Junctional Dysrhythmias

Fast & Easy ECGs – A Self-Paced Learning Program
Junctional Dysrhythmias

- Originate in AV junction (area around AV node and bundle of His)
Junctional Dysrhythmias

• Key characteristics
  – P’ waves may be inverted with a short P’R interval, absent (as they are buried by the QRS complex), or follow QRS complexes
  – QRS complexes usually normal unless there is an intraventricular conduction defect, aberrancy or preexcitation
Premature Junctional Complex (PJC)

- Single early electrical impulse that arises from the AV junction

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate depends on underlying rhythm</td>
</tr>
<tr>
<td>Rhythm is irregular due to premature beat</td>
</tr>
<tr>
<td>P' wave of PJC is inverted; may appear before, during, or after the QRS complex</td>
</tr>
<tr>
<td>QRS complex of the PJC is normal</td>
</tr>
<tr>
<td>If present, the P'R interval of the PJC will be shorter than normal</td>
</tr>
</tbody>
</table>
Premature Junctional Complexes

Characteristics

- Rate: Depends on underlying rhythm
- Regularity: Irregular due to early beat
- P waves: Will be inverted — may precede, be buried in, or follow the QRS complex
- QRS complexes: Normal
- PR intervals: Will be shorter than 0.12 seconds in duration
- QT intervals: Usually within normal limits
<table>
<thead>
<tr>
<th>Causes of PJC's</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac disorders</td>
<td>Ischemia, acute myocardial infarction, damage to the AV junction, congestive heart failure, valvular disease, rheumatic heart disease, swelling of the AV junction after heart surgery</td>
</tr>
<tr>
<td>Use of certain drugs</td>
<td>Digitalis toxicity, other cardiac medications (quinidine, procainamide), sympathomimetic drugs (cocaine, methamphetamine)</td>
</tr>
<tr>
<td>Other</td>
<td>Excessive caffeine, tobacco, or alcohol intake; increased vagal tone on the SA node; hypoxia; electrolyte imbalance (particularly magnesium and potassium); exercise</td>
</tr>
</tbody>
</table>
Junctional Escape Rhythm

- Arises from AV junction at rate of 40 to 60 BPM
## Junctional Escape Rhythm

<table>
<thead>
<tr>
<th>Causes of junctional escape rhythm</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac disorders</td>
<td>Increased vagal tone on the SA node, disease of the SA node (sick sinus syndrome), inferior wall myocardial infarction, rheumatic heart disease, valvular disease</td>
</tr>
<tr>
<td>Use of certain drugs</td>
<td>Digitalis, quinidine, beta-blockers, calcium channel blockers</td>
</tr>
<tr>
<td>Other</td>
<td>Postcardiac surgery, hypoxia</td>
</tr>
</tbody>
</table>
Accelerated Junctional Rhythm

- Arises from AV junction at rate of 60 to 100 BPM
Accelerated Junctional Rhythm

Characteristics

- Rate: 60 to 100 beats per minute
- Regularity: Regular
- P waves: P’ waves are inverted; may appear before, during, or after the QRS complex
- QRS complexes: Normal, all appear the same
- PR intervals: If present, the P’R intervals will be shorter than normal
- QT intervals: Within normal range
## Table 10-3  Accelerated Junctional Rhythm

<table>
<thead>
<tr>
<th>Causes of Accelerated Junctional Rhythm</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac disorders</td>
<td>Inferior or posterior wall myocardial infarction, rheumatic fever, post open-heart surgery</td>
</tr>
<tr>
<td>Use of certain drugs</td>
<td>Digoxin toxicity</td>
</tr>
<tr>
<td>Other</td>
<td>Hypokalemia, COPD</td>
</tr>
</tbody>
</table>
Junctional Tachycardia

- Fast ectopic rhythm that arises from bundle of His at rate of 100 to 180 BPM
Junctional Tachycardia

Characteristics

Rate: 100 to 180 beats per minute
Regularity: Regular
P waves: P' waves are inverted; may appear before, during, or after the QRS complex
QRS complexes: Normal, all appear the same
PR intervals: If present, the P'R intervals will be shorter than normal
QT intervals: Within normal range
## Junctional Tachycardia

