PEDIATRICS

Informant: Mother

Chief Complaint: "Fever, cough, and spitting up blood"

History of the Present Illness: This four year-old female with no significant past medical history was in her usual state of good health until ten days prior to presentation to the hematology floor at CHOP, when she began having fevers of 101-102°F and a non-productive cough, according to her mother. She was given Motrin and Vicks 44 at this time, with some defervescence, but little amelioration of her cough. Her mother denies that the patient had a runny nose, sore throat, red eyes, earache, vomiting, diarrhea, changes in appetite, changes in urination, or a notable decrease in energy during the first three days of illness. The patient reached a maximal temperature of 105.8°F on the third day of illness, at which point she was taken to the Emergency Department at Fitzgerald-Mercy Hospital. At the ED, pneumonia, otitis, and postnasal drip were ruled out, and the patient was sent home with Motrin, a diagnosis of a viral upper respiratory infection, and advice to visit a doctor if the fever did not remit in three days, according to her mother. Throughout the fourth and fifth days of illness, the patient's fever remained persistently above 101°F, reaching a maximum of 103.8°F, and the patient had one episode of vomiting each day, each occurring immediately after administration of Vicks 44. On the sixth day, the patient woke up in the early morning with a cough and vomited again after administration of a new dose of Vicks 44. However, during this episode of vomiting, the patient developed a mild nosebleed that did not remit over the course of the next day.

One day after onset of the nasal bleeding (day seven of illness), the patient presented to her pediatrician at Jefferson Pediatrics with a continued nosebleed, cough, and fever, and a new complaint of abdominal pain. While in the office, the patient had an episode of hematemesis that included noticeable clotted blood. She was then sent to the Jefferson ED, where she was found to have pancytopenia on CBC. At Jefferson, she was noted to have abdominal tenderness in the right upper quadrant, and she received three transfusions of packed red blood cells and platelets in addition to a dose of cefepime. She was then transferred to CHOP and admitted to the oncology service, where she was also noted to have abdominal tenderness, although the tenderness had expanded to include both upper quadrants. At this point, she was also started on intravenous fluids with bicarbonate, at 1.5 times maintenance in case of tumor lysis in the future. She remained on the oncology floor for three days (until day ten of illness), during which she was noted to have right knee pain and one black, tarry, heme-positive stool. The knee pain resolved with a very low dose of morphine and was not accompanied by any physical exam abnormalities or evidence of bleeding. A bone marrow biopsy was completed while on the oncology floor (day ten of illness), and the marrow was noted to be hypocellular with islands of normocellular marrow and a left shift, but no apparent malignant cells. She was transferred to the hematology service after marrow analysis and a diagnosis of aplastic anemia.

The patient's mother denies frequent illnesses in the past, as well as any other bleeding or bruising before or since onset of the illness, including blood in the urine. She had not noted any rashes or skin changes before presenting to the Jefferson ED, but after being shown some petechiae in the hospital, she noted that petechiae were present on the day or two before presentation at Jefferson (days six/seven). Her mother reports that she has been afebrile since admission to CHOP and that she has been eating well but drinking less than normal.

Past Medical History:
1) Eczema, currently.
2) Hospitalized for skin boil, last year.

3) Acid reflux, as an infant. Resolved during infancy.

Medications:
Triamcinolone for eczema. Dosing details not known.

Allergies:
Packed red blood cells—caused itching at Jefferson when administered on the day of presentation at CHOP. No known allergies to medications, foods, latex, or contrast.

Birth History:
The patient was born via induced vaginal delivery at 42 weeks. According to her mother, she was noted to have jaundice for the first day or two, which resolved spontaneously. She remained at the hospital for six days after birth due to severe reflux.

Immunizations:
According to her mother, she is currently up to date on her immunizations.

Growth and Development:
The patient's mother has no growth or developmental concerns, noting that the patient walked earlier than most other children, was easily potty-trained, and has been doing well in pre-K classes.

Exposures:
There is one cat in the patient's home and no known sick contacts in the home, although the patient does attend daycare, where it is likely she came into contact with sick peers.

Nutrition:
Specific details about the patient's diet were not obtained.

Primary Medical Doctor: Dr. McNett at Jefferson Pediatrics.

