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CARDIAC MEDICATIONS

Classifications of Medications

- Cardiac Glycosides
- Antianginal
- Antidysrhythmics
- Angiotensin-Converting Enzyme (ACE) Inhibitors
- Diuretics
- Anticoagulants
- Analgesics

Cardiac Glycosides/Cardiotonics

- Used to increase the efficiency of the heart and improve the contraction of the heart muscle
- Slows the heart rate by decreasing the conduction through the SA and AV node (negative inotropic effect) and increases the force of contraction of the cardiac muscle (positive inotropic effect)
- Treats CHF or heart failure, A-fib, A flutter, PAT

Cardiac Glycosides/Cardiotonics, cont.

- Digoxin (Lanoxin) most common drug used- given as a loading dose and followed by maintenance dose
 - Digoxin toxicity may occur (s/s – nausea, muscle weakness, dysrhythmias) digoxin level greater than 2
 - Digibind may be given
 - Count apical pulse before giving. If less than 60-hold dose and contact doctor
 - Monitor K levels
 - Teach patient to check pulse before giving
- Primacor and Inocor – used if no response to digoxin, diuretics, or vasodilators

Antianginal Drugs

- Calcium channel blockers
- Vasodilators
- Beta-adrenergic blockers

Calcium Channel Blockers

- Cardiac and vascular smooth muscles contraction depends upon movement of the extracellular calcium across the walls of the cell.
- Calcium channel blockers inhibit the movement of calcium across the cellular membranes.
- Examples:
 - Norvasc, diltiazem (Cardizem), nifedipine (Procardia, Adalat), verapamil (Calan),
 - Nursing interventions- Vitals, EKG, watch for irregular HR, dizziness, edema
- The effects of these drugs include:
 - Dilation of coronary arteries
 - Dilation of peripheral arteries

Vasodilators

- Relaxes smooth muscle layer of the blood vessels, which allows for dilation of the vessel and more blood flow
- Decreases preload, afterload, and myocardial O₂ consumption
- Assessment: chest pain, vitals, headache, dizziness, vertigo
- Examples:
 - Nitrates: Nitroglycerin, Isordil (isosorbide), Nitro-Bid, Imdur

Beta Adrenergic Blockers

- Decrease activity of the sympathetic nervous system on certain tissue
- Decrease the excitability of the heart, decrease cardiac workload, and O₂ consumption, and provide stabilization of dysrhythmias
- Used for hypertension, and certain cardiac arrhythmias

Beta Blockers, cont.

- Examples: Tenormin, Betapace, Brevibloc, Corgard, Lopressor, Toprol-XL, Inderal
- Nursing Interventions
 - Vitals
 - Monitor weight
 - Teach patient to get up slowly and avoid hot showers, not to d/c drug without doctors orders
 - Inderal can cause bronchial constriction

Antidysrhythmics /Antiarrhythmics

- Used to prevent and treat cardiac arrhythmias, control tachycardia, and angina
 - PVC'S. PAT, VT AF, PAC'S
- Work by:
 - Slowing the rate of the impulse of conduction
 - Depressing automaticity
 - Increases resistance to premature stimulation

4 Classes of Antidysrhythmics

- Class I - membrane stabilizing effect
 - EX. Quinidine, procainamide, Norpace, Lidocaine, Tambocor, Tonocard, and Rythmol
 - Uses – V-Tach, PAT/flutter, PAC's
 - Adverse effects – dry mouth, dizziness, headache, faintness, blurred vision, hypotension, N/V,
- Class II – decrease myocardial tissue response to stimulus from epinephrine/norepinephrine, includes the beta blockers
 - EX. Brevibloc, Inderal
 - Uses – ventricular arrhythmias, hypertension, angina, MI
 - Adverse effects – dizziness, H/A, hypotension, bradycardia, weakness, depression, angina

4 Classes of Antidysrhythmics, cont.

- Class III – prolongs repolarization and refractory period and increases refractory period for V-Fib
 - EX. Bretylol, Amiodarone, Corvert and Tikosyn
 - Uses – ventricular arrhythmias, conversion of A-Fib to NSR
 - Adverse effects – H/A, fever, malaise, hypotension, chest pain, bradycardia, CHF, N/V
- Class IV – calcium channel blockers which inhibit the movement of calcium across the cell membrane
 - EX verapamil, Diltiazem, felodipine, nifedipine
 - Uses – SVT, rapid ventricular rate in A-Fib /Flutter
 - Adverse effects – constipation, dizziness, fatigue, N/V, H/A, peripheral edema, rash, hypotension, bradycardia, AV block

ACE Inhibitors (Angiotensin-Converting Enzyme Inhibitors)

- Treats hypertension, CHF, used to treat post MI
- Work to increase the blood flow to the renal system
- Block aldosterone which prevents sodium and H₂O retention
- Lower B/P and blood volume
- Reduces afterload

ACE Inhibitors, cont.

