Patient case

**Chief complaint:** Right flank and RUQ pain

**HPI**: SC is a 59yoF with PMH Hep C, anemia, HTN, anxiety, depression, IVDU (30 yrs ago), gastric bypass (2004) CKD stage 3 and R kidney stones s/p ureteroscopy in 2004 and recent nephrectomy (12/2015), presents with R flank and RUQ pain. Says pain started 5 days prior to admission when she was moving chairs in her home. She felt like she strained a muscle and it continued to hurt, so she finally came to the emergency room. Denies fevers/chills, nausea/vomiting, dysuria or frequency. Does note mildly decreased appetite and + diarrhea since surgery. No drainage or redness at site of nephrectomy scar. Patient has an 11 year history of nephrolithiasis and a uretoscopy in 2004 to try to remove the stones, then a R kidney reconstruction and stent placements with recurrent infections. She finally had an open nephrectomy 1 month ago, which found a shrunken non-functioning kidney. She has been healing well from the surgery and is not on chronic pain meds. Her daughter and previous notes say that she has a remote history of IVDU, but the patient currently denies current or past IVDU on interview. She admits to alcoholism and sobriety for 6 months and is living at a sober house in Brooklyn.

**PMH:**

Hep C

Anemia

HTN

Anxiety

Depression

Remote history of IVDU (30 yrs ago) and methadone maintenance

CKD stage 3

Hyperkalemia

R kidney stones s/p ureteroscopy in 2004 and recent R nephrectomy (12/2015)

**PSuH**:

Ureteroscopy (2004)

Failed ureteral/bladder reconstruction w/ indwelling R ureteral stents

Gastric bypass (Roux-en-y 2004)

R nephrectomy (12/2015)

**Social History**:

Lives at group home: El Regresso in Brooklyn. There for alcohol sobriety program. Case manager is Carmelo, phone is 718-384-6400 or 8400. Has daughter in California and in NYC. Worked in California at a drug and alcohol rehab program, but quit to move here. Alcohol use disorder, sober 6 months. IV drug use (30 yrs ago) with history of methadone maintenance therapy – currently denies.

**Family** **history**:

Noncontributory

**Allergies**: Penicillins (unknown), Demerol (unknown)

**Home Medications:**

Vitamin C Tab EF 500mg- 1 tablet oral daily

Ferrous sulfate Cap EF 325mg – 1 capsule oral twice daily

Lisinopril Tab 40mg – 1 tablet oral daily

Gabapentin Tab 600mg – 1 tablet oral twice daily

Vistaril Cap 50mg – 1 capsule oral twice daily

Wellbutrin XL Tab ER 24HR 150mg – 1 tablet oral daily

**Current Medications:**

Ascorbic acid 500mgs – 1 tablet oral daily

Ferrous sulfate 325mgs – 1 tablet oral twice daily

Furosemide 40mgs – 1 tablet oral daily

Gabapentin 200mgs – 1 capsule oral Q8H

Hydroxyzine pamoate 50mgs – 1 capsule oral twice daily

Bupropion HCl ER 24HR 150mgs – 1 tablet oral daily

Cyclobenzaprine 10mgs – 1 tablet oral Q8H prn

Fluoxetine 40mgs – 1 capsule oral daily

Sodium bicarbonate 650mgs – 1 tablet oral Q8H

Sodium polystyrene sulfonate 15G QD prn

Lidocaine 5% patch – 1 patch topical daily abdomen

Tramadol 100mgs – 1 tablet oral Q8H prn

Acetaminophen 650mgs – 1 tablet oral Q8H

Ceftriaxone IV 1G once daily

Cefpodoxime 200mg – 1 tablet Q12H

Sodium chloride 0.9% IVcont

Heparin 5,000units/mL QD

**Vital signs (on admission)**

*BP*: 161/90

*Pulse*: 73

*Temp*: 97.8F

*RR*: 18

*Wt*: 88.451Kg

*Ht*: 162.564cm

*BMI*: 33.46

**PE (on admission)**

General: sitting up in bed. Appears comfortable at rest, but winces when moves around at all. NAD

Skin: large midline surgical scar in abdomen; large horizontal surgical scar on R abdomen

Eye: PERRL

Oral: MMM

Chest: non tender

Respiratory: good air movement. Lungs CTAB, no wheezing, rhonchi, or rales

Cardiac: RRR, no murmurs

Gastrointestinal: abdomen obese, soft, tenderness and voluntary guarding along lower right end of surgical scar from nephrectomy. No erythema. Also RUQ and mild RLQ ttp.

