Fast and Slow Rhythms

AND THE INTERVENTIONS

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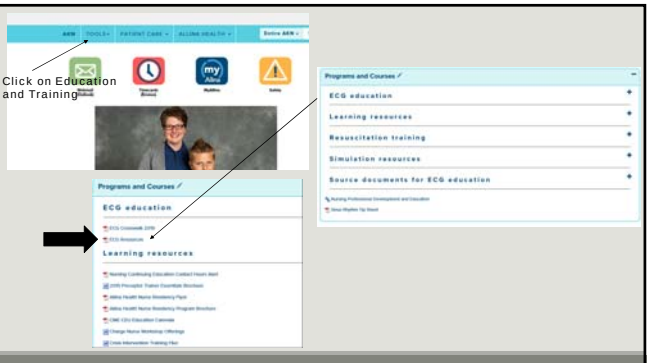
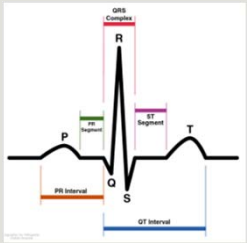
Disclosure:
None

Objectives

1. Identify each rhythm
2. Know 2 characteristics of each rhythm
3. Understand 2 common treatments for each rhythm





PR Interval (Normal .12-.20)
QRS Complex (Normal .06-.11)
QT Interval (Normal QTc: <0.47 sec in men, <0.48 sec in women)

Sinus Tachycardia

- Atrial and ventricular ratio 1:1
- Rate is 101-150
- Normal PR interval and QRS complex
- SA node is pacemaker

Treat the underlying cause-fever, infection, anxiety, caffeine, hypoxia, pain etc.

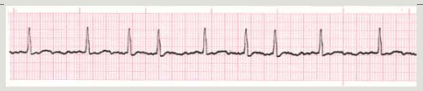
Supraventricular Tachycardia (SVT)

- QRS is narrow and regular
- Rate 150-250
- P wave may be buried in T wave. If P wave present it is 1:1
- Pacemaker is above the ventricles

Treatment: Vagal Maneuvers, Adenosine 6mg/12mg, Synchronized Cardioversion 50-100J (BiPhasic). Ablation

Pediatrics: Vagal maneuvers. Adenosine 0.1 mg/kg 1st does, 0.2 mg/kg 2nd dose. Synchronized Cardioversion 0.5-1 J/kg may increase to 2 J/kg.

Atrial Fibrillation (A-Fib)



- There is no P to QRS ration because there is no P wave
- Ventricular rate varies and usually irregular
- PR interval is not measurable, QRS complex is normal
- Multiple areas of the Atria fire as the pacemaker

Treatment: Calcium Channel Blocker-Diltiazem/Beta Blocker-Metoprolol (slow heart rate). Synchronized cardioversion 100-120 J (BiPhasic). Anti coagulation. Ablation

Atrial Flutter

- Atrial ventricular ratio can vary 1:1, 2:1 (common), 3:1 etc.
- Atrial rate 240-400
- Cannot measure PR interval, QRS complex is normal
- Pacemaker is in the right atria and moves in circular motion until passing in AV node

Treatment: Beta Blocker/Calcium Channel Blocker. Synchronized cardioversion 100-120 J (BiPhasic). Anti Coagulation. Ablation

Ventricular Tachycardia (V-Tach) with pulse

- Ventricular rate 100-250. No P waves.
- QRS complex is wide (>.11) and regular
- Pacemaker is a single circuit in the ventricle
- Sustained VT lasting more then 30 seconds requires immediate treatment

Treatment: Amiodarone 150mg given IV over 10 minutes. Vagal maneuvers. If unstable Synchronized Cardioversion 100+ J (BiPhasic)

Pediatric: Amiodarone 5 mg/kg over 20-60 minutes or Procainamide 15 mg/kg over 30-60 minutes. Synchronized cardioversion 0.5-1 J/kg may increase to 2 J/kg.

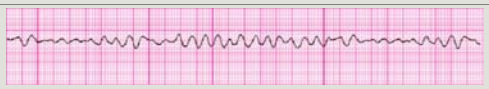
Ventricular Tachycardia-No Pulse

- Ventricular rate 100-250. No P waves.
- QRS complex is wide (>.11) and regular
- Pacemaker is a single circuit in the ventricle
- NO PULSE
- Can quickly result in V Fib

Treatment: Immediate CPR. defibrillate ASAP with 3 stacked shocks 200J/300J/360J. Epinephrine 1mg every 3-5 minutes and Amiodarone 300mg/150mg.

Pediatrics: Immediate CPR, defibrilation-2,4,6,8 that's how we defibrillate max of 10 J/kg. Epinephrine 0.01 mg/kg, Amiodarone 5 mg/kg

Ventricular Fibrillation



- P waves and QRS complex not measurable
- Ventricular rate is chaotic and not measurable
- Pacemaker is multiple ectopic areas in the ventricles
- Does not have a pulse
- Can quickly result in Asystole

Treatment: Immediate CPR. defibrillate ASAP with 3 stacked shocks 200J/300J/360J. Epinephrine 1mg every 3-5 minutes and Amiodarone 300mg/150mg.

Pediatrics: same as pVT

Sinus Bradycardia

- Regular atrial and ventricular ratio 1:1
- Rate is <60
- Normal PR interval and QRS complex
- SA node is pacemaker

Treatment: ensure adequate oxygenation and ventilation. Atropine 0.5 mg every 3-5 minutes for max of 3mg. Epi or Dopamine infusion. Transcutaneous pacing with rate of 60-80 BPM. Increase to 10 mA above capture.

Pediatrics: Epinephrine 0.01 mg/kg. Atropine 0.02 mg/kg, minimum dose 0.1 mg and max single dose 0.5mg.

Paced Bradycardia

First Degree AV Block

- Atrial and ventricular ratio is 1:1
- Prolonged PR interval of >.20. Normal QRS complex
- SA node is pacemaker
- Electrical activity is slowed at the AV node but all impulse pass into ventricles
- Can be a normal result of medications such as beta blockers

Treatment: rarely cause symptoms-observe. Atropine 0.5 mg

Second Degree AV Block Type 1
(Wenchenback)

- Atrial rate is normal and QRS is slower then normal (blocked P wave or dropped QRS)
- Atrial rate regular(marches out), ventricular rate irregular
- Normal QRS complex when present
- PR interval lengthens until QRS is dropped. Strip is 4:3 ratio

Treatment: likely no treatment indicated, observe. Atropine 0.5 mg.

Second Degree AV Block Type 2

- PR interval is constant when conducted
- More P's then QRS's. Atrial rate is regular, ventricular rate varies(don't march out)
- Normal QRS complex when present
- May progress to complete heart block

Treatment: requires rapid treatment. Dopamine or Epinephrine infusion. Pacemaker. Not likely to respond to Atropine

Third Degree AV Block

- None of the electrical signals from the Atria reach the ventricles
- The ventricles will generate their own impulses at a very slow rate
- Atrial rate and ventricular rate are regular
- PR interval varies
- QRS complex is normal to wide

Treatment: Pacemaker. Dopamine or Epinephrine infusion. Will likely not respond to Atropine.

References

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