Family History: The patient's parents have no known medical problems. One of the patient's maternal great-grandmothers had diabetes, cervical cancer, and a myocardial infarction, another maternal great-grandmother had breast cancer, and one paternal great-grandfather had prostate cancer. Patient's mother denies hypertension, diabetes, excessive bleeding, and aplastic anemia in the family.

Social History: The patient lives with her mother and her maternal grandfather, and she attends pre-K five days a week.

Review of Systems:
General – As per HPI. Did not ask about weight changes or dizziness.
Skin – As per HPI. Did not ask about itching or scaling.
Head – Did not ask about headaches, loss of consciousness, seizures, or head injury.
Eyes – As per HPI. Did not ask about icterus.
Ears – As per HPI. Did not ask about difficulties hearing or ear discharge.
Nose – As per HPI.
Mouth/Throat – As per HPI. Did not ask about oral lesions, tongue pain, cavities, or hoarseness.
Neck – Did not ask about lumps in neck or stiff neck.

Cardiovascular – Did not ask about edema, chest pain, cyanosis, or history of a heart murmur.
Lungs – As per HPI. Did not ask about wheezing or dyspnea.
Gastrointestinal – As per HPI. Did not ask about dysphagia, odynophagia, or jaundice.
Genitourinary – As per HPI. Did not ask about vaginal or urethral bleeding and discharge.
Hematology – As per HPI.
Allergy/immunology – As per HPI/PMH. Did not ask about lymph node swelling.
Endocrine – Mother denies polydipsia, polyphagia, and polyuria. Did not ask about goiters or abnormal weight changes.
Musculoskeletal – Did not ask about fractures, trauma, joint swelling, or joint stiffness.
Neurological – Did not ask about muscle atrophy, paralysis, weakness, spasticity, tremors, involuntary movements, changes in sensation, or lack of coordination.
Psychological – Mother denies difficulty sleeping. Did not ask about anxiety or phobias.

Physical Examination:
VS: Temp 37.4°C (axillary), BP 102/52, P 73, RR 20, SpO_2 100%, RA
Growth parameters: Weight 16.3 kg (50^{th} percentile), Height 75^{th} percentile (Did not record actual value in centimeters.)
General: Well-appearing, no acute distress. Sleeping quietly for first half of exam. Awake, alert, friendly, and cooperative for second half of exam.
Skin: Scattered hyperpigmented areas. A few scattered small petechiae on anterior neck and upper chest.
HEENT: Atraumatic, normocephalic. Normal alignment and position of brows, lashes, lids. Pink conjunctivae, with no conjunctival injection. Sclerae anicteric. Lacrimal apparatus not palpated. Pupils equal, round, and reactive to light. Visual fields and visual acuity not tested. Opthalmoscopy not completed. Pinna normal to inspection and palpation. Auditory acuity not tested. Right and left tympanic membranes dull and bulging. No nasal congestion or rhinorrhea. Dried blood on lower lip. Oral mucosa pale with no obvious ulcers but a few palatal petechiae. No pharyngeal erythema or edema and normal tonsils. Did not examine dentition.
Neck: No palpable lymph nodes and no masses. Neck supple.
Chest: Normal breathing rate and rhythm with minimal effort. Normal chest shape and no accessory muscle use or retractions; no pectus carinatum or excavatum. Spine is midline with no scoliosis or kyphosis. Respiratory excursion not assessed. Percussion not completed. Lungs clear to auscultation bilaterally. No rales, rhonchi, or wheezes.
COR: Regular rate and rhythm, with normal S1 and S2 and no audible S3 or S4. 1-2/6 systolic ejection murmur. No heaves, thrills, or rubs. Peripheral pulses, jugular venous pulse, and carotids not examined. PMI not palpated.
Abdomen: Bowel sounds present, with no bruits. Abdomen soft, non-tender, non-distended, with no guarding or rebound. No masses or hepatosplenomegaly.
Extremities: Extremities warm and well-perfused. No peripheral edema. No visible thumb or radial abnormalities. Moves all extremities equally, with full range of motion of all extremities. No knee tenderness to palpation or passive movement. Did not examine femoral or axillary lymph nodes.
Genital/Anal: Deferred.
Neurologic: Cranial nerves II, IX, X, and XII intact. Cranial nerves III, IV, V, VI, VII, VIII, and XI not specifically tested, but grossly intact. Strength, reflexes, and coordination not tested.