Spine/back: no midline tenderness; + flank tenderness in right side

Extremities Exam: large, but no pitting edema

Vascular: 2+ dorsalis pedis pulses

Neurological: CN 2-12 grossly normal. Gait deferred. Strength in upper and lower extremities grossly 5/5

# Chart of blood pressures

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Date* | 1/21/16 | 1/22/16 | 1/22/16 | 1/22/16 | 1/22/16 | 1/23/16 | 1/23/16 |
| *BP* | 161/90 | 155/80 | 149/73 | 155/86 | 144/79 | 140/85 | **141/75** |
|  | | | | | | | |
| *Date* | 1/24/16 | 1/24/16 | 1/24/16 | 1/25/16 | 1/25/16 | 1/25/16 | 1/26/16 |
| *BP* | **138/79** | **130/68** | **132/85** | **104/58** | **92/52** | **110/63** | **107/67** |
|  | | | | | | | |
| *Date* | 1/26/16 | 1/26/15 | 1/26/16 | 1/27/16 |  |  |  |
| *BP* | **137/64** | **127/68** | **128/68** | **128/38** |  |  |  |

**Pain assessment**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | 1/21 | 1/22 | 1/23/16 | 1/24/16 | 1/25/16 |
| Pain lvl | 8 | 7 | Not reassessed | 6 🡪 4 | 7 🡪 2 |
| Pain qual | Throbbing | Throbbing |  |  | Aching |
| Pain loc | Incision | Incision /flank |  |  | Flank |
| Pain dur | Sporadic | Sporadic |  |  | Continuous |
|  | | | | | |
| Date | 1/26/16 | 1/27/16 |  |  |  |
| Pain lvl | 9 🡪 0 | 7 🡪2 |  |  |  |
| Pain qual | Aching | Aching |  |  |  |
| Pain loc | Flank | Flank |  |  |  |
| Pain dur | Continuous | Continuous |  |  |  |

## Labs:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Date | 1/21 | 1/22 | 1/23 | 1/24 | 1/25 | 1/26 | 1/27 |
| Na | 140 | 139 | 138 | 139 | 135 | 140 | 139 |
| K | **6.3** | **5.9** | **5.3** | **5.1** | 4.4 | 5.0 | **5.2** |
| Cl | **110** | **111** | **109** | 104 | 100 | 106 | 102 |
| Mg |  | 1.9 |  |  |  | 2.0 |  |
| CO2 | **19** | **16** | **21** | 24 | 24 | 24 | 25 |
| BUN | **32** | 23 | 23 | **28** | **46** | **34** | **33** |
| Scr | **1.45** | 1.15 | 1.30 | **1.35** | **1.87** | **1.50** | **1.36** |
| CrCl | 44.98 | 56.71 | 50.17 | 48.31 | 34.88 | 43.48 | 47.95 |
| eGFR | 37 | 40 | 42 | 40 | 28 | 36 |  |
| Glucose | 85 | **60** | 79 | 80 | 86 | **58** | 72 |
| Anion gap | 11 | 12 | 8 | 11 | 11 | 10 | 12 |
| Albumin | 3.9 |  |  |  |  |  |  |
| T. bili | 0.4 |  |  |  |  |  |  |
| Alka phos | 111 |  |  |  |  |  |  |
| AST | 26 |  |  |  |  |  |  |
| ALT | 32 |  |  |  |  |  |  |
| Date | 1/21 | 1/22 | 1/23 | 1/24 | 1/25 | 1/26 | 1/27 |
| WBC | 5.5 | 5.5 | 3.8 | 4.4 | 6.2 | 3.7 | 4.2 |
| RBC | **3.89** | **3.79** | **4.02** | **4.31** | **4.31** | **3.96** | **4.13** |
| Hgb | 10.3 | 10.1 | 10.6 | 11.4 | 11.3 | 10.5 | 10.7 |
| Hct | 32.2 | 32.0 | 33.4 | 35.7 | 35.6 | 33.1 | 34.9 |
| MCV | 82.8 | 84.5 | 83.3 | 82.8 | 82.7 | 83.6 | 84.7 |
| RDW | **18.5** | **18.7** | **18.2** | **18.5** | **18.9** | **18.6** | **19.0** |
| MCH | 26.4 | 26.5 | 26.5 | 26.4 | 26.1 | 26.6 | 25.9 |
| WBC, urine | **45** |  |  |  |  |  |  |
| RBC, urine | **12** |  |  |  |  |  |  |

**Hospital Course:**

1/21/16: Presented with R flank and RUQ pain, admitted for incidental finding of hyperkalemia and metabolic acidosis. Given 1 dose of morphine 15mg PO, will switch to tramadol. In ED was given insulin 10units will hold off b/c patient became hypoglycemic.

