PT211 In-Class Case: Cardiovascular Agents/Seizure Disorders Combined Case
March 28, 2016

You are on your inpatient PT clinical when you meet patient LT:

CC: LT is a 44 year old female with a past medical history of familial hypercholesterolemia and depression. She arrived at the emergency department today with a suspected myocardial infarction.

HPI: LT's partner rushed her to UCSF Medical Center after LT developed pain in her jaw and neck, and SOB while jogging outside. LT has never felt this sensation before. She also complained of pain in her upper back, dyspnea, nausea, weakness, and fatigue. MA originally attributed her symptoms to anxiety that she's been having lately, but her partner eventually convinced her to come to the hospital to rule out any other causes.

PMH: Familial hypercholesterolemia x 40 years
HTN x 20 years

SH: Employed as a personal trainer and fitness instructor, lives with partner and two children in San Francisco. Denies EtOH, tobacco, or IVDU.
Allergies: penicillin (rash), lisinopril (cough)

Current Medications: losartan 50mg PO daily
ezetimibe 10mg PO daily
Caduet 10 mg/40 mg PO daily
acetaminophen OTC 325 mg PO Q4-6hrs PRN headache
multivitamin 1 tab PO daily

PE: Tired appearing female. **EKG:** Consistent with STEMI

VS: **BP** 164/95 **HR** 108 **T** 37.6 C **Wt** 63 kg **Ht** 5'5" **RR** 16
O2 90%RA **Pain** 7/10

Labs:						
	Na^+	140	(136-146 mEq/L)	AST	18	(12-37 IU/L)
	K^+	4.8	(3.5-5.0 mEq/L)	ALT	7	(3-25 IU/L)
	Cl^-	99	(98-106 mEq/L)	TChol	300	(<200 mg/dL)
	HCO_3	26	(23-29 mEq/L)	LDL	200	(<100 mg/dL)
	Cr	1.1	(0.5-1.2 mg/dL)	HDL	70	(>39 mg/dL)
	BUN	12	(7-18 mg/dL)	Glu	140	(70-120 mg/dL)
	Troponin 2.98 ng/mL (<0.01 ng/mL)					

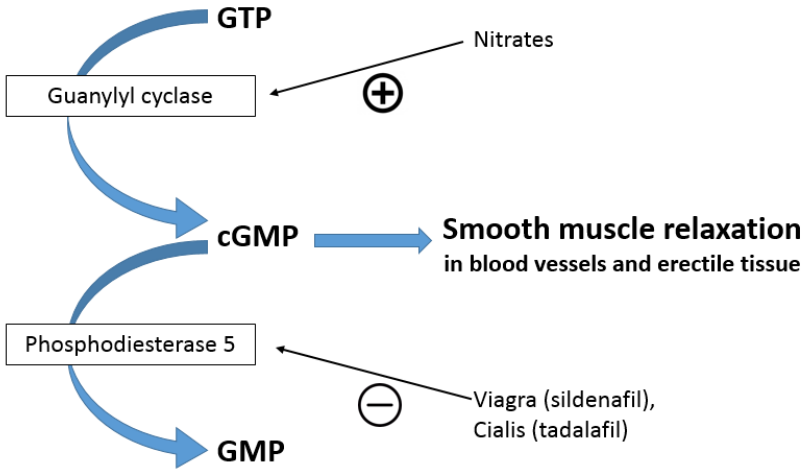
In the ED, LT's troponin levels are elevated and her EKG shows changes consistent with NSTEMI. Therefore, myocardial infarction is suspected.

LT is asked to chew an aspirin 325 mg tablet, placed on oxygen NC 2L, and given the following:
nitroglycerin 0.4 mg SL q5 min x 3 doses
clopidogrel 75mg 1 tab po
atorvastatin 80 mg 1 tab po daily
morphine 8 mg IV x1 PRN pain unrelieved by nitroglycerin
A) Give the generic/brand name, drug class, and likely indication of MA's medications.

Generic Name	Brand Name	Class	Indication
losartan			
ezetimibe			
	Caduet®		
acetaminophen			
nitroglycerin			
morphine	*No brand name for IV formulation (often used as generic)*		

LT's partner notices that there is another patient in the ED waiting room who also looks like he may be experiencing a myocardial infarction. In fact, a medical student is administering very similar medications to the other patient. However, before administering the sublingual nitroglycerin, the medical intern asks: "This is a personal question, but I need to know the answer before I give you this next medication. Have you used any medications for erectile dysfunction, such as Viagra or Cialis, during the past 48 hours?"

Nitrates cause smooth muscle relaxation in the heart by stimulating the enzyme guanylyl cyclase, which causes an increase in the second messenger cGMP, whereas Viagra (sildenafil) and Cialis (tadalafil) are both phosphodiesterase-5 (PDE5) inhibitors that cause smooth muscle relaxation in erectile tissue by inhibiting the breakdown of cGMP.