Laboratory/Imaging Studies:
Hematology:
From Jefferson ED, before transfusion (day 7 of illness): WBC=1.8, Hgb= 4.5, Platelets=8
From day of transfer to hematology floor (day 10 of illness): WBC=3.4, Hgb=9.7, Platelets=43

Virology:
Influenza A = positive
EBV = past infection
Parvovirus B19 = negative

Pathology:
Bone marrow biopsy = Hypocellular with islands of relatively normal cells with a left shift.

Summary:
In summary, this 4 year-old female with no significant past medical history was transferred to the hematology service for further evaluation and management after a ten-day course of illness that culminated with diagnoses of influenza A infection, otitis media, and aplastic anemia. The course of illness included seven days of fever and cough (days 1-7, Tmax=105.8°C), three episodes of non-bloody, non-bilious emesis (days 4-6), a mild nosebleed with a duration of 1.5 days (days 6-7), one episode of hematemesis (day 7), three transfusions of packed red blood cells and platelets (day 7), one episode of melena (day 10), and one episode of right knee pain with a duration of less than one day (day 10). The physical exam is notable for pale oral mucosa, dull and bulging TM's, a 1-2/6 systolic ejection murmur, and a few scattered petechiae on the palate, anterior neck, and upper chest.

Impression: The patient presents to the hematology floor with recent diagnoses of influenza A infection, otitis media, and aplastic anemia. Aplastic anemia can result from a variety of causes, both acquired and inherited. Because of this patient's young age, both inherited and acquired etiologies must be considered, but the lack of other known abnormalities or malformations decreases the likelihood of an inherited disorder. The most common inherited form of aplastic anemia is Fanconi Anemia (FA), with a heterozygote frequency of 1 in 300 in the United States and Europe. FA results from an autosomal recessive or X-linked mutation in a DNA repair gene, FANCD1, which is identical to BRCA2, a breast cancer susceptibility gene. FA is generally diagnosed between ages 6 and 9, but it has been identified in children above and below this age range. This patient, at age 4, is still within the reasonable age range for diagnosis of FA, but her young age does lower the likelihood of FA being the cause of her anemia. Furthermore, 60-70 percent of FA patients have associated congenital malformations, including hypopigmented and café-au-lait discolorations of the skin, thumb abnormalities, microcephaly, and hypogonadism, and an even larger percentage of patients exhibit short stature. This patient's average height and lack of known malformations further decreases the likelihood of FA being the cause of her pancytopenia, but certainly does not rule out the diagnosis. It is important to screen for FA in this case because almost 25% of patients with FA later develop malignancies and many patients have underlying involvement of other organ systems, so appropriate intermittent cancer screenings and treatment for other organ manifestations should be initiated as early as possible.

The next three most common inherited causes of aplastic anemia are Dyskeratosis congenita (DC), a syndrome of ectodermal dysplasia that is thought to result from a mutation in genes important for the function of telomerase, Shwachman-Diamond syndrome (SDS), a syndrome resulting from an unknown mutation that includes exocrine pancreatic insufficiency, short stature, skeletal anomalies, and progressive marrow failure, and congenital amegakaryocytic thrombocytopenia (CAMT), a disorder that results from mutations in the thrombopoeitin receptor gene. All three of these disorders, however, are quite unlikely to be the cause of this patient's marrow failure. Both DC and SDS would exhibit marrow failure in conjunction with other significant abnormalities, and both CAMT and SDS would be expected to present much earlier than age four, generally appearing in infancy. Full marrow failure can also occur in other inherited disorders that usually present with only a cytopenia in a single cell line (such as Diamond-Blackfan anemia), but such cases are very rare, and thus these causes are very unlikely in this patient.

