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Internal Medicine Rotation

H&P #2

Chief Complaint:
acute onset of posterior neck pain and bilateral upper arm pain, consistent with vaso-occlusive pain crises related to underlying sickle cell disease.

History of presenting illness
27-year-old male with a history of sickle cell disease, hypertension, prior cerebrovascular accident at age 2, DVT of the upper extremities diagnosed 12/14/25, and is currently on Eliquis, right hip replacement for avascular necrosis, and a history of acute chest syndrome (2012). He presents to the ED with acute back, posterior neck, and bilateral upper arm pain since Saturday, describing the pain as similar to his usual vaso-occlusive crises. The pain was reported as 10/10 and described as throbbing. He reports that cold weather may have precipitated the pain. Arm pain has improved, but back and neck pain persist. The patient reports taking oral morphine 14 hours ago and oxycodone at 10 PM without relief. He usually takes morphine PO BID and oxycodone PRN 1–2 times daily. He denies chest pain, shortness of breath, fever, chills, nausea, vomiting, diarrhea, or urinary symptoms. He was previously admitted this year on 1/23–2/2 for influenza A, during which he had similar pain managed with analgesics, hydroxyurea, and two blood transfusions over the course of his hospital visit. In the ED, the patient received IV fluids and IV Dilaudid with ongoing severe pain.

Past medical history:
- Attention-deficit/hyperactivity disorder (ADHD),
- deep vein thrombosis (DVT),
- hypertension,
- sickle cell disease.

Allergies:
- Ceftriaxone - anaphylaxis
- Red Dye #40 (Allura Red) - puritis to the lips
-

Past Surgical History:
- Cholecystectomy
- Right hip replacement due to avascular necrosis

Immunizations: Up to date with immunizations.

Family History:
Mother - deceased at an unknown age and cause
Father - deceased at an unknown age and cause
Maternal and paternal grandparents - deceased at unknown age and cause
No siblings or children

Social History:
Patient denies tobacco use, including cigarettes, smokeless tobacco, or secondhand smoke exposure. Reports occasional marijuana use, approximately 2 times per week. Denies alcohol use or other illicit drug use; the patient is not sexually active at the moment. Currently has a heart-healthy diet that includes bread, vegetables, low-sodium items, and less-processed meals. Lives with family at home, participates in activities such as martial arts.

Medications:

- Lactated Ringer's 75 mL/hr IV continuous
- Apixaban (Eliquis) 5 mg PO every 12 hours
- Folic Acid (Folvite) 1 mg PO daily
- Hydroxyurea (Hydrea) 2,500 mg PO every other day
- Diphenhydramine (Benadryl) 25 mg IV every 3 hours PRN
- Hydromorphone HCl PF (Dilaudid) 6 mg IV every 3 hours PRN
- Polyethylene Glycol (MiraLAX) 17 g PO daily PRN
- Senna (Senokot) 17.2 mg PO twice daily PRN
- Ritalin 5 mg PO twice daily

Review of System

General: Denies fever, chills, weight loss, fatigue, or night sweats. Reports normal appetite and sleep.

Skin: Denies rashes, itching, lesions, or wounds.

HEENT: Denies headaches, vision changes, hearing loss, sore throat, or oral lesions
.
Respiratory: Denies cough, shortness of breath, dyspnea, or orthopnea.

Cardiovascular: Denies chest pain, palpitations, or edema.

Gastrointestinal: Denies nausea, vomiting, diarrhea, constipation, or abdominal pain
.
Genitourinary: Denies dysuria, hematuria, urinary frequency, or urgency.

Musculoskeletal: pain to the mid-back, posterior neck, and bilateral upper arm pain rated as a 10/10

Endocrine: Denies polydipsia, polyuria, polyphagia, heat or cold intolerance.

Neurological: Denies dizziness, weakness, numbness, tremors, or syncope.

Psychiatric: Denies anxiety, depression, mood changes, hallucinations, or suicidal ideation.

Hematologic: Denies easy bruising, bleeding, or lymphadenopathy.