<table>
<thead>
<tr>
<th>Causes of junctional tachycardia</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac disorders</td>
<td>Inferior or posterior wall myocardial infarction, swelling of the AV junction after heart surgery, damage to AV junction from inferior wall MI or rheumatic fever, post open-heart surgery</td>
</tr>
<tr>
<td>Use of certain drugs</td>
<td>Digoxin toxicity, particularly in the presence of hypokalemia</td>
</tr>
<tr>
<td>Other</td>
<td>Excessive catecholamine administration, anxiety, hypoxia, electrolyte imbalance (particularly hypokalemia)</td>
</tr>
</tbody>
</table>
Practice Makes Perfect

- Determine the type of dysrhythmia

Rate: _________ (atrial) _________ (ventricular)
P waves: _________ QRS complexes: _________
QT intervals: _________ Dysrhythmia: _________
Regularity: _________
PR intervals: _________
Practice Makes Perfect

- Determine the type of dysrhythmia
Practice Makes Perfect

- Determine the type of dysrhythmia

Rate: __________ (atrial) __________ (ventricular)
P waves: __________
QRS complexes: __________
QT intervals: __________
Dysrhythmia: __________
Regularity: __________
PR intervals: __________
Practice Makes Perfect

• Determine the type of dysrhythmia

Rate: __________ (atrial) __________ (ventricular)
P waves: __________ QRS complexes: __________
QT intervals: __________ Dysrhythmia: __________
Regularity: __________
PR intervals: __________
Practice Makes Perfect

- Determine the type of dysrhythmia

Rate: ___________ (atrial) ___________ (ventricular)
P waves: ___________  QRS complexes: ___________
QT intervals: ___________  Dysrhythmia: ___________
Regularity: ___________
PR intervals: ___________
Practice Makes Perfect

• Determine the type of dysrhythmia

Rate: ___________ (atrial) ___________ (ventricular)
P waves: ___________ QRS complexes: ___________
QT intervals: ___________ Dysrhythmia: ___________
Regularity: ___________
PR intervals: ___________
Practice Makes Perfect

- Determine the type of dysrhythmia

Rate: ___________ (atrial) ___________ (ventricular)
P waves: ___________ QRS complexes: ___________
QT intervals: ___________ Dysrhythmia: ___________
Regularity: ___________
PR intervals: ___________
Practice Makes Perfect

- Determine the type of dysrhythmia

Rate: ____________(atrial) ____________(ventricular)
P waves: ____________ QRS complexes: ____________
QT intervals: ____________ Dysrhythmia: ____________
Regularity: ____________
PR intervals: ____________
Practice Makes Perfect

- Determine the type of dysrhythmia

![ECG Image]

Rate: ___________ (atrial) ___________ (ventricular)
P waves: ___________ QRS complexes: ___________
QT intervals: ___________ Dysrhythmia: ___________

Regularity: ___________
PR intervals: ___________
Practice Makes Perfect

• Determine the type of dysrhythmia

Rate: ____________ (atrial) ____________ (ventricular)
P waves: ____________ QRS complexes: ____________
QT intervals: ____________ Dysrhythmia: ____________
Regularity: ____________
PR intervals: ____________
Summary

• Junctional rhythms originate in the AV junction.

• Impulses originating in the AV junction travel upward and cause backward or retrograde depolarization of the atria resulting in inverted P’ waves in lead II with a short P’R interval, absent P waves or P waves that follow the QRS complexes.

• With junctional dysrhythmias the QRS complexes are usually normal unless there is an intraventricular conduction defect, aberrancy or preexcitation.
Summary

• A premature junctional complex (PJC) is a single early electrical impulse that arises from the AV junction.

• Junctional escape rhythm arises from the AV junction at a rate of 40 to 60 beats per minute.

• Accelerated junctional rhythm arises from the AV junction at a rate of 60 to 100 beats per minute.

• Junctional tachycardia is a fast ectopic rhythm that arises from the bundle of His at a rate of between 100 and 180 beats per minute.