Seventy to eighty percent of non-hereditary cases of marrow failure do not have a clearly identified cause, but known etiologies of aplastic anemia include radiation exposure (causing dose-dependent marrow failure), medications (including phenylbutazone, chloramphenicol, gold, sulfonamides, anti-epileptics, nifedipine, and cytotoxic drugs), industrial chemicals (especially benzenes), infection (especially viruses), and pregnancy. Most known cases of acquired marrow failure in children are post-viral (especially post-hepatitis) or resulting from drug or toxin exposure. This patient's lack of known exposure to radiation, chemicals, and drugs implicated in causing marrow failure reduce the likelihood of these etiologies, although toxic exposures should be investigated if no other cause can be determined.

Give this patient's clinical course and history, infection is the most likely cause of her marrow failure. A variety of bacterial and viral infections (including Influenza A) can result in transient pancytopenia by unknown mechanisms, and specific viruses such as non-typeable hepatitis viruses (i.e. not A, B, C, or G), HIV, and Parvovirus B19 can cause marrow failure by direct damage to marrow stem cells by the virus itself or by resultant cytokine release from T cells. This patient could have marrow failure from her influenza A infection or from another concurrent or previous viral or bacterial infection that has not yet been identified.

Plan:

1) Pancytopenia: - Monitor with serial CBCs, ANCs, and reticulocyte counts
   - Search for an etiology via diepoxybutane (DEB) testing (for FA), HIV testing, Parvovirus testing, and hepatitis A/B/C testing
   a) Anemia: - Monitor hemoglobin level and vital signs
      - transfuse pRBCs again if necessary
   b) Thrombocytopenia: - Monitor for bleeds
      - Prevent injuries by limiting activity
      - Transfuse platelets if bleeding occurs or if platelets drop below 10,000
   c) Afebrile neutropenia: - Monitor for fever or other signs of infection (especially pneumonia due to Influenza A status)
      - Begin G-CSF injections
      - Monitor ANC after G-CSF administration
      - Arrange for home delivery of G-CSF, parental teaching about home G-CSF administration, and home nursing visits to help with initial home doses of G-CSF
2) Otitis media: - Continue ceftazidime (50 mcg/kg, every 8 hours, IV)
3) Influenza A: - Seems to be resolved or resolving—monitor for fevers and bacterial superinfections
4) Melena: - Heme test stools to monitor for further GI bleeding
5) Right knee pain: - Seems to be resolved—monitor for further pain, swelling, or decreased range of motion
6) Fluids and nutrition: - Continue house diet, encourage PO fluids, and consider discontinuation of IV fluids if PO intake is adequate

MEDICINE

Source of History: Patient, Reliable Historian

Chief Complaint: "pains in my stomach"

HPI: Mr. R is a 25 year old man with PMH significant for 3 year history of extensive GI work-up with 4 hospital admissions to an OSH for waxing and waning abdominal pain associated with nausea, vomiting, diarrhea, "dark urine", and a non-blanching petechial rash without definitive diagnosis, who presents now with 6 days of similar symptoms that acutely worsened 48 hours ago. He was in his USOH until 6 days ago, when he noted the sudden onset of lower abdominal pain (RLQ>LLQ) associated with nausea, nonbloody vomiting to all oral intake, a diffuse, petechial rash on his arms, legs and trunk, and "dark urine" that has been characteristic of his 4 prior flares. 4 days PTA, the patient presented to his PCP; a definitive diagnosis was not suggested but a prednisone taper was initiated, which the patient states significantly improved both his abdominal pain and rash until the day of admission.

On the morning of admission, the patient awoke with 10/10, subumbilical abdominal pain greatest in the RLQ, which he describes as sharp, stabbing, and nonradiating, along with severe nausea, nonbloody vomiting, a worsening of his erythematous rash (nonpruritic, nonpainful), and "dark urine." He also noted a well formed bowel movement on the morning of admission that was associated with dark blood on the toilet tissue, without gross blood in the toilet bowl. In the past, he has taken Excedrin 250 mg (asprin+acetaminophen+caffeine) for abdominal pain, which has transiently improved the pain, but he states that he did not take it this time because his PCP advised against it. The pain was slightly improved with rest and lying on his stomach. He denies recent fevers, chills or night sweats, though he states that he does occasionally experience these symptoms in the setting of such episodes; he last experienced a fever several weeks ago. He also notes a 15 lb weight loss since January which he attributes to poor appetite, and increased fatigue. He denies diarrhea at this admission but states that he has frequently had grossly bloody diarrhea during the 4 prior admissions. He also hematemesis, changes in the caliber of his stools, prior history of hemorrhoids or anal fissures, oral ulcers, dysphagia or odynophagia, history of liver disease or jaundice. In addition, he denies recent travel history, joint pain, eye problems, dysuria, history of nephrolithiasis, or periorbital or lower extremity edema.

