Management of Supraventricular Arrhythmias During Pregnancy

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Atrial premature beats:
similar incidence with or without symptoms

Supraventricular tachycardia:
Onset in pregnancy (4%) exacerbation of arrhythmias

Atrial Fibrillation

Possible exacerbating/precipitation factors:
Adrenergic sensitivity to estrogen
Increased plasma volume
Stress/anxiety
Hyperthyroidism
Supraventricular Tachycardia
Supraventricular Tachycardia During Pregnancy
Northwestern Clinical Experience

38 women (of data set of 41) with documented SVT
43 pregnancies with SVT

Primigravidas at initial presentation 42%

Age Range: 16-42 years
Average: 34.2 years

History of SVT 39%
History prior ablation 1/38

Structural heart disease:
- Mitral Valve Prolapse/Mitral Regurgitation 6
- Moderate Tricuspid Regurgitation 1
- Enlarged Coronary Sinus 1
- Patent Ductus Arteriosus 1
- Ejection Fraction < 55% 0
Supraventricular Tachycardia During Pregnancy

**Treatment**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adenosine Initially</td>
<td>5</td>
</tr>
<tr>
<td>Adenosine Only</td>
<td>5</td>
</tr>
<tr>
<td>Metoprolol Only</td>
<td>30</td>
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<tr>
<td>Digoxin Only *</td>
<td>2</td>
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<tr>
<td>Digoxin Added</td>
<td>6</td>
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<tr>
<td>Diltiazem Added</td>
<td>2</td>
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<tr>
<td>Aspirin</td>
<td>2</td>
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<tr>
<td>No treatment</td>
<td>4</td>
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<tr>
<td>Labetolol</td>
<td>1</td>
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<tr>
<td>Ablation after pregnancy</td>
<td>6</td>
</tr>
</tbody>
</table>

* Patients with allergies to Metoprolol
Supraventricular Tachycardia During Pregnancy

Etiology

- Pulmonary embolism
- Hyperthyroidism
- Valvular heart disease
- Congenital heart disease
- Unrepaired
- Repaired
- Pericarditis
- Medications/Drugs:
  - Decongestants
  - Cocaine
  - Caffeine
- Infection
Supraventricular Tachycardia During Pregnancy

Exacerbating Factors

- Adrenergic sensitivity to estrogen
- Increased plasma volume
- Stress/anxiety
- Volume depletion
- Increased circulating catecholamines
- Atrial enlargement ("stretch")
Supraventricular Tachycardia During Pregnancy

Evaluation

History
Examination
ECG:
  PR interval
Echocardiography
Ambulatory monitoring:
  Holter
  Event monitor
  Implantable monitor
Supraventricular Tachycardia During Pregnancy

Initial Treatment

Vagal Maneuvers

Adenosine (FDA class C)
- No teratogenicity
- Effective as in non-pregnant state
- Dose: 6-12 mg (max 24 mg)
- Short ½-life

Metoprolol (FDA Class C)
- Dose: 1 mg/ min up to 10 mg
- Begin oral therapy
- Used in WPW

Cardioversion:
- Hemodynamically unstable
- Monitor fetus
- 10-50 J
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Digoxin

FDA class C
Leading dose 0.5-1 mg- IV
Oral 0.5-1 mg/ 24 hours in divided doses
Follow levels

Digoxin toxicity risk:
  Miscarriage
  Fetal death

Contraindicated with WPW
Supraventricular Tachycardia During Pregnancy

Potential Effects on Fetus:
- Growth restriction
- Neonatal bradycardia
- Respiratory depression
- Hyperglycemia

**Metoprolol**
- Arrhythmia- supraventricular and ventricular
- Valvular heart disease
- Cardiomyopathy
- Ischemic heart disease

Cardioselective
Relatively safe
Supraventricular Tachycardia During Pregnancy
Beta Blockers

**Carvedilol**
- Studied with ventricular arrhythmias and left ventricular dysfunction
- Studied with atrial fibrillation

**Esmolol**
- IV administration

**Sotalol (FDA Class B)**
- Prolonged QTc/torsades de points
- Begin in hospital
Supraventricular Tachycardia During Pregnancy

Calcium Channel Blockers

Verapamil (C) 5-10 mg over 2 minutes
Diltiazem (C)

May be used for acute treatment

Side Effects:
  - Hypertension
  - Longer half-life
  - Tocolytic
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Ablation

To be considered:
- Hemodynamic compromise (CHF)
- No response to medical therapy/cardioversion
- Reduced EF from incessant tachycardia

Methodology in Pregnancy
- Intracardiac echocardiography
- Mapping without fluoroscopy
Supraventricular Tachycardia During Pregnancy

Atrial Fibrillation

Etiology
- Mitral stenosis
- Pulmonary embolism
- Hyperthyroidism
- Pericardial disease
- Hypertension

Complicating factors
- Hypercoaguable patient

Treatment
- Rate control
- Cardioversion
- Anticoagulation
Amiodarone

· Use:
  - ventricular tachycardia
  - refractory atrial arrhythmias
  - fetal arrhythmias

· Iodine and metabolites cross placenta

· Adverse effects
  - transient fetal bradycardia
  - prolonged QT interval
  - neonatal hypothyroidism
Supraventricular Tachycardia During Pregnancy

Management

Prevent sustained tachycardia
Lowest effective dose
Adequate hydration to prevent hypotension
Continue during labor and delivery
Continue into postpartum period of BP tolerates
Discontinue 2-4 weeks postpartum and evaluate, consider ablation if recurs
Postpartum recurrence-consider ablation prior to future pregnancies