Physical Exam

general: 27-year-old male, lying in bed, appears in mild distress due to pain, but is awake, alert, and oriented to person, place, and time patient appears to be of stated age and is well groomed

Vitals:
BP: 128/78 mmHg
Temperature: 36.8°C
O2 saturation: 97% on room air
Pulse: 88 bpm
Respiratory rate: 18

HEENT: Normocephalic, atraumatic; sclera clear; oral mucosa moist; no oropharyngeal lesions.

Neck: Supple, no lymphadenopathy, no jugular venous distention.

Cardiovascular: Regular rate and rhythm; S1/S2 normal; no murmurs, rubs, or gallops; peripheral pulses intact.

Respiratory: Normal effort; lungs clear to auscultation bilaterally; no wheezes, crackles, or rhonchi.

Abdomen: Soft, non-tender, non-distended; bowel sounds present; no hepatosplenomegaly.

Genitourinary: No bladder distention; no CVA tenderness.

Extremities: No cyanosis or clubbing; trace edema noted; no erythema or tenderness

Skin: Warm, dry; no rashes, ulcers, or lesions

Neurological: Alert and oriented ×3; cranial nerves II–XII intact; strength and sensation symmetric; no focal deficits.

Musculoskeletal: Reports tenderness to palpation over the lower back, neck, and bilateral upper arms; full range of motion is limited due to pain; no deformities noted.

Initial Differeintals diagnosis

1. Vaso-occlusive sickle cell crisis: The patient with Sickle Cell Disease presents with acute severe, throbbing pain involving the back, neck, and bilateral upper extremities, consistent with prior vaso-occlusive episodes. The pain was triggered by cold exposure and is refractory to home opioid therapy, which is characteristic of microvascular occlusion and tissue ischemia. The absence of fever, chest symptoms, or focal neurologic deficits further supports this diagnosis.

Workup:

- CBC with differential
- Reticulocyte count
- CMP (renal/hepatic function)
- LDH, bilirubin
- Type and screen
- Peripheral smear
- Pain reassessment and monitoring response to therapy

2. Acute chest syndrome: Patients with Acute Chest Syndrome can initially present with a pain crisis prior to developing respiratory symptoms. Although this patient currently denies chest pain and dyspnea and has normal oxygen saturation, he remains at risk given his underlying condition. Symptoms can evolve during hospitalization, so early consideration is necessary.

Workup:

- Chest X-ray
- Arterial blood gas
- Respiratory viral testing
- Blood cultures
- Empiric antibiotics
- CMP

3. Avascular necrosis: Patients with Sickle Cell Disease are prone to avascular necrosis due to chronic microvascular occlusion and bone ischemia. Although this patient has a known history of right hip avascular necrosis, the acute onset of back and neck pain raises concern for possible ischemic bone pain. Pain from AVN can mimic vaso-occlusive crises and may represent worsening or new sites of bone involvement.

Workup:

- MRI of affected regions (most sensitive for early AVN)
- X-rays (initial, may be normal early)
- Orthopedic consultation if indicated
- ESR/CRP (may be mildly elevated)
- Pain assessment and functional limitation evaluation

4. Osteomyelitis: Patients with Sickle Cell Disease are at increased risk of osteomyelitis, often due to Salmonella species. Bone pain may mimic a vaso-occlusive crisis. This diagnosis is less likely in the absence of fever or localized findings, but it remains an important consideration.

