



Pharmacology Case Presentation

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Patient Scenario & Medical History

Raymond Williams 65 year old male came to the emergency room complaining of shortness of breath for the past 2 days especially at night, chest pain, fatigue, Pain by his ankles, palpitations and said he feels like he drowning and never felt like this before.

Medical History : Mr Williams has a medical history of Hypertension, high cholesterol , MI, Coronary artery disease , Smoking 1 pack per day X 15 years

BMI 39

Prescribed - Atorvastatin (Lipitor) 15 mg PO, and Losartan (Cozaar) 140 mcg PO.

Assessment and Vital signs

The nurse focused assessment indicates that Mr. Williams has crackles bilateral lungs auscultation, Normal S1 and S2 heart sounds, Active Bowel sounds all 4 Quadrant, Neuro assessment pt is light headed and dizzy but is alert and oriented x4. Extremities presented pitting edema, weak pulse in the lower extremities 1+

Vital signs : BP : 160/ 99

HR: 135

RR: 27

Pulse ox- 88

Pain level : Chest pain rate 8 out of 10

Patient alert and oriented x4

EKG results - Sinus Tachycardia

Physicians Orders

Upon this admission Mr. Williams is newly diagnosed with Heart failure.

The physician Orders : Lab Work : BNP, Lipid Panel, and CBC

Propranolol To lower his Blood pressure (HTN) and HR

IV Furosemide In the morning : To remove the fluids in his lower leg, Heart failure. Keep Pt. on Continuous ECG monitor. Monitor potassium levels.

Nitroglycerin : Used to treat angina

Atorvastatin: Keep lowering cholesterol levels on admissions.

IV Nitroprusside : For Heart Failure.

- Monitor Vital signs every 4 hours
- Daily weights
- Limit FLuids to 1300 cc per day
- Diet : Low fat, sodium restricted Diet
- Monitor Intake and Output

Update

Mr. Williams was in the hospitals for 10 days. Upon admission pt legs were swollen (edema) and weighed 300 lbs after receiving diuretics pt weight dropped down to 280. Lost 20 pounds of water weight. He is able to breathe better, overall feel better, and Reduced swelling in the pt lower extremities. . His BNP levels were very elevated confirmed heart failure. After receiving meds Mr. Williams Bp and heart rate decreased within normal range. When taking diuretics his potassium levels drop to 3.0 gave pt IV potassium and encourage to eat bananas.

Mr. Williams discharge packet include: Pt education how to manage Heart failure, The importance of weighing yourself everyday. Being on a healthy diet and limit sodium intake and fluids. Stop smoking, implementing moderate exercise techniques for weight loss. Continued meds: Atorvastatin, continue to take losartan at home, tablet lasix take in the morning. Educate the patient will be urinating often to remove fluids. Lastly, A 2 week follow up with Primary Physician, Cardiologist, and Nutritionist.

Propranolol (*Inderal*)

Pharmacologic classifications: Beta-Blocker

Examples of drugs: betaxolol (Betoptic), levobetaxolol (Betagen), metipranolol (Optipranolol), timolol (Betimol, Timoptic)

Actions: Nonselective Beta-blocker with negative inotropic, chronotropic, dromotropic properties.

Indications: management of HTN, angina, arrhythmias, hypertrophic cardiomyopathy, thyrotoxicosis, essential tremors, pheochromocytoma.

Pharmacokinetics:

- PO, IV
- Well absorbed but undergoes extensive first-pass hepatic metabolism
- Moderately penetrates CNS, crosses placenta and enters breast milk.
- Do not crush, break or chew or open extrel cap.

Propranolol (*Inderal*)

Contraindications:

- DO NOT abruptly discontinue.
- Hypersensitivity, pregnancy, breast feeding, children, diabetes mellitus, hyperthyroidism, COPD, renal/hepatic disease, PVD, cardiac failure, Raynaud's disease, bronchospastic disease.

Side Effects:

- CNS: depression, hallucinations, dizziness, fatigue, paresthesias, bizzare dreams and disorientation.
- CV: bradycardia, hypotension, heart failure, palpitations, AV block, peripheral vascular insufficiency, vasodilation, cold extremities, pulmonary edema, dysrhythmias.
- EENT: sore throat, laryngospasm. Blurred vision, dry eyes.
- INTEG: Rash, pruritus, fever, Stevens-johnson syndrome, toxic epidermal necrolysis.
- META: hyperglycemia, hypoglycemia.
- RESP: Dyspnea, respiratory dysfunction, bronchospasm, cough.

Nursing Considerations:

- DO NOT abruptly withdraw. Taper.

Patient Education:

- Teach not to discontinue abruptly and to take med at same time of the day.
- Teach how to taper off.
- Avoid OTC unless approved by physician.
- Monitor glucose.
- Change positions slowly.
- Cold sensitivity occurs.
- Teach how to take BP and pulse properly and the correct ranges and contraindications of when to contact PCP.

Furosemide (*Lasix*)

Pharmacologic Classification: Loop Diuretic

Example of drugs: Bumetanide (Bumex), Ethacrynic Acid (Edecrin) and Torsemide (Soaanz).