Of note, the patient states that his 4 prior admissions to OSHs were nondiagnostic. He states that his last colonoscopy and EGD 1 year ago were inconclusive, that a skin biopsy showed "vasculitis," and that repeat urinalyses have shown persistent hematuria and proteinuria, though he has never had a renal biopsy. In addition, he was started on mesalamine controlled release in January during admission to OSH, which reportedly worsened both his abdominal pain and rash. He presented to HUP yesterday morning in the hope that we could provide him with a definitive diagnosis and treatment.

In the ED, he was given hydromorphone for pain control (1 mg IV x2, 2 mg IV x2), along with ondansetron (4 mg IV x1) for nausea. Labs were significant for a CRP 1.3, ESR 67, ALT 120, and a UA + for protein and blood, without leukocytes, nitrates, or ketones. CT was performed, which showed bowel wall thickening, fat stranding and engorgement of the vessels involving the terminal ileum as well as the descending colon, most pronounced in the sigmoid, along with a 1 cm x 1 cm organizing fluid collection w/o pneumoperitoneum or abscess, most likely consistent with Crohn's disease.

PMH:
Asthma (multiple hospital admissions until the age of 7, he has no memory of intubations, no MDI is currently prescribed and he is only mildly symptomatic during humid weather, which is relieved by sitting in an air conditioned room)

? vasculitis (reported skin biopsy 1 year ago at OSH)
? glomerulonephritis (reported hematuria and proteinuria on prior microscopic U/A)

PSH:
Tendon repair to right hand for bar fight (2001)

SH:
Works as the manager of BMW retail department. Lives with his parents, completed high school. Sexually active, states that his last HIV test was 1 year ago (result negative, per patient) and that he has never been treated for STDs. Occasional alcohol use, drinks beer a few times a month. Remote 3 year smoking history of 3-4 cigarettes per day, quit 5 years ago. Remote history of ecstasy and marijuana use (9 years ago), denies IVDU.

FH:
Paternal cousin with celiac disease. Mother with hypertension. Paternal aunts and grandmother with history of lung and "brain" cancer. Pertinent negatives – no known family history of IBD, vasculitis, GI malignancy.

Meds:
Occasional Excedrin – aspirin+acetominophen+ caffeine (last dose 6 days PTA, 500 mg)

Allergies:
1) penicillin (hives, swelling) – no exposure since childhood
2) amoxicillin (hives, swelling) – no exposure since childhood
3) erythromycin (hives, swelling) – no exposure since childhood
4) cefaclor (hives, swelling) – no exposure since childhood

ROS:
General: As above
Skin: as above
Head: Denies headaches, history of seizures, head trauma
Eyes: Denies blurry vision, double vision, pain or difficulty seeing
Ears: Denies difficulty hearing, tinnitus, dizziness
Nose: Denies difficulty smelling, epistaxis, or history of polyps
Throat: Denies sore throat, neck masses or swollen lymph nodes
Cardiac: Denies chest pain, palpitations, orthopnea, history of murmur
Pulmonary: Denies cough, wheeze, shortness of breath with exercise
GI: As above
GU: As above
Endocrine: Denies history of DM or thyroid disease
Heme: Denies history of DVTs, increased bleeding or bruisability, history of anemia or thrombocytopenia
Psych: Denies current depression or anxiety

Neuro: Denies weakness, paralysis, numbness or tingling in extremities, hx of migraine or CVA
MS: Denies fractures, joint or muscle pain

