Treatment of Arrhythmias in the Emergency Setting

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There are no potential conflicts of interest to disclose

My Most Important Slide

• Take a deep breath
  – Things will go a lot slower if you rush or panic

• Make use of those around you
  – Pride can be dangerous

• Keep moving forward
Don’t Forget the Basics

• 79 yo man with a history of CHF s/p remote ICD presents with progressive, severe dyspnea at rest
• Compliant with his medicines; described some diarrhea after a recent trip to Mexico
• Sitting up, diaphoretic, tachypneic, oxygen saturation ~87%, blood pressure ~88/40

Don’t Forget the Basics

When you have a questionable ECG:

If you can, always…

1. Compare it to a previous ECG
Don’t Forget the Basics

When you have a questionable ECG:

If you can, always…

1. Compare it to a previous ECG
2. Think about electrolytes (K⁺, Mg²⁺, Ca²⁺)

Tachyarrhythmias: Unstable

SVT
- Unconscious, altered mental status, ongoing chest pain
- “Hypotension” is a clinical judgment

Atrial fibrillation

AF with WPW

VT/ VF
Tachyarrhythmias: Quasi-stable

SVT

Atrial fibrillation

AF with WPW

VT/VF

WAIT! GET A RUNNING 12 LEAD ECG!
Tachyarrhythmias: Quasi-stable

SVT

Vagal Maneuvers

• Carotid sinus massage
• Valsalva
• Will terminate ~20%


Adenosine

• Metabolized by red blood cells and endothelium
• Give 6 mg IV with 20 cc flush
• Repeat with 12 mg IV X 2
• How do I know if I’ve given enough?

Tachyarrhythmias: Quasi-stable

Atrial Fibrillation

• Nondihydropyridine Calcium channel blockers
  • Diltiazem
  • Verapamil
• Beta-blockers
  • Metoprolol
  • Atenolol
  • Carvedilol
• Labetolol
• Propranolol

Blood Pressure

1. Address underlying condition
2. Esmolol
3. Digoxin
4. Amiodarone
Atrial Fibrillation with preexcitation

Give:
- Procainamide
- Ibutilide
Tachyarrhythmias: Quasi-stable Ventricular Tachycardia

- Scarcity of data
- Amiodarone probably the most effective

- Can cause bradycardia
- Can exacerbate polymorphic VT
- Scrutinize for pause-dependence and QTc
- Can hinder EP studies/ablation

Extrapolate from cardiac pulseless VT/VF versus placebo:

Tachyarrhythmias: Quasi-stable Ventricular Tachycardia

- Consider
  -- Lidocaine gtt
  -- Procaainamide
  - watch for hypotension and prolonged QT

Tachyarrhythmias: Quasi-stable Ventricular Tachycardia

- Get EP involved
- May respond to beta-blockers or calcium channel blockers
- May be amenable to ablation
Tachyarrhythmias

Tachyarrhythmias

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Tachyarrhythmias

1. Electrolytes

Hypokalemia
Hypo-Mg
Hypo-Ca2+
Tachyarrhythmias

1. Electrolytes
   Hypokalemia
   Hypo-Mg2+
   Hypo-Ca2+

2. DRUGS
   www.torsades.org

3. Congenital

Tachyarrhythmias

1. IV magnesium (effective even if normal Mg²⁺ level)
2. Isoproterenol
3. Transvenous pacing
4. Unstable → DC shock

Bradyarrhythmias

+ SYMPATHETIC NERVOUS SYSTEM
− PARA-SYMPATHETIC NERVOUS SYSTEM

Blood Flow
Bradyarrhythmias

+ SYMPATHETIC NERVOUS SYSTEM
- PARA-SYMPATHETIC NERVOUS SYSTEM

Blood Flow
Bradyarrhythmias

+ SYMPATHETIC NERVOUS SYSTEM

− PARA-SYMPATHETIC NERVOUS SYSTEM

Blood Flow

1. Atropine
Bradyarrhythmias

1. Atropine
2. Dopamine
3. Epinephrine
4. Isoproterenol (vasodilating)

Bradyarrhythmias

Beta-blocker
Calcium channel blocker
Glucagon
Calcium

Conduction disease
Anterior MI

1. Atropine
2. Dopamine
3. Epinephrine
4. Isoproterenol
Pt. comes in with multiple, recurrent shocks from his ICD

1. Place external pads
2. Place magnet on chest

1. PUTS DEVICE IN “MAGNET MODE”
2. FOR AN ICD: INHIBITS THERAPY DETECTION
3. FOR A PACEMAKER: INHIBITS SENSING