1/22/16: Complaining of pain at bottom part of her nephrectomy incision site. Lidocaine 5% patch added

1/23/16: Patient experiences some relief from tramadol but not complete. Also with Lidoderm patch over nephrectomy incision site. Now with new L groin pain. Understands hesitation to give strong pain meds. Given gabapentin 600mg BID.

1/24/16: Patient was complaining of pain in her right lower abdomen, near surgical site. She expressed frustration at the changes in her pain medications. Given gabapentin 200mg Q8H

1/25/16: pain not gone but dulled. Given gabapentin 100mgs Q8H

1/26/16: Continues to complain of pain at nephrectomy site. Given gabapentin 200mg Q8H. Discontinue Chlorthalidone 25mg QD.

**Problem list**

1. R flank & RUQ pain
2. Hyperkalemia
3. Metabolic acidosis
4. CKD 3
5. HTN
6. Chronic Hep C
7. Anxiety, depression
8. UTI
9. Iron deficiency anemia

**Problem #1- R flank & RUQ pain**

**Subjective/Objective:**

* BP: 161/90 ; Pulse: 73 ; RR: 18
* Refer to pain assessment
* CT abdomen w/o signs of abscess or infection at surgical site or in gallbladder/liver
* No signs of pyelonephritis (afebrile, no leukocytosis)
* Voluntary guarding along lower right of nephrectomy scar
* Was moving around furniture, pain “crampy and throbbing”
* Lidocaine 5% patch topical QDay abdomen
* Tramadol 100 PO Q8H prn
* Cyclobenzaprine 10 mg PO Q8H prn
* Acetaminophen 650mgs Q8H

**Assessment:**

SC is a 59 yo female with right flank and RUQ pain which started 5 days prior to admission. Pain had been well controlled since nephrectomy and was not on chronic pain meds. All imaging has been negative and no organic source of pain discovered, pain likely caused by muscle strain. Goals of therapy to control pain well enough for patient satisfaction and discharge.

**Plan:**

* No NSAIDs for pain
* Continue tramadol 100mg PO Q8H prn, do not continue after discharge
* Continue cyclobenzaprine 10mg PO Q8H prn
* Continue lidocaine 5% patch topical QDay abdomen
* Continue acetaminophen 650mg Q8H

**Monitoring/Counseling:**

* Acetaminophen MDD not to exceed 2G
* Do not use cyclobenzaprine for longer than 3 weeks
* No alcohol while on medication
* RR, BP, HR
* Tramadol
  + Efficacy: pain reduction
  + Toxicity: worsening of depression, decrease seizure threshold
* Cyclobenzaprine
  + Efficacy: relief of back muscle spasms
  + Toxicity: sedation, decrease seizure threshold
* Lidocaine
  + Patch 12 hours on, 12 hours off
  + Efficacy: improvement of pain at abdomen
  + Toxicity: local irritation
* Acetaminophen
  + Efficacy: pain reduction
  + Toxicity: increase in LFTs, nausea

**Problem #2- Hyperkalemia**

**Subjective/Objective:**

* Potassium upon admission 6.3
* BUN/SCr (32/1.45)
* No EKG changes (compared to 12/24/15)
* Lisinopril 40mg QD
* Furosemide 40mg QD
* Insulin 10U in ED
* Kayexalate 15 G QD prn
* 6 months sober
* Daily banana, orange, tomato
* Diarrhea

**Assessment:**

SC is a 59 yo female with incidental finding of hyperkalemia upon admission for right side and flank pain. In December patient was also hyperkalemic but without metabolic acidosis, likely from underlying CKD3. Potassium is now controlled but patient is dehydrated from diuretics, would switch patient to amlodipine 5mg QD upon discharge. Goals of therapy restore potassium to 3.5-5mmol/L and prevent cardiac events.

