This write up is an excellent illustration of how to get the most out of a "routine" admission. Specifically, the student explored the patient's initial presentation and then anticipated treatment complications in the plan.

February 21; 2006
15:00
Medical student H&P

Chief Complaint: 56 year old female with acute myelogenous leukemia who presents for HiDAC consolidation chemotherapy.

History of Present Illness: This is a 56 year old white female with a history of Acute Myelogenous Leukemia (FAB M5: monocytic variety) first diagnosed in December 2005. She is status post successful '7+3' cytarabine and daunorubicin induction therapy; and presents today for her first high-dose cytarabine consolidation treatment. She initially presented to Mercy Medical Center in Hometown; Florida on December 30; 2005 with a five day history of shortness of breath; swelling of the gums; diarrhea and fatigue. Her WBC at the time was 79;000. She was transferred to Central Hospital on December 31 where she underwent a bone marrow biopsy that revealed 100% cellular bone marrow with approximately 75% of cells being blast forms. She was diagnosed with AML immunophenotype M5 and found to have the cytogenetic translocation t(9:11) characteristic of the M5 type.
On 1/2/06 she started 7+3 cytarabine and daunorubicin induction therapy. She became neutropenic on 1/5/06 and then achieved an absolute neutrophil greater than 500 on 1/24/06. The patient tolerated chemotherapy well; and received G-CSF after. She did note some mild gait imbalance that she described as an occasional misstep that has resolved since her hospitalization. She has experienced no further symptoms similar to those prior to her initial presentation. She was discharged from the hospital on 1/27/06. She had a repeat bone marrow biopsy on 1/30/06 that demonstrated complete remission and a CSF analysis on 1/30/06 that demonstrated no CSF involvement of her AML.
Her recent hospital course was complicated by the development of cellulitis and fungal pneumonia. The cellulitis occurred in her bilateral lower extremities below the knee; right more severe than left. She received Cephalexin for a total of 10 days in the hospital and home and IV vancomycin for 14 days as an outpatient; ending on 2/14. Since then; she has noted increased swelling; redness and diffuse pain (7/10) in her bilateral lower extremities around the ankles; in the area of her previous infection. The pain and swelling are worse at the end of the day after she has been on her feet; and is relieved slightly by elevating the legs and oxycodone. She has associated decreased ability to flex and extend her foot at the ankle. She has no personal or family history of DVT or other clotting disorders.
She also developed fungal pneumonia during the hospitalization for induction and had a positive serum assay for galactomannan; and chest CT showed a large left upper lobe mass and multiple small parenchymal nodules. Serum galactomannan was markedly elevated at 7.82 suggesting invasive pulmonary aspergillosis. She has received voriconazole 350mg bid since 1/19. Repeat galactomannan measurements have all been <0.5. Her last chest CT on 2/6 showed a decrease in size of the large upper lobe nodule and stable or slightly decreased size of the smaller nodules suggesting a resolving process. She denies chest pain; cough and hemoptysis presently or at the time of initial diagnosis.
Her past medical history is pertinent for COPD diagnosed in 2000 and a 35 pack-

year history of smoking; and she endorses having a slight “smoker’s cough” for several years. Her COPD is well controlled with home Combivent (albuterol/ipratropium) discus and nebulizer treatments she takes approximately 3-4 times per week. She has no PFTs on record.

Past Medical History
1. COPD as above; diagnosed 2000; controlled with daily Combivent and intermittent nebulizer treatments
2. CAD status post MI and one stent placement in the RCA in 2000.
3. Chronic hepatitis C; she does not know when or how she acquired the disease
4. History of anxiety and depression
5. Three full-term vaginal births; two spontaneous abortions

Past Surgical History
1. D&C x2 after spontaneous abortions

Medications
1. Voriconazole 350mg PO bid for aspergillosis
2. Tequin 400mg PO qd for neutropenic prophylaxis
3. Zoloft 50mg PO qd for mood
4. Combivent 1-2 puffs qid for COPD
5. Advair 250/50 1 puff bid for COPD

Allergies: patient is allergic to dilantin that caused her to have a rash when she received it as a child

Social History: The patient has “lots of different jobs;” most recently she worked as a waitress. She has not worked and has been on disability since 2000 after her myocardial infarction. She moved from Beachfront City to Hometown in July 2005. She is currently living with her husband in Summertown; FL; but has recently bought an RV and is planning to move to an RV park outside Springville. She has been married for 35 years and has 3 adults children; 2 sons and a daughter. One son lives in Summertown; FL; her daughter lives in Beachfront City; and her other son lives in Alabama. She has a 35 pack-year smoking history but states she is motivated to stop smoking. She denies alcohol use and current illicit drug use; although admits that she used several different drugs briefly over 30 years ago before her children were born. She denies any occupational or environmental exposure to chemical carcinogens or radiation; and has never received any chemotherapy before.

Family History: Positive cancer history in maternal grandmother; who had “throat cancer.” No family history of leukemia or lymphoma. Also; positive for diabetes on mother’s side of the family and CAD in father. Her four siblings and three adult children are in good health without chronic conditions.

