PR Intervals

Fast & Easy ECGs – A Self-Paced Learning Program
Step 5 of ECG Analysis

- Examining the PR intervals
The PR Interval

• Denotes depolarization of the heart from the SA node through the atria, AV node and His-Purkinje system
The PR Interval

• The distance from the beginning of the P wave to the beginning of the Q wave
• Morphology is a P wave and a flat line
The PR Interval

- Considered abnormal if they are shorter, longer, absent or vary.
Shorter P’R Intervals

• Shorter P’R intervals occur when the impulse originates in the atria close to the AV junction or in the AV junction.
Shorter P’R Intervals

Normally, the SA node initiates impulses, resulting in a repetitive cycle of P, QRS, and T waveforms.

Premature atrial complexes occur when a site in the atria fuses before the SA node is able to initiate an impulse.

Following the premature beat, the SA node typically reinitiates impulses in the normal manner.

A shorter than normal P’R interval occurs when the PAC arises closer to the AV junction.

A P’R interval within normal duration occurs when the PAC arises from a site in the upper- or middle-right atrium.
Shorter P’R Intervals

- Can occur when an impulse arises from a supraventricular site but travels through abnormal accessory pathways to the ventricles.
- Leads to premature ventricular depolarization called preexcitation.
Shorter P’R Intervals

Impulse originates from ectopic site

A. It is blocked from traveling through AV node

Bundle of Kent

B. Instead, it travels through accessory pathway to the ventricles

Delta wave

Delta wave

Delta wave

Delta wave

Delta wave

Delta wave
Longer P’R Intervals

- Occur when there is a delay in impulse conduction through the AV node
- For example, 1<sup>st</sup>-degree AV heart block
Varying P’R Intervals

- In wandering atrial pacemaker the pacemaker site moves from beat to beat causing the P’ waves to appear different and the P’R intervals to vary.
Varying P’R Intervals

- 2nd-degree AV heart block, Type I has PR intervals that are progressively longer until a QRS complex is dropped and then the cycle repeats
Absent PR Intervals

- Occurs in atrial flutter and fibrillation and ventricular dysrhythmias
Absent PR Intervals

- In 3rd-degree AV heart block the PR interval is not measurable
More P Waves and Constant PR Intervals

- In 2\textsuperscript{nd}-degree AV heart block, Type II, some sinus beats are blocked in the AV node and do not reach the ventricles.
- PR intervals associated with P waves that are conducted through to the ventricles are constant.
More P Waves and Constant PR Intervals

- Impulse originates in SA node
- Some of the impulses are blocked as they travel through the AV node.
- Impulse originates in SA node
- There are more P waves than QRS complexes
- ECG trace with P waves and constant PR intervals
Practice Makes Perfect

- Determine the type of PR interval
Practice Makes Perfect

• Determine the type of PR interval
Practice Makes Perfect

- Determine the type of PR interval
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- Determine the type of PR interval
Practice Makes Perfect

- Determine the type of PR interval
Summary

• Fifth step of analyzing an ECG rhythm is examining the PR intervals.

• PR interval is the distance from the beginning of the P wave to the beginning of the Q wave.

• Duration of the PR interval is normally 0.12 to 0.20 seconds.

• PR intervals are considered abnormal if they are shorter, longer, absent or vary.
Summary

- Shorter P’R intervals occur when the impulse originates in the atria close to the AV junction or in the AV junction itself.

- 1st-degree AV heart block is the most common cause of longer PR intervals.

- In wandering atrial pacemaker the pacemaker site moves from beat to beat causing the P’ waves to appear different and the P’R intervals to vary.
Summary

• In 2\textsuperscript{nd}-degree AV heart block, Type I, PR intervals are progressively longer until a QRS complex is dropped and then the cycle repeats.

• There is an absence of PR intervals in atrial flutter and fibrillation, ventricular dysrhythmias.

• In 3\textsuperscript{rd}-degree AV heart block the PR intervals are not measurable.
Summary

- In 2\textsuperscript{nd}-degree AV heart block, Type II, some of the sinus beats are blocked in the AV node and do not reach the ventricles. The PR intervals associated with the P waves that are conducted through to the ventricles are constant.