**Plan:**

* Kayexalate for K+ >5.7
* Lisinopril 40mgs PO QD stopped, in order not to exacerbate hyperkalemia
* Switch to amlodipine 5mg PO QD
* Educate patient on potassium restricted diet (avoid foods with high K+ content: dried fruits, nuts, tomatoes, bananas, spinach)

**Monitoring/Counseling:**

* Potassium levels
* Monitor for EKG changes (increased T waves)
* Kayexalate
  + Efficacy: decrease potassium levels
  + Toxicity: hypernatremia, hypocalcemia, hypokalemia, hypomagnesemia
* Amlodipine
  + Efficacy: control blood pressure without affecting electrolytes
  + Toxicity: peripheral edema, palpitations

**Problem #3- Metabolic acidosis**

**Subjective/Objective:**

* Patient reports diarrhea since nephrectomy (12/2015)
* CO2 19 on admission
* Sonogram of kidneys reveals no stones
* Normal anion gap
* ABG: Arterial pH 7.22, O2 sat 56.3%, arterial bicarb 17, base deficit 10.2mEq/L
* Sodium bicarbonate 650mgs PO Q8H

**Assessment:**

SC is a 59 yo female with incidental finding of nonanion gap metabolic acidosis. It is likely resulting from underlying CKD and the loss of bicarbonate from the GI tract, since patient reports increased diarrhea. Goal of treatment is to increase bicarbonate, decrease potassium and achieve acid-base balance (arterial pH 7.35 - 7.45).

**Plan:**

* Hold sodium bicarbonate 650mgs PO Q8H, refer to current labs

**Monitoring/Counseling:**

* Take the medication 1-3 hours after meals
* Electrolytes (CO2, K, Na)
* Efficacy: increase in CO2, decrease K+
* Toxicity: hypernatermia, edema, hypokalemia, flatulence

**Problem #4 – CKD 3**

**Subjective/Objective:**

* Lisinopril 40mg PO QD
* Lasix 40mg PO QD
* Blood pressure
* Nephrectomy (12/2015)
* Not aware of CKD diagnosis
* Refer to labs (eGFR, BUN, SCr)

**Assessment:**

SC is a 59 yo female who presented with metabolic acidosis and was dehydrated with an elevated BUN/Cr ratio that was initially 32/1.45. During the hospital stay she has been hypotensive because dual diuretics. Goals of therapy are to prevent worsening of current kidney function by controlling blood pressure to 140/90 and correcting metabolic acidosis.

**Plan:**

* D/C Lisinopril
* Switch patient to amlodipine 5mg QD

**Monitoring/Counseling:**

* Education on how best to maintain current kidney function (BP, diet, fluid)
* Encourage increased oral intake of fluid
* Blood pressure
* ABG
* Avoid nephrotoxic agents (NSAIDs)
* Amlodipine
  + Efficacy: control blood pressure 140/90
  + Toxicity : peripheral edema, palpitations

**Problem #5 HTN**

**Subjective/Objective:**

* Lisinopril 40mg PO QD
* Chlorthalidone 25mgs PO QD
* Furosemide 40mgs PO QD
* Refer to BP chart

**Assessment:**

SC is a 59 yo female with a history of hypertension that was controlled on her previous regimen of lisinopril. However, her regimen needed to be changed because of suspicion that it precipitated hyperkalemia and in order to not exacerbate it. Unfortunately, she has been relatively hypotensive after being placed on two diuretics from 1/23-1/26. Do not agree with use of diuretics, switch to calcium channel blocker as to not affect electrolytes. Goal of therapy is for blood pressure to be 140/90.

**Plan:**

* D/C lisinopril 40mg PO QD
* D/C chlorthalidone 25mg PO QD
* Switch to Amlodipine 5mg PO QD
* Encourage patient to increase oral fluid intake

**Monitoring/Counseling:**

* Monitor electrolytes (Na, K, Cl, Mg, Ca)
* Monitor weight
* Blood pressure, heart rate
* Amlodipine
  + Efficacy: controlled blood pressure to goal
  + Toxicity: peripheral edema, palpitations

**Problem #6- Chronic Hep C**

**Subjective/Objective:**

* Chronic hepatitis C x 18 years
* Previously treated 3 times with interferon
* Alka phos 111u/l, AST 26u/l, ALT 32u/l, albumin 3.9g/dl, t. bili 0.4 mg/dL
* CT normal sized liver
* Sober 6 months
* CrCL 41.33 , SCr 1.5

**Assessment:**

SC is a 59 year old female with Hepatitis C since 1998. Patient says that she has a new GI doctor and may be getting treated with Harvoini. Goals of therapy include reducing all-cause mortality and liver-related health adverse consequences, by the achievement of virologic cure as evidenced by a sustained virology response (undetectable HCV RNA at least 12 weeks after completion of therapy).