PE:
General: Caucasian man, WNWD, uncomfortable appearing and irritable, lying in bed
VS: 98.1 (afebrile), HR 79s-80s, BP 139/75 RR 16 100% RA
HEENT: NC/AT, PERRLA, EOMI, sclera anicteric, no evidence of uveitis or episcleritis, conjunctiva pink and moist, no periorbital edema or facial swelling, neck supple, without cervical adenopathy or thyromegaly, no oral ulcers appreciated
Skin: diffuse, nonblanching petechial rash on flexor surfaces of arms, extensor surfaces of legs, and trunk (sparing face and back), no decreased capillary refill or tenting
Lungs: lungs clear to auscultation and percussion, no rales or rhonchi
Cardiac: regular rate and rhythm, nL S1S2, no murmurs, rubs or gallops
GI: diffusely tender, most prominent in RLQ, with voluntary guarding, no rebound, mild distention, +BS, no hepatosplenomegaly or abdominal masses appreciated
Neuro: CNs II-XII grossly intact, strength 5/5 UE and LEs, full range of movement, nL DTRs, sensation grossly intact to all modalities
Extremities: no clubbing, cyanosis, or edema appreciated.

Data:
CBC (in ED): WBC 9.7, Hgb 13.9, Hct 41, platelets 371. Differential: 75.3% PMNs, 16.2% lymphs, no bands, 7.1 monocytes, 0.8% eosinophils, 0.7% basophils
Lytes (in ED): Na^+ 143, K^+ 4.3, Cl- 104, HCO_3 28, BUN 14, Creatinine 0.8, Glucose 107
LFTs (in ED): ALT 120, AST 43, Total bili 0.8, Alkaline Phosphatase 70, amylase 40, lipase 70
UA (in ED): pH 7.0, + blood, + protein, - nitrate, - leuk esterase, - bacteria
CRP 1.3, ESR 67

CT (in ED): Colitis involving the TI as well as the descending colon from the level of the splenic flexure to the sigmoid, most pronounced in the sigmoid, associated with fat stranding, bowel wall thickening, and engorgement of adjacent vessels. This is most likely secondary to Crohn's disease in a patient of this age, with infection and ischemic colitis less likely. Early 1 cm x 1 cm organizing fluid collection is visualized in the sigmoid, without pneumoperitoneum, frank abscess formation or secondary inflammation of adjacent structures.

Summary:
In summary, Mr. Rafferty is a 25 year old man who presents with 6 days of acutely worsening abdominal pain, nausea, vomiting, a diffuse nonblanching petechial rash, and "dark urine" in the setting of a 3 year history of a waxing and waning course of identical symptoms, which is most likely secondary to Crohn's disease on the basis of CT findings of skip lesions, transmural inflammation and fat stranding. Vital signs are within normal limits. Physical exam findings are significant for diffusely tender abdomen most pronounced in the RLQ, with voluntary guarding, no rebound, and a diffuse nonblanching petechial rash most pronounced on his trunk, arms and legs. Laboratory studies reveal a UA positive for blood and protein, normal amylase and lipase, and a normal WBC and hemoglobin. CT findings suggest colitis involving the TI through the descending colon, most pronounced in the sigmoid, with small organizing fluid collection.

Problem List:
1) Abdominal pain/n/v

2) Hematuria/proteinuria
3) rash
4) weight loss

Differential Diagnosis: Abdominal Pain/n/v (+/- hematuria and rash)

1) Crohn's Disease – This is the most likely diagnosis, given the classic findings of abdominal pain, nausea/vomiting, intermittent fevers, and weight loss. The CT findings of bowel wall thickening, fat stranding, and vascular engorgement from the TI through the descending colon, along with an organizing fluid collection, are also consistent with the diagnosis, since the transmural inflammation associated with Crohn's disease predisposes patients to stricturing, fistula formation, and abscess. The patient's petechial rash could be associated with Crohns, since patients can present with vasculitic findings, though skin findings of erythema nodosum and pyoderma gangrenosum are more common. The hematuria and proteinuria present on macroscopic UA in the ED (and by report) have yet to be confirmed with microscopic analysis, and warrant further work up. Should these findings be confirmed on microscopic U/A, they would be harder to subsume under the diagnosis of Crohn's disease. A vasculitis secondary to IBD could possibly present with a glomerulonephritic picture. In addition, patients with Crohn's disease are predisposed to form calcium stones secondary to malabsorption of free fatty acids. This patient has terminal ileal disease on the basis of CT findings, and therefore it is conceivable that calcium oxalate stones could be causing persistent abdominal pain associated with hematuria/proteinuria. Further work up is warranted.