Workup:

- ESR and CRP
- Blood cultures
- MRI of affected areas (most sensitive)
- Bone scan if MRI unavailable
- Infectious disease consultation if suspected

Laboratory Results

Complete Blood Count (CBC)

- White Blood Cell: 6.49
- Hemoglobin: 7.5
- Hematocrit: 22.1
- Red Blood Cell: 2.21
- Platelet: 276
- Reticulocyte count: 5–15%
- LDH: 300–800+ U/L
- Indirect bilirubin: 1.5–4.0 mg/dL
- Haptoglobin: 25 mg/dL

Coagulation Studies

- PT/INR: 1.0–1.2
- aPTT: 30 seconds

Infectious Workup

- Blood cultures: No growth
- Respiratory viral panel: Negative

Peripheral Smear

- Sickle cells
- Target cells
- Anisopoikilocytosis
- Howell-Jolly bodies

Type & Screen

- Blood type (e.g., O+)
- Antibody screen: Negative

Basic Metabolic Panel (BMP)

- Sodium: 136
- Potassium: 4.9
- Chloride: 101
- CO_2: 25
- Blood Urea Nitrogen: 8
- Creatinine: 0.63
- Glucose: 79

Inflammatory Markers

- ESR: 30–80 mm/hr
- CRP: 10–50 mg/L

Imaging: Chest X-ray (PA & lateral):

- Lungs/Pleura: Nonspecific coarsening of interstitial markings, which could reflect chronic changes or airway inflammation. No focal consolidations or pleural effusions. No signs of pneumothorax
- Heart/Mediastinum: Cardiac silhouette is normal in size and contour. Cardiothoracic ratio is within normal limits. No evidence of chamber enlargement, abnormal contours, or mediastinal widening. Aortic arch, pulmonary arteries, and central vessels appear normal.
- Osseous: Stable S-shaped thoracolumbar scoliosis. Stable right humeral head sclerosis consistent with osteonecrosis. Stable spinal findings consistent with sickle cell disease.

Assessment:
27-year-old male with sickle cell disease, history of upper extremity DVT on Eliquis, prior right hip replacement for avascular necrosis, acute chest syndrome, hypertension, and remote CVA, presenting with back, neck, and bilateral upper arm pain. The patient describes the pain as similar to his prior sickle cell crises, triggered by cold weather, with partial improvement in arm pain but persistent back and neck pain. Pain is severe and refractory to home analgesics, including morphine and oxycodone. I am most concerned for an acute vaso-occlusive crisis, given his history and severe pain, and I want to prevent complications such as acute chest syndrome, new or extending thrombosis, or end-organ ischemia. It is important to rule out other causes of pain, including recurrent Acute Chest syndrome, osteonecrosis-related pain, or end-organ damage.

Leading differential diagnosis: sickle cell crisis

Based on the acute onset of severe, throbbing pain in the back, neck, and bilateral upper extremities similar to prior episodes and the identified trigger of cold exposure, the presentation is most consistent with a vaso-occlusive pain crisis. The pain is refractory to home opioid therapy, which further supports an acute sickling event with microvascular occlusion and tissue ischemia. Laboratory findings demonstrate anemia(Hgb 7.5, Hct 22.1 with an appropriate reticulocyte response and evidence of hemolysis (elevated LDH and indirect bilirubin with low haptoglobin), which aligns with ongoing red blood cell destruction seen in sickle cell crises. There is no leukocytosis, fever, or identified infectious source, and the chest

X-ray shows no acute pulmonary abnormalities, making alternative diagnoses such as infection or acute chest syndrome less likely. Overall, the clinical presentation and supporting laboratory data most strongly align with a vaso-occlusive sickle cell crisis.

Plan:

Sickle Cell Crisis / Sickle Cell Anemia

Patient is currently experiencing a vaso-occlusive crisis with pain in the back, neck, and bilateral upper arms. Pain severity is refractory to home opioids. No signs of acute chest syndrome at this time (no hypoxia, cough, or chest infiltrates on imaging). Monitor closely for any new respiratory symptoms. Labs show H/H near baseline; transfusion is not indicated at present.

- Transfuse if hemoglobin drops below 7 g/dL or the patient develops symptomatic anemia.
- Send type and screen (T+S) for potential transfusion if needed.
- Continue the patient's chronic sickle cell medications: folate supplementation and hydroxyurea. Confirm dosing schedule and ensure adherence.
- Start intravenous fluids (IVF) to maintain hydration and reduce the risk of sickling.
- Pain management: Continue home morphine (PO 100 mg BID) and allow breakthrough pain with IV Dilaudid. Titrate and wean opioids as tolerated, aiming for adequate pain relief without oversedation.
- Monitor for opioid side effects.
- Address opioid-related pruritus with PRN diphenhydramine as requested by the patient.
- Consider adjunctive analgesia with NSAIDs, such as Toradol, if renal function is stable and no contraindications exist.

