CARDIOVASCULAR EMERGENCIES IN THE POST ANESTHESIA CARE UNIT
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OBJECTIVES
- Review differential diagnosis and treatment of arrhythmias in PACU
- Review signs and treatment of congestive heart failure in PACU
- Review signs and treatment of coronary ischemia in PACU
- Review differential diagnosis and treatment of hypotension and hypertension in PACU

OUTLINE
- Ventricular arrhythmias
- Atrial arrhythmias
- Bradyarrhythmias
- Congestive heart failure
- Acute coronary syndrome
- Hypotension
- Hypertension
- Final comments
VENTRICULAR ARRHYTHMIAS
- Ventricular tachycardia
- Premature ventricular contractions
- Ventricular fibrillation

VENTRICULAR TACHYCARDIA DIAGNOSIS
- Wide complex
- AV dissociation
- Regular
- Different QRS morphology

VENTRICULAR TACHYCARDIA
VENTRICULAR TACHYCARDIA TREATMENT
- Pulseless: defibrillation and intravenous amiodarone/lidocaine
- Search for causes: electrolytes, hypoxemia, coronary ischemia
- Transfer to ICU and consult Cardiology

PREMATURE VENTRICULAR CONTRACTIONS
- Common in cardiac patients
- Not harbingers of worse arrhythmias
- Search for causes: electrolytes and hypoxemia
- No need for antiarrhythmics

VENTRICULAR FIBRILLATION DIAGNOSIS AND TREATMENT
- Disorganized electrical activity with no pulse
- Call for help and stat CPR
- Defibrillate
- Start iv amiodarone/lidocaine
- Search for causes: electrolytes, hypoxemia, coronary ischemia
- Transfer to ICU and consult Cardiology
VENTRICULAR FIBRILLATION

ATRIAL TACHYCARDIAS
- Sinus tachycardia
- Atrial fibrillation
- Atrial flutter
- Supraventricular tachycardias

SINUS TACHYCARDIA
- A manifestation of an underlying problem
- Search for a cause: dehydration, fever anxiety, hypotension, bleeding, pain, heart failure, pulmonary embolus, coronary ischemia
- Do not treat with antiarrhythmics
- Treat underlying cause
**ATRIAL FIBRILLATION**

- Irregularly irregular
- QRS unchanged
- Rate usually below 150 bpm
- Fibrillation waves instead of p in leads II and V1
- Treatment: Amiodarone, digoxin, beta blockers, cardizem

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**ATRIAL FIBRILLATION**

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**ATRIAL FLUTTER**

- Regular
- Rate usually 150 bpm but sometimes 100 or 75 depending on degree of AV block
- QRS unchanged
- Treatment: amiodarone digoxin beta blockers cardizem
ATRIAL FLUTTER

- Fixed AV relationship
- QRS usually unchanged
- Regular
- Treatment: adenosine, cardizem, beta blockers, digoxin

SUPRAVENTRICULAR TACHYCARDIA

- Fixed AV relationship
- QRS usually unchanged
- Regular
- Treatment: adenosine, cardizem, beta blockers, digoxin
BRADYARRHYTHMIAS

- Different types: asystole, bradycardia, AV block Mobitz I and II complete heart block
- Treatment depends on severity. Temporary pacemaker needed in asystole of more than 3 seconds, bradycardia with rate less than 40 bpm, AV Block Mobitz II and complete heart block.
- Types of temporary pacemaker: external and intravenous
- Treatment: atropine and dopamine intravenously

AV BLOCK

- Normal
- First-Degree AV Block
- Second-Degree AV Block (2:1)
- Third-Degree AV Block
CONGESTIVE HEART FAILURE

- Definition: elevated filling pressure
- Symptoms: shortness of breath, orthopnea, edema, palpitations
- Signs: jugular venous distention, S3, crackles, edema.
- Diagnosis: CXR, Swan Ganz, BNP, echocardiogram, response to treatment
- Types: systolic and diastolic
CONGESTIVE HEART FAILURE TREATMENT

- Diuretics: lasix, torsemide, bumetanide
- ACE inhibitors and Angiotensin receptor blockers
- Beta blockers
- Digoxin
- Inotropic agents: Primacor and Dobutamine

ACUTE CORONARY SYNDROME DIAGNOSIS

- Spectrum: angina, non ST elevation MI, ST elevation MI
- Angina: chest pain of cardiac origin. May or may not radiate to arm, neck, jaw or back. May be associated with shortness of breath, diaphoresis and nausea
- More common in patients with risk factors: hypertension, hyperlipidemia, diabetes mellitus, peripheral vascular disease
- Diagnosis: clinical picture, ekg and cardiac enzymes (troponin and CPKMB)
ACUTE CORONARY SYNDROME TREATMENT

- Morphine, oxygen, nitroglycerin and aspirin; if not contraindicated
- Anticoagulation if not contraindicated
- For ST elevation MI: an emergency catheterization is indicated with the idea of implanting a coronary stent within 90 minutes
- Transfer to ICU and Cardiology consult

ST ELEVATION MI
HYPOTENSION DIFFERENTIAL DIAGNOSIS

- Bleeding: Check H/H and look for sources
- Volume depletion: dry tongue, skin changes, reduced urine output, concentrated urine and history of reduced water intake before surgery
- Medication effects: calcium channel blocker, beta blockers, antihypertensives
- Tension pneumothorax: stat CXR
- Cardiac tamponade: stat echocardiogram
- Vagal effect

TENSION PNEUMOTHORAX

CARDIAC TAMPONADE
HYPOTENSION TREATMENT
- Intravenous fluids: Normal saline or lactated Ringer’s solution
- Albumin intravenously
- Blood transfusions if bleeding
- Trendelenburg position
- Vasopressors: dopamine, levophed, neosynephrine
- Intraaortic balloon pump for congestive heart failure

HYPERTENSION DIAGNOSIS
- Treat pain and anxiety
- Check blood pressure in both arms
- Patient with chronic hypertension will need reinitiation of antihypertensives
- Be aware of rare causes: pheochromocytoma, renal crisis in scleroderma, refractory hypertension in dialysis patients

HYPERTENSION TREATMENT
- Intravenous labetalol
- Intravenous cardene
- Intravenous esmolol
- Intravenous nitroglycerin
- Topical nitroglycerin and clonidine
FINAL COMMENTS

- Treat patients not numbers
- Investigate the underlying cause of the problem
- When in doubt double check or ask for help
- A good history and physical exam will give you the information
- Be prepared

QUESTION LIKE HOUSE ACT LIKE FLORENCE