2) HSP – The triad of petechiae, abdominal pain, and nephritis in a young man could be diagnostic of HSP, a relatively uncommon IgA nephropathy. The CT findings, which are virtually diagnostic of Crohn's disease, would argue against the diagnosis, but the reported history or hematuria and proteinuria, along with a skin biopsy suggestive of vasculitis, might support it. In addition, the patient's waxing and waning course is less suggestive of HSP, since patients with the disease classically present following a URI with acute symptoms, which resolve spontaneously. The Diagnosis of HSP is accomplished by skin or kidney biopsy with IgA immunoflourescence staining; serum IgA levels are nonspecific but often elevated. Since this disease could potentially explain all of this patient's findings, we should at least keep it in the differential pending results of the microscopic U/A.

3) PAN – Polyarteritis nodosum, an uncommon systemic vasculitis characterized by necrotizing inflammation of small and medium sized arteries, is a possible diagnosis in this patient given his symptoms of hematuria, abdominal pain, and rash. Patients with PAN commonly present with nausea, vomiting and abdominal pain secondary to bowel infarction, arthralgias and myalgias, hematuria secondary to glomerular involvement, and a palpable purpuric rash. In late stages of the disease, arterial biopsy commonly shows fibrinoid necrosis with a chronic inflammatory infiltrate. The patient's constitutional symptoms of malaise and weight loss might be consistent with the diagnosis, which is suggested by a positive p-ANCA test. 30% of patients are also hypergammaglobulinemic.

4) Cryoglobulinemia- This is a possible, though less likely, diagnosis in a patient who presents with abdominal pain, hematuria and a petechial, vasculitic rash. Cryoglobulinemia is an immune complex mediated disease whose sequelae are secondary to hyperviscosity and thrombosis. The disease is most commonly associated with Hep C positive patients, though it is occasionally seen independently or in association with other autoimmune diseases including SLE. Patients commonly present with hypocomplementemia, in particular with low C3 levels, and often with a monoclonal

IgM spike on serum protein electrophoresis or a positive rheumatoid factor. If other studies are negative, it might be worth checking complement levels or an SPEP.

5) Nephrolithiasis – The patient's reported "dark urine" associated with intermittent fevers, and abdominal pain might support this diagnosis, though the absence of pain with urination, flank pain, and pyuria would likely argue against it. In addition, the CT findings are unlikely to be consistent with a diagnosis of UTI, though the diagnosis could still be possible (as detailed in the consideration of calcium oxalate stones), since a patient could present with multiple problems at the same time.

6) Malignancy (colon, ileum)– This is lower on the differential, given the lack of BRBPR, the CT findings, and the normal Hemoglobin. But the diagnosis should still be considered given the patient's fatigue, weight loss, and change in bowel habits, along with his recurrent abdominal pain. Given the likelihood or the diagnosis of Crohn's disease in this case, the patient will require routine surveillance for malignancy, since in Crohn's disease the risk of malignancy is increased in proportion to episodes of active disease.

7) Ulcerative Colitis – Given the specific findings on CT, this is an extremely unlikely diagnosis, since UC would likely evidence CT findings of continuous inflammation beginning in the rectum and moving proximally (not skip lesions), without terminal ileal involvement, and with inflammation limited to the mucosa. In spite of this, the patient's presenting symptoms of abdominal pain, bloody diarrhea, nausea and vomiting could suggest the diagnosis. The disease is also associated with an elevated ESR and can be diagnosed on the basis of colonoscopy findings consistent with mucosal (not transmural) inflammation.

8) Chronic mesenteric ischemia – this is an unlikely diagnosis in a patient of this age, found more commonly in elderly patients who develop severe abdominal pain after eating and weight loss, nausea, vomiting, and diarrhea. In addition, the patient is without cardiovascular risk factors and did not evidence an anion gap on admission. Chronic mesenteric ischemia most often presents with an elevated lactate, which would manifest in an increased anion gap.