#chronic Anemia

- Monitor hemoglobin and hematocrit daily
- Continue folic acid supplementation
- Transfuse if hemoglobin drops below 7 g/dL or the patient develops symptomatic anemia.
- Send type and screen (T+S) for potential transfusion if needed.
- Evaluate the need for exchange transfusion if severe or complicated

Right Upper Extremity (RUE) DVT ; History of DVT diagnosed on 12/14/25

- The patient is currently on Eliquis for anticoagulation
- . Repeat upper extremity Doppler confirms a small left brachiocephalic thrombus. Continue anticoagulation with Eliquis.
- Monitor for signs of thrombus propagation: swelling, pain, redness, or sudden shortness of breath. Notify hematology if thrombus progresses or if any bleeding occurs.

DVT Prophylaxis / Anticoagulation

- Continue therapeutic anticoagulation with Eliquis for known thrombus and prophylaxis against new thromboembolic events.
- Monitor for bleeding, especially given the patient's history of frequent nosebleeds.
- Consult Hematology for Further evaluation of AC therapy

Hypertension (HTN)

- Continue home antihypertensive therapy with lisinopril.
- Monitor blood pressure during hospitalization and adjust therapy as needed.

Attention-deficit/hyperactivity disorder

- Hold stimulant medication such as Ritalin during the acute inpatient period due to the risk of sedation, altered mental status, and cardiovascular effects when combined with opioids.
- Monitor for sedation, agitation, delirium, and changes in mental status.
- Continue non-pharmacologic support (structured environment, clear communication, minimize disruptions).
- If significant agitation or behavioral issues develop, consider non-stimulant therapy such as Clonidine or Guanfacine.
- Arrange outpatient follow-up with primary care or psychiatry for reassessment and medication optimization.

Patient education

You have a condition called Sickle Cell Disease, which can cause your red blood cells to become “sickle-shaped” and block blood flow in small blood vessels, leading to episodes of severe pain called pain crises. To help prevent these episodes, it is important to stay well-hydrated by drinking plenty of fluids and to take your prescribed medications, such as hydroxyurea, exactly as directed. Pain medications may also be used to help control symptoms, including stronger medications like morphine or oxycodone for severe pain, and other medications such as NSAIDs under medical supervision. You should monitor your pain closely and let your healthcare team know right away if your pain worsens, changes location, or is not relieved by your usual medications. Additionally, try to avoid triggers such as dehydration, cold weather, and significant physical stress, and seek medical attention if you develop concerning symptoms like fever, chest pain, or shortness of breath.

Red Flag Symptoms (Seek Care Immediately)

- Severe or uncontrolled pain that does not improve with medication
- Fever ($\geq$ 100.4°F / 38°C)
- Chest pain or shortness of breath (possible lung complication)
- Persistent cough or difficulty breathing
- Swelling, redness, or pain in the arms or legs

- Severe headache, confusion, weakness, or trouble speaking
- Vision changes or sudden loss of vision
- Unusual bruising or bleeding
- Extreme fatigue or dizziness

Things to Avoid

- Dehydration (not drinking enough fluids)
- Extreme cold or sudden temperature changes
- Overexertion or intense physical stress
- Smoking or exposure to smoke
- Missing prescribed medications

Important Prevention Measures

- Stay well hydrated by drinking plenty of fluids
- Take all prescribed medications as directed, including hydroxyurea if prescribed
- Keep up with regular follow-ups with your primary care provider and specialists
- Stay up to date on vaccinations, especially:
- Influenza (flu) vaccine
- Pneumococcal vaccines
- Meningococcal vaccines
- COVID-19 vaccine