibrinolytic System
Pregnancy is a Pro-thrombotic State

![Diagram of the coagulation cascade and fibrinolytic system during pregnancy](image)
Hemodynamic Changes

Cardiac Output = Stroke Volume \times \text{Heart Rate}

\[
\text{Stroke Volume} \sim \frac{\text{Preload}}{\text{SVR}}
\]
Hemodynamic Changes

Cardiac Output = Stroke Volume \times Heart Rate

Stroke Volume \sim \frac{Preload}{SVR}
Cardiac Output Changes

Robson et al. Am. J. Physiol. 256. 1989