Diagnosis of Atrial Arrhythmias & Management of Narrow Complex Tachycardia

Atrial Ectopics

Diagnostic features:
- Usually earlier than normal (ie premature)
- P wave morphology different from sinus P. May be lost or deform preceding T wave
- PR interval may be short or long
- QRS usually normal unless aberrantly conducted
- When early may be blocked - blocked atrial ectopic

Assessment:
- Symptomatic?
- Associated AF
- Underlying heart disease
- Respiratory disease
- Usually no treatment necessary

Sinus Arrhythmia

Rate: Usually 60-100 beats/min but may be faster or slower
Rhythm: IRREGULAR
P waves: Uniform and upright in appearance
PRI: .12 - .20 sec
QRS: <.10

Junctional Rhythm

- Rate is slower than sinus rhythm
- Rhythm is regular
- No preceding P wave
- Infrequently P wave may precede or be just after the QRS (The P waves are inverted in II, III, aVF)
- QRS usually narrow unless aberrantly conducted

Tachycardia

- Regular
  - Narrow Complex
    - Sinus Tachycardia or PSVT or Atrial Flutter
  - Broad Complex
    - Ventricular Tachycardia or SVT with Aberrancy or Preexcitation
- Irregular
  - Narrow Complex
    - Atrial Fibrillation or Atrial Flutter with varying block or Multifocal AT
  - Broad Complex
    - Polymorphic VT or Torsade De Pointes or Preexcited AF

Sinus Tachycardia

Rate: 100-160 beats/min
Rhythm: Regular
P waves: Uniform and upright in appearance
PRI: .12 - .20 sec
QRS: <.10
**Sinus Tachycardia**  
**Symptoms and Treatment**

- Pain - analgesia  
- Anxiety - sedation  
- Hyperdynamic state - β blockade  
- Hypovolemia - volume replacement  
- Extensive myocardial damage - hemodynamic monitoring and drug therapy

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**Paroxysmal Supraventricular Tachycardia**

- Rate: 150 - 250 / min  
- Rhythm: Regular  
- P waves: Atrial P waves differ from sinus P waves. P waves are usually identifiable at the lower end of the rate range but seldom identifiable at rates > 200. May be lost in preceding T wave  
- PRI: Usually not measurable because the P wave is difficult to distinguish from the preceding T wave; if measurable, is .12–20  
- QRS: <.10 sec

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**Supraventricular Tachycardia**

- Rate: 150 - 250 / min  
- Rhythm: Regular  
- P waves: Atrial P waves differ from sinus P waves. P waves are usually identifiable at the lower end of the rate range but seldom identifiable at rates > 200. May be lost in preceding T wave  
- PRI: Usually not measurable because the P wave is difficult to distinguish from the preceding T wave; if measurable, is .12–20  
- QRS: <.10 sec

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**WPW paths & associated rhythms**

- WPW complex (premature ventricular contraction)  
- WPW tachycardia (paroxysmal ventricular)  
- WPW paroxysmal (premature ventricular)  
- WPW with ventricular tachycardia
Atrial Flutter

Rate: Atrial rate 250 - 350 / min
Rhythm: Atrial rhythm regular
Ventricular rhythm usually regular but may be irregular
P waves: Saw-toothed, "flutter waves"
PRI: Not measurable
QRS: Usually <.10 but may be widened if flutter waves are buried in the QRS complex

Flutter - saw tooth P waves
Flutter rate usually about 300/min
Best seen in II, III, aVF
Ventricular rate usually 150/min with 2:1 AV block
Rarely 1:1 or higher degree AV block (3:1, 4:1)

Tachycardia

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<th>Irregular</th>
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Three Variations of Atrial Fibrillation

Atrial Fibrillation

V, V, V, V
Atrial Fibrillation
- Absent P waves
- Chaotic irregular baseline - fibrillatory waves
- Irregularly irregular RR cycles - fast or slow AF
- Wide QRS due to aberrancy may occur intermittently (Ashman’s phenomenon)

Narrow Complex Tachycardia Algorithm
- Step 1: Access the patient
- Step 2: Identify the arrhythmia
- Step 3: Treat the arrhythmia

Assess the patient for Serious Signs and Symptoms
- Chest pain / AMI
- Shortness of breath / CHF
- Hypotension
- Decreased level of consciousness
- Shock

Narrow Complex Tachycardia (SVT)
- Maintain airway. Give O2 if hypoxemic
- ECG and vital sign monitoring
  - If hypotensive, altered mental state, signs of shock, ischaemic chest discomfort or acute heart failure, synchronized cardioversion with sedation
  - If vital signs stable:
    - Non-pharmacological manoeuvres (LOE 2)
      - IV Adenosine, verapamil, diltiazem (all LOE 1)
      - IV adenosine 6mg and repeat with 12 mg, if needed
      - IV verapamil 1 mg/min up to max 20 mg
      - IV diltiazem 2.5 mg/min up to max 50 mg
Diagnosis of Atrial Arrhythmias & NCT

Narrow Complex Tachycardia (AF)

- Maintain airway. Give O2 if hypoxemic
- ECG and vital sign monitoring
- If hypotensive, altered mental state, signs of shock, ischemic chest discomfort or acute heart failure
- If not hypotensive or in shock:
  - Rate Control
    - If no heart failure: IV calcium channel blockers
    - IV verapamil 1 mg/min infusion up to 20 mg
    - IV diltiazem 2.5 mg every 3 minutes up to 50 mg
    - If in heart failure: IV amiodarone or IV digoxin
    - IV amiodarone 300 mg over 20 - 30 minutes. Check BP frequently.
    - IV digoxin 0.5 mg over 30 minutes
  - Rhythm control
    - IV amiodarone 150 mg over 10 - 15 minutes and repeat 1 x if needed.
    - Check BP
    - Need to check anticoagulation status of patient

* either drug depending on availability and experience

Narrow Complex Tachycardia

- Rate Control
  - If no heart failure: IV calcium channel blockers
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