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Stroke, COVID, Sickle Cell Anemia Cases

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Day 1 (7/19/2022)

Admission H&P

CC: Chest pain and body ache

HPI: 31 years old male presenting to the ED with chest pain and body ache. He reported experiencing pain on his arms and legs while at work yesterday and it had gotten worsened today accompanied with chest pain and tightness, which prompted him to come to the ED. Patient has sickle cell disease with severe vaso-occlusive episodes requiring hospitalization about 3-4 times a year. He has had 2 crisis episodes requiring hospitalization this year with last hospitalization about 2 months ago. Patient recently moved to Stockton last month and is trying to establish care with a new PCP as he has ran out of his oxycodone and missed his blood transfusion this month. He has some Norco left that gets him through the past few days without oxycodone. On typical days, he reported taking his oxycodone twice and on average 4 tablets of Norco daily that control his pain well. He is also inquiring about getting labs for his hydroxyurea as his previous PCP initiated it 6 months ago and inform him that he will need to obtain some labs after 6 months of therapy.

PMH: Sickle cell anemia on monthly exchange transfusion, hypertension

Surgical history: Splenectomy in 1998

Social History: Denies alcohol, tobacco, or recreational drug use. Lives with wife.

Home medications:
Amlodipine 5 mg - 1 tablet PO daily
Lisinopril 40 mg - 1 tablet PO daily
Hydroxyurea 500 mg - 2 capsules PO daily
12 HR Oxycodone ER 40 mg - 1 tablet PO BID
Hydrocodone/acetaminophen 5/325 mg - 1-2 tablets q6h PRN for pain

Physical Exam:
Vital Signs upon admission: 36.6 C, Pulse 106, RR 18, BP 149/87, 98% on RA, Wt 140 lbs, Ht 5'8"
General: Alert and oriented, in acute distress
HEENT: Normocephalic, oral mucosa is moist, extraocular movements are intact, Normal conjunctiva.
Respiratory: Diminished air entry bilaterally, diffuse wheezing and coarse breath sounds
Cardiovascular: Rapid rate, Regular rhythm, No murmur, No gallop,
Gastrointestinal: Soft, tender, Non-distended, Normal bowel sounds.
Lymphatics: No lymphadenopathy
Extremities: Good pulses equal in all extremities, Normal peripheral perfusion, No edema. Reports pain 9/10 in arms, legs, chest and generalized joint ache.
Neurologic: Appears tired, Oriented, No focal deficits, Cranial Nerves II-XII are grossly intact.

Assessment/Plan:
1. Vaso-occlusive crisis: Oxycodone ER and Norco are non-formulary medications. Will convert pain medications to MS Contin 60 mg PO BID and Dilaudid 2 mg IV q6h PRN. Start IV fluid.

2. Acute chest syndrome 2/2 pneumonia: Start IV empiric antibiotics.

3. Elevated LFT: possibly due to iron overload. Will continue to monitor and defer treatment to primary care.

Other Work-ups

ECG: Normal sinus rhythm. No cardiac abnormality.
Chest X-ray: Opacities concerning for pneumonia. No pleural effusion.

Day 2 (7/20/2022)

Inpatient Progress Note

Patient was seen at bedside. No acute event overnight. Patient was comfortable but very sleepy this morning. RN reported patient has not been needing the PRN Dilaudid as much. He has only received 1 dose of Dilaudid around admission.

Physical Exam:
Neuro: non-focal, A&Ox3
HEENT: normocephalic, atraumatic, no scleral icterus, or conjunctival injection
Neck: supple, no rigidity, no lymphadenopathy, bruits, or thyromegaly
Lungs: expiratory wheezing throughout, improved breath sounds
CV: RRR, normal S1/S2, no gallops, no jugular venous distention
GI: no distention, positive bowel sounds, no masses
Extremity: no cyanosis, clubbing, or distal pitting edema
Skin: warm and dry, no ulcerations

Assessment/Plan:
1. Vaso-occlusive crisis: better pain control with inpatient pain medications. Continue to monitor and discharge tomorrow if stable.
2. Acute chest syndrome 2/2 pneumonia: On IV Rocephin and azithromycin. Complete 7-day course.
3. Elevated LFT/Iron overload: Stable. Defer management to primary care.

Day 3 (7/21/22)

Discharge Summary

Admitting complaint: Chest pain and body ache

Discharge diagnosis: Vaso-occlusive crisis and acute chest syndrome secondary to pneumonia

Course of care: Patient presented to ED with signs and symptom of vaso-occlusive crisis and acute chest syndrome. During hospitalization, patient received IV pain medications and transitioned to PO pain medications, which resolved the pain crisis. Patient was also initiated on antibiotics for pneumonia and received 2 days of IV ceftriaxone and IV azithromycin.

Past medical history: Sickle cell anemia on monthly exchange transfusion (goal Hgb 9-10 g/dl), hypertension

Discharge Instructions: Complete total 7 days of antibiotic. Continue all home medications.