- EX: captopril, Vasotec, Monopril, Prinivil, Accupril,
- Adverse effects: angina, tachycardia, CHF, hypotension, rash, gastric ulcers, liver injury, renal insufficiency, urinary frequency, neutropenia, hemolytic anemias

Analgesics

- Used for chest pain
- Usually titrated until relief is obtained
- Common drugs used:
 - Nitroglycerin
 - vasodilator
 - Morphine sulfate – used when no relief obtained from NTG
 - Relieves pain, reduces anxiety and decreases workload of the heart
 - Usually given IV
 - If patient cannot take MS, may use Demerol, but is not as effective

Diuretics

- Increases the secretion of H₂O, wastes and electrolytes from the body
- Used in heart failure, fluid overload, endocrine diseases, and kidney and liver disease
- Work in the tubules of the kidney nephrons
- Types
 - Loop – Bumex, Lasix, Edecrin, Demadex
 - Osmotic - mannitol
 - Potassium-sparing – Aldactone, Dyrenium
 - Thiazides – Diuril, HCTZ, HydroDIURIL, Lozol, Zaroxolyn
 - Carbonic anhydrase inhibitors – no cardiac drugs, Diamox used in glaucoma or in ocular edema with CHF

Diuretics, cont.

- Adverse effects
 - Hypotension
 - Electrolyte imbalances
 - Hyperkalemia from potassium sparing diuretics
 - Most likely with inadequate intake of fluid, elderly, diabetics, renal disease
 - Nausea and vomiting with loop diuretics

Anticoagulates

- Used to prevent the formation and extension of a thrombus
 - Used in A-Fib
 - Prevention of deep vein thrombus
 - Post MI to prevent embolization

Anticoagulates, cont.

- Coumadin
 - Used for long term therapy for DVT's and A-Fib, PE, post MI, post valve replacement
 - Monitor PT and INR
 - Watch for drug interactions (ASA, NSAIDS, beta blockers)
- Heparin
 - used for acute therapy – PE, venous thrombosis, A-Fib, some stroke patients, coronary occlusion
 - Monitor PTT
 - Watch for drug interactions
 - Protamine sulfate on hand
- Low molecular weight heparin
 - Fragmin, Lovenox, Arixtra
 - Usually not followed with lab work as closely as the others

Thrombolytic Drugs

- Used to dissolve blood clots and reopen blood vessels
- Must be watched closely for bleeding
- EX: Activase (TPA), Retrovase, Betapace, Streptokinase
 - More affective if used in the 1st 6 hours after an MI
 - Can be given IV or directly into the coronary arteries
 - Works on fibrin in the clotting mechanism
- ReoPro
 - Works on the platelet component
 - May be given IV during a PTCA may be used in conjunction with TPA
 - Used with heparin and ASA with unstable angina or MI

Antiplatelet Agents

- Used after an MI or stroke
 - ASA
 - Plavix
 - Persantine
 - Ticlid
 - ReoPro

Antihyperlipidemics

- Used to treat increased cholesterol and triglyceride
- Used when diet, exercise and weight loss has failed
- May hear them referred to as “statins”
- EX: Lipitor, Zocor, Lescol, Lopid, Mevacor, Pravachol, Crestor, Niacin, Questran

Emergency Drugs

- **Atropine** – increases heart rate and cardiac output, used in bradycardia, and asystole
- **Dopamine** – increases cardiac output B/P and renal blood flow (in lower doses), used in shock from MI, open heart surgery, renal failure and CHF
- **Isuprel** – increased cardiac output by increasing contractility, used as a cardiac stimulant
- **Nipride** – vasodilator, decreases preload and afterload
- **Sodium bicarb** – used to treat metabolic acidosis
- **Calcium chloride** – used for muscle contraction and cardiac rhythm problems

Emergency Drugs, cont.

- **Inotropic Medications**

- **Inacor** – vasodilator, increases cardiac contractility and blood flow to the coronary arteries, decreases preload and afterload, and is used to treat CHF
- **Primacor** – increases cardiac contractility and cardiac output, decreases preload and afterload

Emergency Drugs, cont.

- Catecholamines

- **Dobutamine** (Dobutrex) – increases contractility of the heart, used in CHF and post cardiac surgery
- **Epinephrine** – increases HR, B/P and cardiac output, strengthens myocardial contraction
- **Levophed** – vasoconstrictor, stimulates muscle contraction and flow to the coronary arteries