Review of Systems:
General: fatigue; but improved from initial presentation
Skin: see HPI
Head: hair loss since induction therapy
Eyes: no visual changes or double vision

Ears: no auditory changes
Nose; sinuses: denies congestion or rhinorrhea
Mouth; teeth; throat: denies sore throat or mouth pain or ulcerations
Endocrine: denies heat or cold intolerance or chills
Respiratory: see HPI
Cardiovascular: see HPI
Gastrointestinal: states she has had occasional runny stool as she has not been eating her customary fresh fruits and vegetables in compliance with her neutropenic diet.
Genitourinary: denies dysuria or urinary frequency or urgency
Musculoskeletal: ankle pain per HPI
Psychiatric: patient has history of anxiety and depression; and states that she becomes anxious in the hospital; she denies current depressive symptoms
Nervous: as per HPI; patient experienced ataxia during induction chemotherapy that has resolved.

Physical Exam:
General: Well developed; well nourished white female in no apparent distress who is awake; alert and oriented to person; place; time and situation.
T: 37.2 (oral)
P: 78
R: 20 unlabored
BP: 142/71 (left arm)
O2 sat: 95% on room air
Head: Normocephalic; atraumatic. Short growth of hair that the patient typically keeps covered with a hat
Eyes: pupils are equal; round; reactive to light and accommodating; extra-ocular muscles intact; sclera anicteric and conjunctiva are not erythematous.
Ears: normal appearing tympanic membranes; ear canals without cerumen impaction
Nose: nares patent and non-erythematous
Oral pharynx: dentition intact; mouth without ulcerations and throat is non-erythematous
Neck: no JVD; no thyromegaly; no lymphadenopathy
CV: regular rhythm; rate 78. S1; S2 appreciated without other heart sounds; murmurs; rubs or gallops. Carotids 2+ without bruits. Bilateral radial and dp pulses 2+.
Pulm: faint expiratory wheezes appreciated in bilateral lungs fields; lungs are normally resonant to percussion. There are no crackles or rhonchi.
Abdominal: non-tender; non-distended without lesions or scars and with positive bowel sounds in all four quadrants; liver span 8 cm along mid-clavicular line; non-palpable spleen; no other palpable masses
Extremities: 2+ edema in bilateral lower extremities below mid-calf level; erythema and warmth in bilateral lower extremities from mid-calf to mid-foot with associated tenderness. Large vertical scar on anterior left lower leg; patient states came from falling off bicycle as a child. No cyanosis or clubbing.
Neurological: CN2-12 intact. Gait intact without ataxia; no dysmetria; no dysdiadicokinesia; no nystagmus; DTR: 3 bilateral patellar; 2+ bilateral biceps; triceps; and achilles'; bilateral downgoing babinski. Stregth 5/5 throughout; sensory intact throughout to light touch; vibration; and pinprick. Normal speech

patterns

Labs:
From 2/13/06
Sodium 144
Potassium 4.1
Chloride 105
Bicarb 29
Creatinine 0.5
Glucose 81
Calcium 8.0
Magnesium 1.7
Phosphorous 3.5
Uric acid 5.2
Total protein 6.1
Albumin 3.3
Total bili 0.4
Direct bili 0.1
AST 21
ALT 14
Alk phos 153
LDH 345

Urinalysis normal without WBCs; RBCs; leukocyte esterase or nitrates.

WBC 10.7
Hemoglobin 9.1
Hematocrit 27.9
Platelets 464
Neutrophils 84%
Lymphocytes 11%
Monocytes 4%
Eosinophils 0.6%
Basophils 0.6%

CT chest without contrast on 2/06: Decreasing size of left upper lobe mass having characteristics consistent with healing invasive aspergillosis; multiple diffuse small parenchymal nodules stable or slightly decreased.

Bone marrow biopsy on 1/30/06: markedly hypercellular marrow; 90% (no increase) in blasts; “findings consistent with a hematologic remission.”

CSF fluid analysis on 1/30: no abnormal cells identified

Problem List:
1. AML M5; dx 12/05; in remission
2. bilateral lower extremity cellulitis; s/p 14 days IV vancomycin completed 7 days ago
3. invasive pulmonary aspergillosis; resolving per chest CT
4. anemic with H&H 9.1 and 27.9

5. chronic hepatitis C
6. COPD
7. CAD
8. History of depression and anxiety

Assessment: 56 year old white female with history of AML M5 without CNS involvement who is status post successful 7+3 induction therapy being admitted for first consolidation HiDAC therapy.

