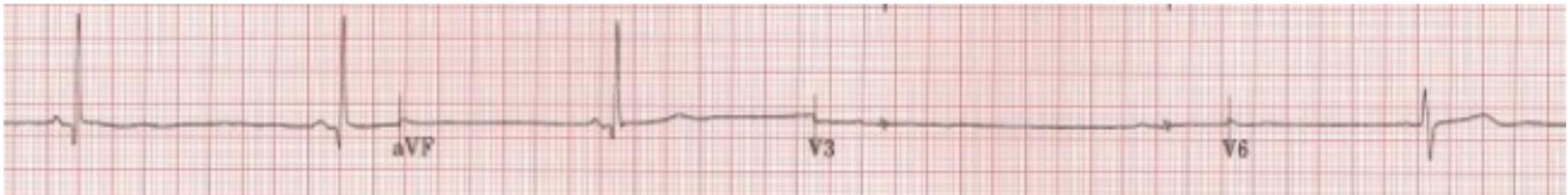




Foundations EKG I - Unit 4 Summary

Approach to Bradyarrhythmias

Bradyarrhythmias can be secondary to a variety of causes. Determining the specific type of bradyarrhythmia helps pinpoint where in the heart trouble might lie. Often evaluation requires careful inspection of the rhythm strip and sometimes of a prolonged 12 lead EKG.



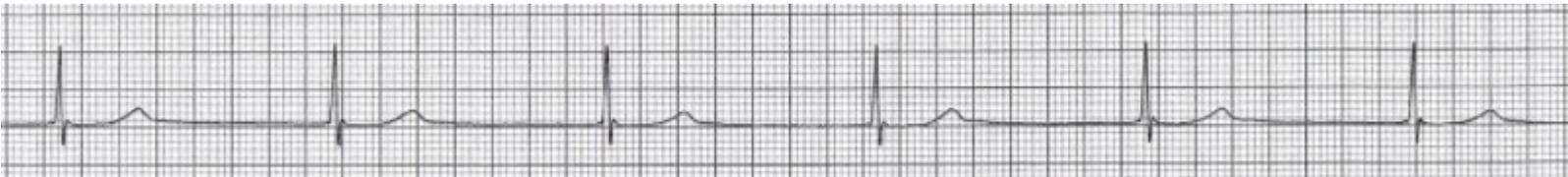
Sinus bradycardia may be due to normal functioning of the heart, or can be caused by electrolyte abnormalities or pharmacological influences. A rate under 60 bpm in normal adults is considered bradycardic. Note in sinus bradycardia the rhythm has normal conducting p waves followed by a QRS with normal intervals. In symptomatic patients atropine is an appropriate first treatment while trying to identify other reversible causes.

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Understanding the intrinsic rates of various pacemaker foci within the heart will help you distinguish the main driver of an impulse. In a normal, healthy heart the SA node is the only pacemaker you will see on the EKG.

- SA node: 60-100 bpm
- Atria: 60-80 bpm
- Junctional: 40-60 bpm
- Ventricular: 20-40 bpm



In the above example we see a rate of approximately 40 bpm. There are no p waves. The QRS is narrow (distinguishing it from ventricular conduction in many cases.) It is an example of a **junctional rhythm** causing bradycardia.



A rhythm with a progressively prolonging PR interval that eventually leads to a dropped beat, followed by a short PR interval that again progressively prolongs is consistent with a **2nd Degree AV block, Mobitz I** (also known as **Wenckebach Phenomenon**).

In an asymptomatic patient, this rhythm is benign with low risk of hemodynamic instability and relatively rare progression to third degree heart block. Atropine usually works for symptomatic patients.

Possible causes include:

- Beta-blocking and calcium channel blocking drugs
- Myocarditis
- Inferior MI
- Increased vagal tone

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Intermittently dropped beats with normal PR intervals are consistent with **2nd degree AV block, Mobitz II**. In this pattern the beat is dropped without any predictable pattern. This rhythm is much more likely to cause hemodynamic instability than Mobitz I and may develop into third degree heart block. In addition to investigating possible causes these patients should be immediately admitted for permanent pacemaker placement.



In **third degree heart block** (also known as complete heart block), the supraventricular impulses are not conducted to the ventricles. QRS complexes march through the rhythm strip completely independently of the p waves. The perfusing rhythm is the ventricular rhythm causing severe bradycardia. Even in patients with a normal blood pressure who are asymptomatic this is a serious emergency—these patients are at risk for ventricular standstill. In symptomatic or hypotensive patients pacing (external or internal) is indicated. Immediate permanent pacemaker placement is imperative.

