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NSTEMI, HTN Crises, UTI & Bacteremia Cases

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All encounters happened on the same day on 6/15/2022

Transfer Note from Outside Hospital

Hospital Transfer Diagnosis: Transfer to catheterization lab facility for ACS management

CC/HPI: 66 years old female presented to West hospital with chest pain that started this morning around 6 AM. Patient was preparing breakfast when she felt sudden chest pain. Her husband who accompanied her immediately called 911. Vitals on arrival was BP 202/124, P 112, RR 21, T 38.1°C, SpO_2 99% on room air. Patient was found febrile as well. Patient reported that she has been experiencing burning sensation during urination for a week and had flank pain 3 days ago. Her PCP ordered her to get cultures and prescribed her Bactrim.

PMH: HTN, T2DM, HLD, atrial fibrillation, chronic kidney disease stage 3, ischemic stroke in 2017, recurrent UTIs

Hospital diagnostic studies summary: Troponin 1: 2.23 ng/mL, Troponin 2: 3.01 ng/mL ECG: T wave inversion noted, WBC 21,000, urinalysis show positive leukocyte esterase with elevated WBC, SCr 2.1

Hospital Course: Patient was initiated on heparin drip and received a dose of labetalol and nitroglycerin sublingual while awaiting transport. Antibiotics was started for possible sepsis secondary to urinary source.

Medications initiated:

- Heparin 4,000 units IV bolus followed by 900 units/hr
- Labetalol 20 mg IV PRN (1 dose received)
- Nitroglycerin sublingual 0.4 mg SL q5min PRN (3 doses received)
- Vancomycin 1,500 mg IV q24h (1 dose received)
- Cefepime 1g IV q12h (1 dose received)

Discharge Instructions: Transfer to Pacific Hospital for percutaneous coronary intervention.

Admission H&P

CC: Outside hospital transfer for PCI 2/2 ACS and sepsis

HPI: Patient Kajri Singh is a 66-year-old female who was transferred from West hospital for MI. At West hospital, patient presented with chest pain. Chest pain started this morning when she was preparing breakfast. She described the pain as pressure-like,10/10 pain, and felt worse on exertion. On presentation, heparin drip was found still running. She was started on antibiotics at outside hospital for sepsis possibly secondary to urinary source. Patient reported that she has been having recurrent UTIs in the past 2 years (about 1-2 times/year), which has been resolved with Bactrim each time.

PMH: HTN, HLD, T2DM, paroxysmal atrial fibrillation, chronic kidney disease stage 4, ischemic stroke in 2017, recurrent UTIs

Social History: Denies alcohol or tobacco use. Lives with husband and retired.

Home medications:
Aspirin 81 mg PO daily
Atorvastatin 80 mg PO daily
Amlodipine 10 mg PO daily
Metformin 1000 mg PO twice daily

Dapagliflozin 10 mg PO daily
Liraglutide 1.8 mg SC once daily
Metoprolol 25 mg PO twice daily

Vitals on arrival:
BP: 180/112 RR: 19 Weight: 165 lb
HR: 118 Temp: 38.6 C Height: 64 inch

Physical Exam:
General: physical distress due to pain 7/10, A&Ox3
HEENT: normocephalic, atraumatic, no scleral icterus, or conjunctival injection
Neck: supple, no rigidity, no lymphadenopathy, bruits, or thyromegaly
Lungs: clear to auscultation bilaterally, no crackles or e
CV: RRR, normal S1/S2, no gallops, no jugular venous distention
GI: soft, nontender, normoactive bowel sounds, no rebound, guarding, or masses
GU: costovertebral angle tenderness (+)
Extremity: no cyanosis, clubbing, or distal pitting edema
Skin: warm and dry, no ulcerations
Neuro: non-focal

Assessment/Plan:
1. ACS: Cardiac work-up confirmed NSTEMI. Continue heparin infusion per protocol (rate on admission is at 900 units/hr) and consult cardiology for cath.
2. Hypertensive emergency: not controlled and need antihypertensive agents
3. UTI/Sepsis: Continue vancomycin and cefepime. Will follow-up outpatient cultures.
4. T2DM: Glucose elevated. start insulin dosing per pharmacy
5. Acute on chronic kidney disease: AKI possibly due to ACS setting. Baseline SCr~1.5. Continue to monitor.
6. Atrial fibrillation: continue home medications
7. HLD: continue home medications

Imaging

ECG: Rate 123**,** PR 123**,** QRSD 81**,** QT 457**,** QTc 489. T wave inversion in leads II, III, and aVL.
Echocardiogram: Ejection fraction 65%; no wall motion abnormalities

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Outpatient Culture Report

Urine Culture Colony count: >100,000 colonies/mL
Microorganism found: *Escherichia coli* *CTX-M gene detected*

Antibiotics	**Susceptibility**	**MIC**
Amikacin	S	<2
Ampicillin	R	>32
Ampicillin/Sulbactam	I	16
Cefazolin	I	4
Cefepime	I	6

Ceftriaxone	R	>16
Ciprofloxacin	R	>16
Ertapenem	S	0.5
Nitrofurantoin	I	16
Piperacillin/tazobactam	I	8
Trimethoprim/Sulfamethoxazole	R	>20

Blood cultures x2: grew *Escherichia coli* (susceptibility report pending)

Cardiology Consult Note

Reason for Consultation: NSTEMI

Chief Complaint: Chest pain

HPI: 66 years old female presented with chest pain and transferred from outside hospital for PCI. Per outside hospital records, troponins elevated and ECG abnormalities were noted. Patient is high risk given medical histories of type 2 diabetes, uncontrolled hypertension, CKD stage 3, atrial fibrillation, and history of ischemic stroke. Cardiology consult requested for further evaluation. At the times of my evaluation, the patient was sitting in his bed with improved chest pain. All other labs are reviewed in details. Currently denies alcohol, illicit drug, or tobacco use.

