

Case 7 Bradycardia

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Learning Objectives

1. By the end of Case 7 be able to discuss

- Asymptomatic vs symptomatic bradycardia
- Signs and symptoms of *symptomatic bradycardia*
- Intervention agents and sequences to use
- Recognition criteria for heart blocks: 1st, 2nd (types I and II), and 3rd degree
- Pathology of conduction system in heart blocks

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Learning Objectives

2. By the end of Case 7 be able to discuss

- Significance of bradycardia in AMI patients
- Significance of RV infarction plus bradycardia
- *Atropine* pharmacology: why atropine helps some heart blocks and not others
- Set up, start, troubleshoot *transcutaneous pacing*

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Drugs to Learn

♦ The actions, indications, administration, and precautions for these drugs and therapies:

- Atropine
- Dopamine
- Epinephrine
- Transcutaneous pacing
- Isoproterenol (rarely used)

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What Is This Rhythm?



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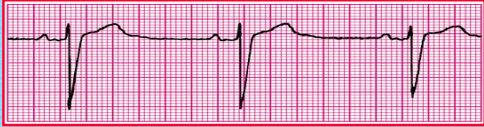
AV Block

First-degree AV block



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Diagnosis?



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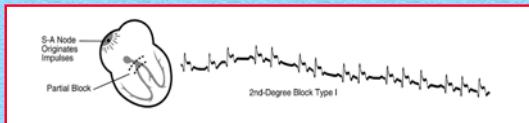
Diagnosis?



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AV Block

Second-degree type I AV block



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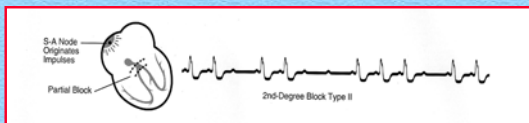
Diagnosis?



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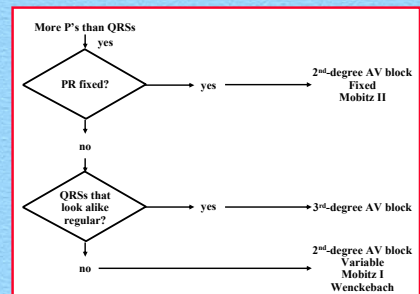
AV Block

Second-degree type II AV block



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Differentiation of Second- and Third-Degree AV Blocks



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Bradycardia Algorithm (1 of 2)

Bradycardia
 • **Slow** (absolute bradycardia = rate <60 bpm)
 or
 • **Relatively slow** (rate less than expected relative to underlying condition or cause)

Primary ABCD Survey

- Assess ABCs
- Secure airway noninvasively
- Ensure monitor/defibrillator is available

Secondary ABCD Survey

- Assess secondary ABCs (invasive airway management needed?)
- Oxygen-IV access-monitor-fluids
- Vital signs, pulse oximeter, monitor BP
- Obtain and review 12-lead ECG
- Obtain and review portable chest x-ray
- Problem-focused history
- Problem-focused physical examination
- Consider causes (differential diagnoses)

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Bradycardia Algorithm (2 of 2)

Serious signs or symptoms?
 Due to bradycardia?

No

Yes

Type II second-degree AV block
 or
 Third-degree AV block?

No

Yes

Observe

Intervention sequence
 • Atropine 0.5 to 1.0 mg
 • Transcutaneous pacing if available
 • Dopamine 5 to 20 µg/kg per minute
 • Epinephrine 2 to 10 µg/min
 • Isoproterenol 2 to 10 µg/min

• Prepare for transvenous pacer
 • If symptoms develop, use transcutaneous pacemaker until transvenous pacer placed

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What Is This Rhythm?



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AV Block

Third-degree AV block



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What Is This Rhythm?



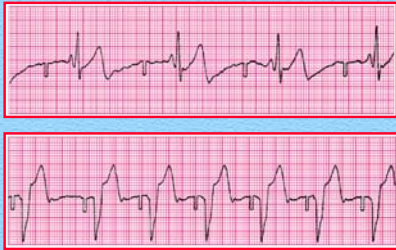
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Indications for Transcutaneous Pacing

- ♦ Hemodynamically unstable bradycardias
- ♦ In the setting of AMI: sinus node dysfunction, type II 2nd-degree block, 3rd-degree heart block
- ♦ Bradycardia with symptomatic ventricular escape beats

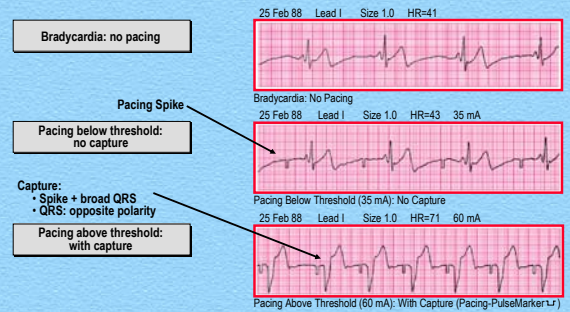
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Transcutaneous Pacing



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Transcutaneous Pacing: “Capture” vs “No Capture”



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Pulse Generators for Transvenous Pacing

Characteristics

- ♦ Variable output in milliamps
- ♦ Fixed versus demand mode
- ♦ Variable rate setting
- ♦ Firing and sensing indicators
- ♦ Familiarize yourself with the equipment!

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