Actions: It works by increasing the action of the kidneys to produce urine. Dehydration is common, and can affect electrolytes causing hypomagnesemia, hypocalcemia, hyponatremia.

Pharmacokinetics:

- Given PO, IV infusion or IV injection

- Peak effect occurs from the GI tract within 1 to 1 ½ hours PO, and 10 to 30 minutes IV.

- Excreted through the kidneys.

- Decreases sodium and chloride from the tubule

Furosemide (*Lasix*)

Contraindications: Contraindicated for patients who have hypokalemia, hyponatremia, hypotension. Also, contraindicated when there is hypovolemia.

Side Effects: fever, ringing of ears, loss of hearing, rash, hives, itching, dysphagia, yellowing of the eyes.

Nursing considerations: Monitor daily weight, intake and output, assess for edema, auscultate lung sounds, check skin turgor, and assess mucous membranes. Keep patient on continuous EKG monitoring.

Patient education: Reinforce patient teaching on taking furosemide as directed. Teach patient to switch positions slowly, encourage consumption of bananas and cantaloupe if hypokalemic. If patient misses dose, they must take it as soon as they remember.

Nitroglycerin (*Nitrojet, Nitronal*)

Pharmacological Classifications: antianginal, coronary vasodilator

Drug examples: Dipyridamole, Adenosine

Actions: decreases the preload and afterload responsible for left ventricle diastolic pressure; dilates the coronary arteries to improve the blood flow through coronary vasculature

Indications: Stable angina pectoris, HF, acute MI, controlled hypotension during surgery

- Unlabeled uses: pulmonary hypertension, hemorrhoids, retained placenta

Pharmacokinetics: PO, Transdermal, IV, Topical, Rectal

Contraindications: hypersensitivity to product or nitrates, severe anemia, increased intracranial pressure, glaucoma, cardiac tamponade

Nitroglycerin (*Nitrojet, Nitronal*)

Side effects:

- Headache
- Flushing
- Hypotension
- Tachycardia
- **Collapse**
- Palpitations
- Nausea
- Sweating

Nursing Considerations:

- Assess patient for chest pain, monitor B/P and pulses before and after Rx
- If pregnant, only use Rx if needed
- Evaluate therapeutic response

Patient Education:

- Teach patient how to take Rx (sublingual)
- Storage of Rx, which should remain in original container and be changed every 6 months
- Avoid alcohol
- Avoid hazardous activities when feeling dizzy
- Slowly change your positions to avoid fainting
- If you take 3 tablets in 15 minutes and pain is not relieved seek immediate medical attention

Nitroprusside (*Nitropress*)

nye-troe-pruss'ide

Pharmacological Classifications: antihypertensive, vasodilator

Drug examples: Diazoxide, Prazosin

Actions: relaxes the the arteriolar venous smooth muscle which causes a reduction in cardiac preload and afterload

Indications: severe hypertension, decrease bleeding during surgery, acute HF

- Unlabeled: postoperative hypertension, mitral regurgitation

Pharmacokinetics: IV infusion

Contraindications: hypersensitivity, hypothyroidism, acute HF, toxic amblyopia

Nitroprusside (*Nitropress*)

nye-troe-pruss'ide

Side effects:

- Dizziness
- ECG changes
- Hypotension
- Nausea
- **Cyanide**
- **thiocyanate toxicity**

Nursing Considerations:

- Assess patient's electrolytes, renal and hepatic studies
- Evaluate patient's therapeutic response

Patient Education:

- Patient should report any headaches, dizziness, blurred vision, hearing loss, dyspnea or pain at IV site

Atorvastatin (Lipitor)

uh-tor-vuh-sta-tin

Pharmacological classifications: HMG-CoA reductase inhibitors/statins

Drug examples: Pravastatin (Pravachol), Simvastatin (Zocor), Fluvastatin (Lescol XL)

Actions: Atorvastatin and statins as a whole work to reduce the amount of cholesterol in the blood, this is done by blocking an enzyme that is needed by the body to make cholesterol

Indications: Used in tandem with diet, weight loss, and exercise to reduce the risk

Contraindications:

- Atorvastatin should not be prescribed to patients with liver problems
- Women who are pregnant or breastfeeding should not take atorvastatin
- Contraindicated in patients with hypersensitivity to statins or acute liver disease

Atorvastatin (Lipitor)

uh-tor-vuh-sta-tin

Side effects:

- Joint pain
- Insomnia
- Urinary tract infection
- Nausea and vomiting
- Loss of appetite
- Muscle and limb pain
- Muscle inflammation

Patient education:

- Atorvastatin is taken orally as a tablet; once or twice a day with or without food
- Atorvastatin should be taken around the same time everyday
- Do not take any more or less than what is prescribed by the doctor
- Patients can start on a low dose and gradually increase the dose, not more than once every 2 to 4 weeks

Nitroglycerin Pimonic

https://www.picmonic.com/pathways/nursing/courses/standard/pharmacological-nursing-324/antihypertensives-1471/nitroglycerin_1528

References

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