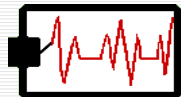


HTEC 91

Medical Office Diagnostic Tests
AV Blocks



Topics for Today

- AV Blocks
 - 1° AV Block
 - 2° AV Block
 - 3° AV Block
-

First-Degree AV Block

- 1° AV Block is a conduction disturbance in which electrical impulses flow normally from the SA node through the atria but are *delayed at the AV node*.



First-Degree AV Block : 8 Steps...

1. P wave: normal in size and configuration.
 2. Atrial rhythm: regular.
 3. Atrial rate: usually within normal limits; same as the ventricular rate.
 4. PR interval: *prolonged* (>0.20 second), but constant in duration.
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First-Degree AV Block : 8 Steps...

5. Ventricular rhythm: regular.
 6. Ventricular rate: usually within normal limits; same as the atrial rate.
 7. QRS complex: usually within normal limits since the conduction delay occurs in the AV node.
 8. QT interval: usually within normal limits.
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Significance of 1° AV Block

- Can appear in healthy persons.
 - Can indicate digitalis toxicity if the person takes digoxin.
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Causes of 1° AV Block

- ☐ Digoxin toxicity
- ☐ Medications
 - Quinidine
 - Procainamide
 - Propanolol
 - Digitalis
- ☐ Rheumatic fever
- ☐ Chronic degenerative disease of the conduction system



Causes of 1° AV Block

- ☐ Inferior wall MI
- ☐ Hypothyroidism
- ☐ Ischemia
- ☐ Infection
- ☐ Potassium imbalance



1° AV Block: Interventions

- ☐ May not require treatment if the patient is asymptomatic.
- ☐ Treat the underlying cause.
- ☐ Carefully observe ECG for progression to higher forms of AV Block.
- ☐ If the patient develops symptomatic bradycardia, atropine may be given.

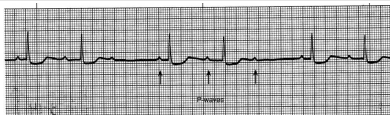


2° AV Block Type I

- ☐ Diseased tissues of the AV node conduct each successive impulse earlier and earlier in the refractory period.
- ☐ Eventually, an impulse arrives during the absolute refractory period, when the tissue cannot conduct it.

2° AV Block Type I

- ☐ The following impulse arrives during a relative refractory period, and is conducted normally.

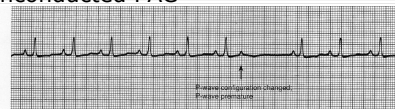


2° AV Block Type I versus Nonconducted PAC

- ☐ 2° AV Block Type I



- ☐ Nonconducted PAC



2° AV Block Type I: 8 Steps

1. P wave: normal in size and configuration.
2. Atrial rhythm: regular; constant P-P intervals.
3. Atrial rate: greater than ventricular rate, but usually within normal limits.
4. PR interval: progressively lengthens with each cycle until a p wave appears without a QRS complex following it.

2° AV Block Type I: 8 Steps

5. Ventricular rhythm: irregular. R-R interval progressively shortens until a p wave appears without a QRS (dropped beat). Then the cycle repeats.
6. Ventricular rate: less than the atrial rate, but usually within normal limits.
7. QRS complex: usually within normal limits since the block lies above the Bundle of His; complex is dropped periodically.
8. QT interval: usually within normal limits.

2° AV Block Type I

- ❑ Often this rhythm is a transient rhythm.
- ❑ Group beating "the footprints of Wenckebach" distinguishes this dysrhythmia.



Causes of 2° AV Block Type I

- ❑ Digoxin toxicity
- ❑ Medications
 - Quinidine
 - Procainamide
 - Propanolol
- ❑ Rheumatic fever
- ❑ Vagal stimulation
- ❑ Inferior wall MI
- ❑ Post-cardiac surgery
- ❑ Electrolyte imbalance



2° AV Block Type I: Interventions

- ❑ May not require treatment if the patient is asymptomatic.
- ❑ Treat the underlying cause.
- ❑ Carefully observe ECG for progression to higher forms of AV Block.
- ❑ If the patient develops symptomatic bradycardia, atropine and/or temporary pacemaker may be used.

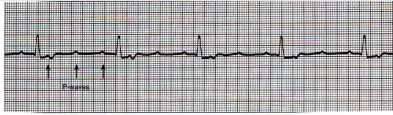


2° AV Block Type II

- ❑ Intermittent block of sinus impulses in the AV node.
- ❑ Dropped QRS complex appears without warning.
- ❑ Conduction abnormality is in the bundle of His or the bundle branches.



2° AV Block Type II



2° AV Block Type II: 8 Steps

1. P wave: normal in size and configuration, but some p waves are not followed by a QRS complex. The P-P interval containing the nonconducted P wave equals 2 normal P-P intervals.
2. Atrial rhythm: regular; constant P-P intervals.
3. Atrial rate: usually within normal limits.
4. PR interval: within normal limits or prolonged, but always constant for the conducted beats.

2° AV Block Type II: 8 Steps

5. Ventricular rhythm: regular or irregular, depending on the pauses.
6. Ventricular rate: less than the atrial rate, but usually within normal limits.
7. QRS complex: varies, but usually within normal limits; complex is dropped periodically.
8. QT interval: usually within normal limits.

2° AV Block Type II: Significance

- ☐ This dysrhythmia reflects organic heart disease and frequently progresses to a higher form of block.
- ☐ Usually occurs at or below the bundle of His.

Causes of 2° AV Block Type II

- ☐ Anterior or inferior wall MI
- ☐ Severe CAD
- ☐ Acute myocarditis
- ☐ Digoxin toxicity



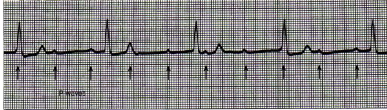
2° AV Block Type II: Interventions

- ☐ Treatment depends on the patient's signs and symptoms.
- ☐ If BP is low, medications are given to support BP and increase HR.
- ☐ Usually requires pacemaker placement



3° AV Block

- ☐ Also known as complete heart block.
- ☐ Complete block of all supraventricular impulses from reaching the ventricles.
- ☐ Conduction abnormality may be in the AV node, the bundle of His or the Purkinje system.



3° AV Block: 8 Steps

1. P wave: normal in size and configuration.
2. Atrial rhythm: no relationship between the atrial and ventricular rhythms; however the atrial rhythm is regular and has constant P-P intervals.
3. Atrial rate: usually faster than the ventricles (usually 60 to 100 beats per minute).
4. PR interval: not measured, because atria and ventricles beat independently of each other.

3° AV Block: 8 Steps

5. Ventricular rhythm: regular with constant R-R intervals; *however there is no relationship between the atrial and ventricular rhythms.*
6. Ventricular rate: usually less than 40 beats per minute.
7. QRS complex: configuration depends on where the ventricular beat originates:
 - ☐ High AV junction: narrow QRS
 - ☐ Bundle of His: wide QRS
 - ☐ Ventricles: wide, bizarre QRS
8. QT interval: may or may not be within normal limits.

3° AV Block: Significance

- ☐ This dysrhythmia may be related to severe digitalis toxicity or MI.
- ☐ Often stems from bilateral bundle branch block.

3° AV Block: Treatment

- ☐ Pacemaker
- ☐ Until pacemaker, BP may be supported with medications
 - Atropine
 - Isoproterenol



Want a challenge?

- ☐ Practice your rhythm interpretation at:

http://www.skillstat.com/ECG_Sim_demo.html