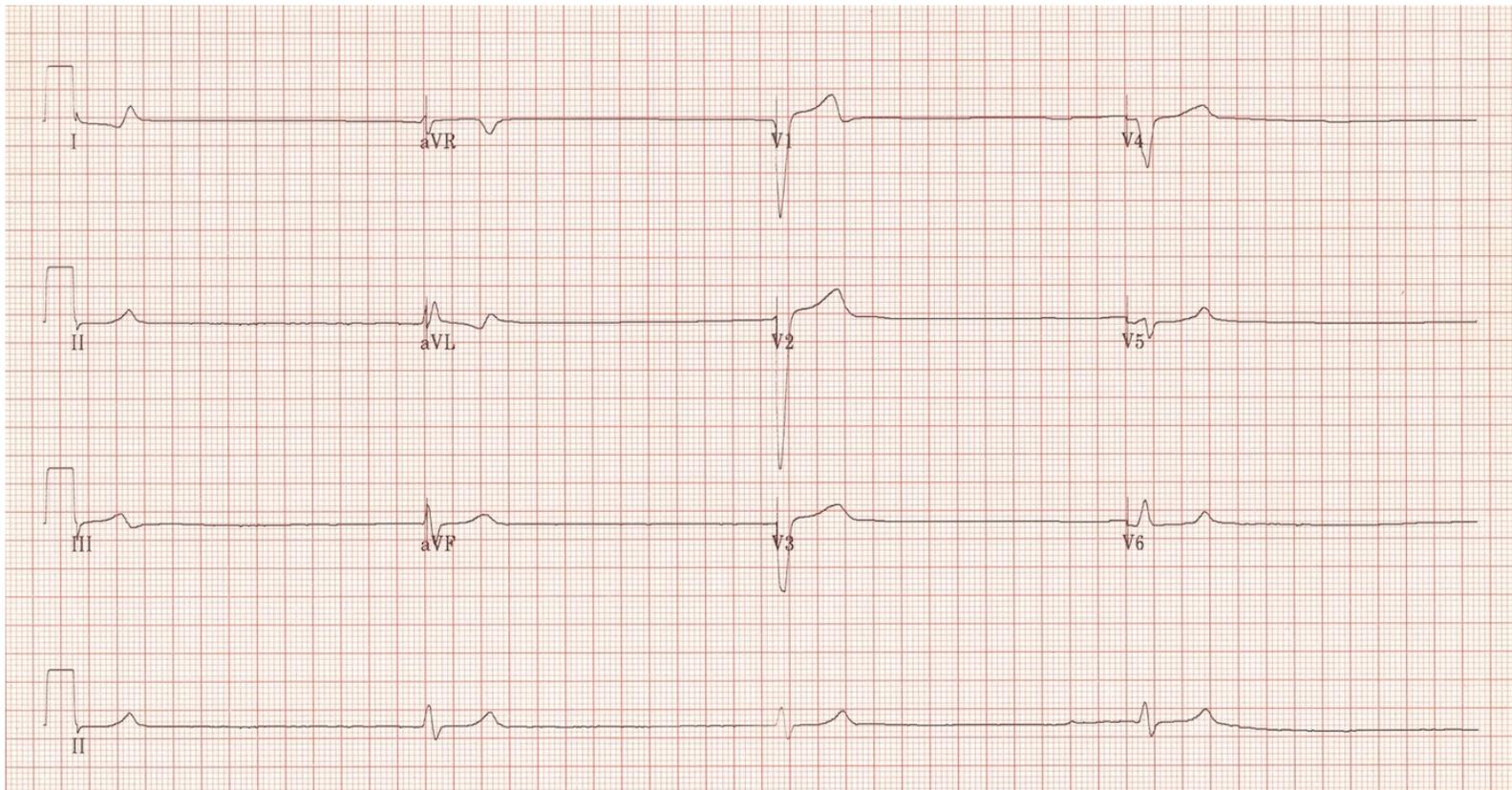


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When there is no conduction from supraventricular impulses the rhythm seen is a **ventricular escape rhythm**. In this case the only impulses seen on an EKG are the ventricular QRS complexes at a rate of 20-40 bpm. The QRS is widened in this case because the impulse is from an ectopic focus lying outside of the His-Pukinje system.

Definitive management requires immediate permanent pacemaker placement.



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