B) Based on the diagram above, why would checking for use of PDE5 inhibitors be an important consideration before administering nitroglycerin?

Patient LT is taken to the cardiac OR for CABG. Her surgery is successful and she is recovering on the cardiac floor. She is started on unfractionated heparin.

C) What are some unique adverse effects for unfractionated heparin?

D) Patient is currently being managed medically managed with IV unfractionated heparin to prevent clot formation. What are some medication-related precautions to consider during physical therapy treatment?

During the course of her hospitalization, LT begins experiencing transient atrial fibrillation.

The decision is made to discharge LT. Her IV heparin is stopped, she is prescribed sublingual nitroglycerin prn chest pain and dabigatran for her atrial fibrillation, her Caduet dose is increased to 10/80mg, and she is re-started on her PTA (prior to admit) medications.

E) Six weeks later you are on your outpatient cardiac rehabilitation clinical when you see a familiar face, patient LT. LT complains of weakness and soreness in her biceps and quadriceps that doesn't go away even at rest. Her functional abilities also suddenly declined so that she can now only walk with flexed hips and knees for less than 6 meters (20 feet) and is unable to climb steps. What should you do next?

F) At her next outpatient cardiac rehabilitation appointment, patient LT expresses her gratitude for your expertise and help in resolving her muscle symptoms. Towards the end of her appointment she casually mentions that she has not been taking her dabigatran because she believes she is taking too many medications. She is a very fit woman, exercises all the time, and besides she has been drinking these great smoothies that her favorite natural foods store advertises as good for the blood. How do you respond to LT's comment?

G) You are back on inpatient for your third clinical, when a patient recognizes you, it's patient LT. She is back in the hospital after experiencing a thromboembolic stroke. LT's physician states that this stroke might have been prevented had LT been compliant with her dabigatran. Which of the medications from the pre-lecture slides could potentially be used emergently to break up a clot to treat patient LT's stroke? How is its mechanism of action different from the anticoagulant dabigatran?

LT needs further anticoagulation treatment after her stroke. Due to her non-compliance on dabigatran and her desire for once daily medication dosing, LT is initiated on warfarin. Her medication list upon discharge from this hospitalization is as follows:

losartan 50mg PO daily
ezetimibe 10mg PO daily
Caduet® 10 mg/80 mg PO daily
warfarin 5mg PO daily
SL NTG 0.4mg PO PRN chest pain
acetaminophen OTC 325 mg PO Q4-6hrs PRN headache
multivitamin 1 tab PO daily

Seizure Disorder

Three months later, LT is with you at a physical therapy session. Halfway into the session, she complains of a strange taste in her mouth. Shortly after, LT collapses and her limbs start jerking. You suspect she may be having a seizure.
H) How would you manage the suspected seizure?

The jerking stops but before the patient recovers consciousness, she appears to have another seizure, more severe than the last.
I) What emergent action should you take?

Being the caring physical therapy student that you are, you request to transport with the patient to the ED and your preceptor agrees.
J) What medications do you anticipate LT will be treated with to abort the seizure?

Six months later you see LT at a subsequent physical therapy appointment. She tells you she is being evaluated for seizure disorder resulting from the stroke since she has had two seizures since the status epilepticus incident. Before her appointment with her provider, she asks you about seizure medications.
K) List some common seizure medications and common *PT-related* side effects associated with each to discuss with LT.

Generic Name	Brand Name	Side Effects

At subsequent appointment, LT mentions that she was prescribed carbamazepine for complex partial seizures. She mentions that, while happy she has not had any seizures since initiating the medication, she has experienced double vision that has impaired her ability to engage in certain activities she enjoys.
L) LT asks you if there were other options that could treat her diagnosed seizure type that do not have this side effect.

AEDs Indicated for Complex Partial Seizures	Diplopia?
	Y / N
	Y / N
	Y / N
	Y / N
	Y / N
	Y / N

M) What other concerns might you have regarding this medication given LT's prior medical history? What other medications indicated to treat LT's seizure type would not be ideal for similar reasons?
Concerns regarding medication selection:

Medication Indicated for Seizure Type	Justification for Concern

LT thanks you for your recommendation and tells you she will discuss that with her prescriber right away. Moving through the rest of the session, LT mentions that she sits for her nephew over the weekends who is also epileptic with absence-type seizures. She explains that she was a little apprehensive when he was dropped off this morning because he doesn't have any medication with him but was relieved when she realized she could just give him some of her carbamazepine to get him through the weekend.

N) What would you tell LT regarding her plans to treat her nephew with the AED she uses for her seizure disorder?