Cardiology Assessment/Plan:

1. ACS: ECG and lab work-up confirmed NSTEMI. Plan for PCI tomorrow AM. NPO starting tonight. Optimize medication management prior to procedure.
2. Hypertensive crises: significantly elevated BP. Need better control prior to PCI.
3. Atrial fibrillation: no rhythm indicating atrial fibrillation. Continue home medication.
4. History of stroke: continue home regimen.
5. DM/HTN/HLD: Continue per the primary team

Thank you for the consult request. We will continue to follow patient.

Summary of Labs/Vitals/Cultures/Glucose/Inpatient Medications:
Actual BW: 75 kg
IBW: 54.7 kg (BMI 28.3)
Baseline SCr ~1.5
Baseline CrCl 31 (IBW) or CrCl 42 (ABW)

Labs

CBC		**Others**	
WBC (cell/ml)	15,600	A1C (%)	10.4
Hgb (g/dl)	11.6	Troponin 1 (ng/ml)	6.57
Hct (%)	34.7	Troponin 2 (30 min later)	6.89
Plt	324,000	BNP (pg/ml)	121
Coagulation		**Lipid panel**	
PT (s)	12	TC (mg/dl)	201
INR	1.1	HDL (mg/dl)	38
aPTT (s)	33	LDL (mg/dl)	153

Anti-Xa (IU/ml)	0.18	TG (mg/dl)	117
CMP		**Urinalysis**	
Na (mEq/l)	137	Color	Yellow
K (mEq/l)	5	Clarity/turbidity	Cloudy
Cl (mEq/l)	100	pH	6
CO2 (mEq/l)	22	Specific gravity	1.013
Glu (mg/dl)	189	Glucose (mg/dl)	Negative
BUN (mg/dl)	30.7	Ketones	Negative
SCr (mg/dl)	2.2	Nitrites	Negative
**CrCl use IBW (ml/min)	21	Leukocyte esterase	Large
**CrCl use ABW (ml/min)	27	Blood (cells)	+1
Tbili (mg/dl)	0.3	WBC (cells/hpf)	170
ALT (IU/l)	13	Bacteria	Large
AST (IU/l)	17	Yeast	Few
Alkphos (IU/l)	92		

**CrCl not provided, students have to calculate.

Vitals

DATE	TEMPERATURE	PULSE	RESPIRATION	BLOOD PRESSURE	PULSE OXIMETRY
06/16/2022 14:55	38.2 C	121	14	192/110	99 %
06/16/2022 11:15	38.6 C	118	19	180/112	98 %

Scheduled Inpatient Medications:
Heparin 900 unit/hr IV infusion (has been ongoing since outside hospital)
Insulin Sliding Scale (received 1 units @11:20 AM for POCT BG 192 and 2 units @3 PM for POCT BG 210)
Recent vaccines:

- Flu (10/29/2021)
- COVID Moderna (09/24/2021, 10/29/2021)

Student Instructions

1. Please provide complete SOAP for the main problems with specific instructions as follows.
   - ACS: complete plan on early hospital care in preparation to PCI (pre-PCI medication recommendation)
   - Hypertensive crises/HTN: complete plan for blood pressure management in the inpatient setting (consider concurrent comorbidities relevant to antihypertensive agents)
   - Sepsis secondary to UTI and bacteremia: complete plan on antibiotic therapy based on most updated lab results and comprehensive inpatient care pertinent to the problem
2. Please provide assessment and plan on secondary problems
3. Please review patient's course of hospitalization (including appropriateness of medications initiated, monitoring during hospitalization, or any necessary follow-ups) and review appropriate clinical guidelines/literatures carefully to assist in responding to the discussion questions

Discussion Questions

1. Fast forward, Kajri underwent PCI and received drug-eluting stent. Please provide comprehensive treatment plan for her discharge to manage MI.

2. Kajri went and obtained pharmacogenetic testing. The results show that her CYP2C19 genotype is *2/*2. What does this genotype mean and what recommendations do you have for her post-PCI treatment (provide rationales)?

3. (a) How do you lower BP in hypertensive emergency?

   (b) Why does immediate action to lower BP is necessary?

   (c) What are consequences of excessive/abrupt reduction of BP in patient with hypertensive crises?

4. (a) What are the different typical pathogens of uncomplicated and complicated UTI?

   (b) What are common sources of bacteremia and their respective common pathogens?

   (c) Was the choice of the empiric therapy at outside hospital (vancomycin and cefepime) started appropriate? Why or why not? Note: assess based on data that's available at that point of time (before the cultures resulted).

5. (a) Calculate the anticipated AUC for vancomycin dose patient received at outside hospital (have a screenshot of the calculator with your numbers ready to discuss for any discrepancy).

   (b) What would have been your recommendation for the vancomycin if you are the pharmacist receiving the order with AUC-monitoring strategy (include initial dosing regimen, anticipated AUC of your dose, and monitoring plan)?

6. (a) What does the guideline recommend regarding antibiotic prophylaxis for preventing recurrent **uncomplicated** UTIs? What are the potential benefit and risks?

   (b) What are some antibiotics options for prophylaxis and what is the recommended duration? Can we recommend our patient antibiotic prophylaxis?

7. What is your assessment for atrial fibrillation and what recommendations do you have?

8. (a) What is your assessment for hyperlipidemia and what recommendations do you have?

   (b) What is your assessment for diabetes and what recommendations do you have for outpatient treatment?