1. AML M5: Patient will start consolidation HiDAC tonight which typically consists of 3000mg/m2 IV q12h on days 1; 3 and 5 and predisone 100mg qd on days 1-5. Due to this patient's active cellulitis and history of aspergillosis; she will receive doses reduced by 33%. This is a common practice aimed at limiting the induced neutropenia and subsequent infections consequences. HiDAC therapy is most frequently associated with the severe side effect of cerebellar toxicity. During her induction therapy; the patient experienced some mild ataxia. The patient is currently without signs of cerebellar toxicity. We will monitor the patient closely for cerebellar signs of ataxia; dysmetria; nystagmus and dysdiadicokinesia and consider halting chemotherapy if these symptoms develop. We will also monitor blood counts and electrolytes for abnormalities including signs of tumor lysis syndrome such as hyperuricemia; hyperphosphatemia; hyperkalemia and hypocalcemia. However; the patient is unlikely to develop TLS as she has a normal WBC and is in hematologic remission per bone marrow biopsy; so likely has only a small tumor load. Will consider starting allopurinol 300mg if electrolytes begin to move and clinical suspicion of tumor lysis increases.
2. Cellulitis: the patient has likely developed recurrent cellulitis since cessation of 14 days of IV vancomycin therapy 7 days ago; a common occurrence in the immune-suppressed patient. She has erythema and tenderness in her bilateral lower extremities and has 2+ edema. The patient has been taking PO Tequin daily since last discharge; so her current cellulitis is probably resistant to it. We will stop PO tequin and restart vancomycin at 1g IV q12h now and continue as an outpatient for a total of 28 days of therapy. The patient states that her 2+ pitting edema is improved with elevating her legs such as when sleeping at night; so there is a dependent component. She does not appear to be clinically in volume overload (no JVD); but we will give 20mg PO lasix to try to reduce the edema as well as encourage the patient to keep her feet elevated when not ambulating. We will also give the patient oxycodone 5-10mg q4-6hours as needed for pain control during the hospitalization for chemotherapy.
It is also possible that the patient may have bilateral deep venous thrombosis in her lower extremities; although bilaterality is less common and she has no personal or family history. However; she has the classic symptoms of pain; erythema and swelling and has the additional DVT risk factor of malignancy. Her Wells score indicates moderate risk of DVT so we will quickly get bilateral lower extremity Doppler studies to evaluate for DVT. If Doppler studies reveal DVT; we will anticoagulate with IV heparin drip titrated to PTT 1.5-2.5 times normal and transition to coumadin. If DVT is ruled out; the patient will be on 5000 units subq heparin for DVT prophylaxis.
If clinical suspicion of cellulitis remains high and the patient shows a response to IV vancomycin; we will consult social work to arrange for the patient to receive

home nursing to complete her 28 day IV vancomycin therapy at home.
3. Aspergillosis: last chest CT showed a resolving process; and the patient is asymptomatic. She has been on voriconazole 350mg bid; which is the appropriate therapy for invasive aspergillosis. The patient will continue on voriconazole while hospitalized. We will get a repeat chest CT to evaluate for interval changes in the pulmonary masses and nodules. We will also get a repeat galactomannan level to evaluate disease progression. While the aspergillosis appears to be improving with galactomannans within normal limits and resolving masses on CT; recurrence is common whenever the patient is immune suppressed such as during this consolidation therapy. The patient will continue on voriconazole therapy throughout her AML therapy course and between therapies.
4. anemia: the patient is anemic by H&H of 2/13/06. We will monitor daily CBCs during therapy and consider erythropoietin or transfusion if the hematocrit falls below 25. Some degree of hematopoetic marrow suppression is common in HiDAC chemotherapy.
5. Chronic Hepatitis C: the patient does not appear to be in an active phase of the disease and her LFTs remain within normal limits. Last hepatits serology on 1/4/06 showed HCV RNA levels of >6.89 IU/ml (nl <2.79). We will continue to monitor LFTs but at this time we will not consider HCV treatment with interferons.
6. COPD: the patient's COPD has been well controlled at home on her current medications; which we will continue as well as add prn nebulizer treatments. She has only mild expiratory wheezes on pulmonary auscultation and is otherwise asymptomatic. The patient states that she is motivated to quit smoking and would like a nicotine patch while she is hospitalized; which we will provide. The patient's O2 saturation is 95% on room air and she is not on home O2; so at this point she will not receive supplemental O2. We will continue to monitor pulmonary exam and O2 saturation.
7. CAD: the patient has a history of CAD; MI and has had one stent placed approximately 5 years ago. While hospitalized; she will be placed on a cardiac diet. She is currently mildly hypertensive; but in lieu of her chemotherapy and infections; we will not treat at this time but instead recommend she follow up with her primary care physician. We will continue to monitor her blood pressure; with the expectation that she will remain hypertensive especially as she will be receiving prednisone; and consider treatment only if pressures are consistently elevated above 160/100.
8. Depression/Anxiety: the patient has been on Zoloft 50mg qd and will continue. Additionally; she will receive Ativan 0.5-1mg PO q8hours as needed for anxiety.
9. F/E/N: The patient will receive IV fluids during chemotherapy per HiDAC protocol. We will monitor electrolytes as above and replace as necessary. The patient will be on a cardiac diet as above. We will monitor glucose on daily BMPs and consider an insulin sliding scale if glucose is elevated above 200 as the patient will be receiving prednisone.
10. Code status: the patient is full code