Exercise Arrhythmias, Pt 1

Chapter 13

• Brady-Arrhythmias
  – Case report
  – Sick Sinus Syndrome
  – Heart Block
  – Treatment of Bradycardia

Bradycardia Case Report

• 60+ yr-old, "control" male undergoing a tilt test for diabetic research study
• Variable and low HR during supine baseline and lack of responsiveness
• HUT starts—normal response at first, then HR and BP fall
• Lower tilt table—HR continues to fall, HR 18!
• Loss of consciousness and convulsions
• Call a code

Bradycardia Case Report

• Treatment
  – Oxygen
  – Feet up, IV fluids

• Diagnosis
  – Previously unknown autonomic disease

Brady-arrhythmia

• An inadequate increase in HR during exercise is a sign of:
  – poor ventricular function
  – severe CAD
• A “relative contra-indication” to terminate an exercise test

Sick Sinus Syndrome (chronotropic incompetence)

• Symptoms
  – abnormally slow HR at rest
  – attenuated increase in HR with exercise
• Causes
  – high vagal tone
  – disease of the nodal tissue
• Protective effect
  – in ischemia, preserves longer diastole
**Junctional Rhythms**

- rhythm originates in av junction
- rate is 40-60, regular
- short PR, if seen
- normal QRS
- P waves inverted in lead II, before, hidden or after QRS

**Conduction Disturbances**

- Increased Symp tone and decreased PS tone may cause conductance disturbances
  - increased traffic in a-v node
  - fatigue of conduction tissue
  - longer refractory period
- ischemia
  - may slow conduction

**Contra-Indications for Exercise**

- For starting a test
  - 2nd or 3rd degree AV block (relative)
- For terminating a test
  - heart block (relative)
  - development of BBB (relative)

**1st Degree Heart Block**

- Often disappears with exercise due to release of vagal tone.
- Rarely, appears with exercise
- Has little clinical significance

**2nd degree Heart Blocks**

- Mobitz I
  - Wenckebach
  - Lengthening PR
- Mobitz II
  - Multiple Ps

**2nd Degree Heart Block**

- While 1st degree heart block usually improves with exercise, 2nd degree gets worse.
  - Block is usually lower, below the A-V node, and sympathetic drive does not enhance conduction
- Don’t start a test
- Stop a test
**3rd Degree (Complete) Heart Block**
- Dissociated, regular, Ps and QRSs
- Poor prognosis when associated with CAD

**Bundle Branch Block**
- Obstruction in one of the branches of the bundle of His
- Wide and sometimes bizarre QRS complexes
- Almost always indicates serious myocardial damage
- Relative contra-indication to stop a test

**Bundle Branch Block**

**RBBB**
- Less serious than LBBB
- Wide QRS
- Lead I, broad S wave
- Lead V1, RSR’

**LBBB**
- Usually indicates severe myocardial disease
- Wide QRS
- Bizarre QRS
- ST depressions
- Inverted T waves

**Brady-arrhythmia Treatments**

- What is bradycardia?
  - Heart rate < 60
  - HR less than expected relative to the underlying condition or cause
- When do you do something about it?
  - With serious signs or symptoms
- Interventions
  - drugs or pacing
All Trained Dogs Eat IAMS

- Atropine (most common, except AV block, Mobitz I)
- Transcutaneous pacing
- Dopamine
- Epinephrine
- Isoproterenol (beta adrenergic agonist)

Caution: don’t use these drugs with ischemia! increase myocardial oxygen consumption

Brady-arrhythmias, Summary

- What are some of the causes of an inappropriately small increase in HR during exercise?
- What should you do if HR does not increase during an exercise test?
- How might a physician treat a patient with severe symptoms from bradycardia?