New medications for discharge: Levofloxacin 750 mg PO daily x 5 days, azithromycin 250 mg PO daily x 5 days, 12 HR oxycodone ER 40 mg PO BID, hydrocodone/acetaminophen 5/325 mg PO q6h PRN pain

Follow-up: Appointment with new PCP, Dr. Estella Moon, had been scheduled on 7/28/2022.

Day 7 (7/25/2022)

Admission H&P

CC: right-sided weakness and facial droop

HPI: 31 years old male with known sickle cell disease brought in by ambulance to the ED with right-sided weakness and facial droop. The wife reported the symptoms started about an hour ago when they were having breakfast and she immediately called 911. He is paretic on the right side with decreased strength in the upper and lower extremities, he has right-sided facial weakness and garbled speech. Patient had a recent ED visit last week for vaso-occlusive crisis and pneumonia. He was hospitalized for 2 days to get his pain under control and was then discharged home to finish antibiotic course. His wife expressed that after discharge, he doesn't seem to get better. The antibiotics he was prescribed last week didn't seem to resolve his pneumonia despite being compliant to it. He has low appetite and last night, he felt chills and spiked a fever. His wife told him to go back to ED but he refused and wanted to wait until the morning. Upon admission, oxygen saturation was found 87% on room air and patient was started on 2 L nasal cannula.

PMH: Sickle cell anemia on monthly exchange transfusion (goal Hgb 9-10 g/dl), hypertension

Surgical history: Splenectomy in 1998

Social History: Denies alcohol, tobacco, or recreational drug use. Lives with wife.

Physical Exam:
Vital Signs upon admission: 38.6 C, Pulse 112, RR 28, BP 192/108, SpO_2 87% on room air, Wt 140 lbs, Ht 5'8", pain 8/10
General appearance: 31 year old male of appropriate height and weight in acute distress.
Head: Normocephalic, non-traumatic, no masses or lesions
Eyes: Visual fields intact, PERRLA, red reflex present. Discs flat with sharp margins, vessels present without defects
Neck: Supple without lymphadenopathy, masses, or thyromegaly. Carotid pulses 2+ bilaterally, no bruits, full ROM, trachea midline, no retraction, lesions, masses or tenderness
Back, thorax & lungs: Lungs sounds with crackles throughout and decreased intensity of breath sounds. Respirations are labored and rapid. Symmetrical chest wall expansion with use of some accessory muscles, coughing copious green purulent sputum.
Cardiovascular: Regular rhythm, tachycardic, no systolic ejection murmur, rubs, gallops
Extremities: Extremity size symmetric without swelling, temperature warm and equal bilaterally. All pulses present, 2+ and equal bilaterally. Reports pain 8/10 in left arm, left leg, chest and generalized joint ache.
Skin: Skin color pale and diaphoretic.
Musculoskeletal: Right sided paresis. Right sided facial weakness. Joints and muscles symmetric in size, no swelling, masses, deformity or tenderness to palpation; no heat or swelling of joints; limited range of motion with the right arm and right leg; muscle strength 3/5 on right side, 5/5 on left.
Nervous system: CN II-XII grossly intact, alert, cooperative, speech is unclear, oriented x2, NIHSS score 12.

Assessment/Plan:
1. Ischemic stroke: Left sided ischemic cerebral vascular accident. Consult neurology and pharmacy for tPA eligibility.
2. Sepsis 2/2 pneumonia: Hospital-acquired from recent admission and positive COVID-19 test. Start empiric antibiotics and COVID standard of care. Continue nasal canula and titrate to goal oxygen saturation 90-92%.
3.Sickle cell crisis: Start IV fluid and blood transfusion. Continue home medications.
4. Elevated LFT: Sign of liver injury secondary to iron overload. Consult pharmacy to start treatment.
5. HTN: continue home medications.

Other Work-ups

CT Head: left middle cerebral artery (MCA) infarction. No intracranial hemorrhage or mass effect.
Chest X-ray: Multifocal patchy bilateral airspace opacities, concerning for multifocal infection. COVID-19 is most likely but bacterial involvement cannot be excluded. No concern of pulmonary embolism.

Summary of Labs/Vitals/Cultures/Glucose/Inpatient Medications:
Actual BW: 63.6 kg
IBW: 68.4 kg (BMI 21.3)

Labs:

	7/19/2022	**7/20/2022**	**7/21/2022**	**7/25/2022**
CBC				
WBC (cells/ml)	9,200	9,800	8,900	15,200
Hgb (g/dl)	8.3	8.2	8.5	8.1
Hct (%)	25	24.6	26.2	24.3
Plt	231,000	250,000	280,000	420,000
MCV (fl)	99	92	94	89
MCH (pg)	30	32	36	34
MCHC (%)	32	36	37	36
Reticulocyte (cells/mm^3)	156,000	148,000	161,000	157,000
Segment Neutrophil (%)	65	69	68	79
Bands (%)	5.3	5.8	5.9	6.2
ANC**(cells/ul)	6,467.6	7,330.4	6,577.1	12950.4
Basophils (%)	1	1	1	2
Eosinophils (%)	1.5	2	1	3.5
Lymphocytes (%)	25	36	32	67
Monocytes (%)	3	5	4	6
Coag				
PT	11			12
INR	1.1			0.9
BMP				
Na	138	141	137	142
K	3.8	3.7	4.1	3.9
Cl	107	104	106	102
CO2	28	24	23	25
Glu	82	79	89	103
BUN	8	7	9	8
SCr	0.7	0.7	0.8	0.6
CrCl**	>120	>120	>120	>120
Tbili	1.5	1.4	1.5	1.6
ALT	66	59	61	69
AST	46	37	39	42
Alkphos	215	214	205	218
Alb	2.6			2.4
Others				
TC	187			
HDL	32			
LDL	97			
TG	128			
SARS-CoV-2 PCR	Negative			Positive
Troponin	<0.01 x2			
Serum ferritin (ng/dl)	5327.3			5428.4

CRP (mg/L)				48
Sputum culture				Pending
Blood culture #1				Pending
Blood culture #2				Pending

**Students are not given these calculated numbers (i.e. CrCl, ANC)

Vitals/Pain

Previous Admission

DATE	TEMPERATURE	PULSE	RESPIRATION	BLOOD PRESSURE	PULSE OXIMETRY
07/21/2022 09:16	36.8 C	85	15	149/81	100 %
07/21/2022 05:55	36.8 C	89	18	151/84	100 %
07/20/2022 22:15	37.1 C	79	15	143/78	100 %
07/20/2022 17:20	36.9 C	82	17	145/87	100 %
07/20/2022 12:12	36.8 C	94	19	142/89	99 %
07/20/2022 06:30	36.9 C	89	18	146/78	100 %
07/19/2022 21:25	37.2 C	87	17	148/82	100 %
07/19/2022 15:08	37.1 C	96	16	152/79	99 %
07/19/2022 09:20	36.6 C	106	18	149/87	98 %

DATE	PAIN
07/21/2022 09:16	2
07/21/2022 05:55	2
07/20/2022 22:15	2
07/20/2022 17:20	3
07/20/2022 12:12	2
07/20/2022 06:30	2
07/19/2022 21:25	3
07/19/2022 15:08	5
07/19/2022 09:20	9

Additional Scheduled Medications (on top of home medications and discharge antibiotics from previous admission):
IV fluid 1000 mL on both admission
2 units PRBC on stroke admission
2 L NC on stroke admission
MS Contin 60 mg BID and Dilaudid 2 mg q6h PRN on previous admission
Recent vaccine:

- Moderna COVID vaccine (8/3/21, 10/01/21, 3/15/22)
- Influenza (10/2/21)
- Hib (8/3/1998)
- Hep B (9/19/11, 12/8/11, 1/25/13)
- MenACWY (9/19/11, 12/8/11, 7/19/2016)
- MenB (9/19/11, 12/8/11, 1/25/13, 7/19/2016)
- Tdap (7/17/01), Td (9/19/11)
- PPSV23 (12/10/20)

Student Instructions

1. Please provide comprehensive assessment and plan for the main problems with specific instructions as follows. **Be very clear on timing of medication administration or initiation and drug forms/strengths.**
   - Acute ischemic stroke/hypertensive crisis: provide assessment for patient's tPA eligibility and other necessary immediate plan (within 24 hours) surrounding tPA administration (do not worry about providing long-term plan as your work-up)
   - COVID-19 and bacterial pneumonia: provide antibiotics recommendations for bacterial pneumonia and guideline-recommended therapy for hospitalized patients with COVID-19 pneumonia. In addition, provide comprehensive inpatient care plan pertinent to the problem.
   - Sickle cell anemia: provide plans for long-term sickle cell anemia management to reduce incidence of crisis or complications, include necessary vaccinations with appropriate administration timings and plans.
2. Please review patient's course of hospitalization or previous admission (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. Assuming Tony is eligible and received tPA, please provide treatment plan 24 hours after tPA administration for optimal management and secondary prevention of ischemic stroke (include necessary pharmacological, nonpharmacological, goal of therapy,monitoring, etc.).

2. Assuming Tony was not indicated for and did not receive tPA, please provide immediate and long-term treatment plan for optimal management of ischemic stroke (include necessary pharmacological, nonpharmacological, goal of therapy, monitoring, etc.).

3. Do you agree or disagree with the inpatient discharge treatment plan for pneumonia from previous admission? Please provide rationale.

4. What is the role of baricitinib or tocilizumab in management of COVID-19 infection (i.e. what are the benefits found in studies for these drugs)? Would you recommend either or both medications for Tony at this time? Provide rationales (i.e. what are some indications and contraindications/ precautions for initiating the medications).

5. Do you agree with the opioid conversion (i.e. rom PO oxycodone ER and PO Norco PRN to PO MS Contin and IV Dilaudid PRN) on previous admission? Please provide your rationale.

6. What is the role of naloxone distribution in community programs as preventative strategy? Would you recommend offering naloxone for Tony (provide rationale).