**Plan:**

* Harvoni (ledipasvir 90mg/sofosbuvir400mg) once daily for 24 weeks
* 2 dose of Hep A vaccine (Vaqta)
  + Month 0 & month 6
* 3 doses of Hep B vaccine (Engerix-B)
  + Month 0, month 1, month 6

**Monitoring/Counseling:**

* Factors associated to accelerated fibrosis progression (liver disease)
  + Alcohol consumption : continue with sobriety
  + Obesity : counsel on weight reduction
* After 4 weeks of treatment: CBC, SCr, hepatic function panel, Hep C VL
* If HCV VL detectable, repeat after 2 additional weeks, if VL increased greater than 10-fold at week 6, discontinue therapy (class III, Lvl C)
* Discontinue therapy if ALT increases by 10-fold by week 4
  + Or if there is an increase in ALT accompanied by any weakness, N/V, jaundice, or accompanied by increased bilirubin, alk phos, or INR
* Clinic visits or telephone contact recommended during treatment to ensure medication adherence and to monitor for adverse events
* Education patient to decrease transmission (don’t share toothbrushes, razors, etc.)
* Efficacy: virologic cure
* Toxicity: fatigue, headache, insomnia, nausea, diarrhea

**Problem #7 Anxiety, depression**

**Subjective/Objective:**

* Fluoxetine 40mgs PO QD
* Hydroxyzine pamoate 50mgs PO BID
* Bupropion HCl ER 24HR 150mgs PO QD
* Gabapentin 200mg PO Q8H
* History of psych admissions for suicidal thoughts

**Assessment:**

SC is a 59 yo female with a history of anxiety and depression. The dosing of gabapentin was adjusted constantly which agitated the patient, considering her CrCl dosing for response in anxiety is seen at 600mg BID. Goals of therapy maintain stable emotional state which can facilitate her sobriety.

**Plan:**

* Switch to gabapentin 600mg BID
* Continue fluoxetine 40mgs PO QD
* Continue bupropion HCl ER 24HR 150mgs PO QD
* Continue hydroxyzine pamoate 50mgs PO BID
* Encourage cognitive behavior therapy

**Monitoring/Counseling:**

* Serotonin syndrome (mental status, autonomic hyperactivity, neuromuscular abnormality)
* Mental status
* Blood pressure
* Liver function (jaundice, dark urine)
* Renal function (SCr, BUN)
* Avoid alcohol potentiate CNS depression
* Hydroxyzine pamoate
  + Efficacy: relief of anxiety
  + Toxicity: sedation, anticholinergic effects (constipation, confusion, urinary retention)
* Fluoxetine
  + Efficacy: relief of depression
  + Toxicity: insomnia, sedation, nausea, diarrhea, BBW: increased suicidal thoughts
* Bupropion
  + Efficacy: relief of depression
  + Toxicity: hypertension, insomnia, decrease seizure threshold, BBW: suicidal thinking
* Gabapentin
  + Efficacy: relief of anxiety
  + Toxicity: sedation, peripheral edema

**Problem #8- UTI**

**Subjective/Objective:**

* Temp 97.8
* WBC, urine 45
* RBC, urine 12
* Urine culture <10,000 CFU/mL gram negative bacilli
* Ceftriaxone 1G IV QD x 3 days
* Cefpodoxime PO 200mg PO BID x 1 day

**Assessment:**

SC is a 59 yo female with findings of WBC and RBC in urinalysis. Urine culture was pending and was started on ceftriaxone in the ED since suspicious of acute uncomplicated pyelonephritis and she is high risk with only one kidney. Urine culture results showed no growth, treatment was stopped on 1/25.

**Plan:**

Patient was initially treated but cultures came back negative and treatment was discontinued

**Problem #9 Iron deficiency anemia**

**Subjective/Objective:**

* Ferrous sulfate 325mgs PO BID
* Refer to labs (RBC, RDW, MCV, MCH, Hgb, Hct)

**Assessment:**

SC is a 59 yo female has a history of iron deficiency anemia. Anemia may be related to CKD and having only one kidney to produce of erythropoietin resulting in decreased RBC. Goals of therapy to increase hemoglobin using iron supplement.

**Plan:**

* Continue Ferrous sulfate 325mg PO BID

**Monitoring/Counseling:**

* CBC
* Do not take ferrous sulfate within 2 hours of other medications
* Avoid dairy, calcium containing products, and caffeine 1hours before and 2 hours after taking the supplements
* Ferrous sulfate
  + Efficacy: increase Hgb, increase serum iron
  + Toxicity: constipation, dark stool, GI irritation

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