Plan:
Problem 1:
1) U/A with microscopic analysis
2) Obtain OSH records – EGD/SBFT/colonoscopy, U/A, derm biopsy
3) AM Labs – daily CBC with differential, electrolytes, glucose
4) GI consult
5) Nutrition consult
6) pain control – hydromorphone seems to be controlling pain, continue as necessary
7) ondansetron PRN to alleviate nausea
8) IVF for hydration
9) monitor for fevers, leukocytosis with left shift, decompensation that might suggest abscess formation, in which case we would likely consult IR for drainage

Problem 2: Hematuria/proteinuria –
Differential Diagnosis/Discussion:
This could be secondary to the underlying Crohn's disease or any of the above mentioned diagnoses and warrants further work up with a microscopic U/A. The differential diagnosis for a glomerulonephritic picture associated with abdominal pain has been detailed above, but it is also

worth considering other diagnoses consistent with a glomerulonephritis, since multiple diagnoses can occur in the same patient.

1) SLE - lupus nephritis as a possible, though unlikely, cause of his symptoms. Lupus nephritis is more common in young women, and would be most likely to present with other SLE symptoms, including a malar rash, discoid lesions, photosensitivity, along with arthralgias and myalgias. However, the patient's increasing fatigue, 15 pound weight loss, and elevated ESR and CRP might be consistent with SLE, though they are certainly insensitive markers for the diagnosis. It is probably worth checking an ANA to rule out the diagnosis.

2) Membranoproliferative glomerulonephritis – This immune complex mediated disease presents with a glomerulonephritic picture of hematuria/proteinuria but would not explain the patient's other symptoms of abdominal pain and skin involvement. Patients with MPGN commonly have low C3 and C4 levels due to immune complex deposition with activation of complement. Pending other studies, complement levels might be warranted.

3) The differential for a glomerulonephritis with vasculitis also includes Wegner's granulomatosis and Goodpasture's disease, which are both unlikely given the absence of pulmonary and upper respiratory findings.

Plan problem 2:
1) microscopic U/A
2) follow Hgb/Hct
3) Renal consult
4) Rheum consult

Problem 3 rash –
Differential diagnosis discussion:
This is most likely a vasculitis secondary to the Crohn's disease, though other causes of a petechial, nonblanching rash include thrombocytopenia, which is ruled out by the normal platelet count; infectious causes, which are ruled out by the normal CBC; syphilis, which is unlikely given the patient's reported sexual history, and various vasculitides, including those mentioned above. Further work up should proceed pending the GI and UA results, which might help contextualize the skin findings in this patient. Pending those studies and retrieval of the patient's skin biopsy, which reportedly showed "vasculitis," further work up might be necessary.

Plan problem 3:
1) derm consult pending results of other studies (rash appears to be improving).

Problem 4: weight loss – This is most likely secondary to decreased appetite and oral intake, but nutrition consult is warranted as we wait for further studies.
1) nutrition consult
2) encourage PO intake as tolerated

PPx – SQH, ranitidine

SURGERY

CC: RLL nodule

HPI: Patient is status-post nephrectomy on 3/29/08 for renal malignancy. Nodule was identified in pre-op chest CT scan. Patient has no respiratory complaints, although he complains of mild pain over his incision. He has been active since his nephrectomy and takes no medications for pain.

PMH:
- Type II Diabetes Mellitus
- Hyperlipidemia
- Hypertension
- Atrial fibrillation – single episode which occurred 12 years prior to this visit

PSH:
- Tonsillectomy & Adenoidectomy
- Right nephrectomy

Medications:
- Actos – 45mg PO qd
- Altace – 5mg PO qd
- Aspirin – 81mg PO qd
- Januvia – 100mg PO qd
- Nadolol – 20mg PO qd
- Zocor – 20mg PO qd

Allergies: NKDA

Family History: Patient describes a history of diabetes in his brother and cardiac disease with a history of MI in his father.

Social History: Patient is not a current smoker but has a 20 pack-year history and quit 10 years ago. Patient drinks approximately 2 alcoholic beverages per week, and does not use illicit drugs.

ROS:
GEN: No fevers, chills, weight loss, malaise, fatigue, or weakness
HEENT: No headaches, hearing loss, tinnitus, ear pain, or ear discharge; No nosebleeds, congestion, stridor, or sore throat; No trouble with vision, eye pain, or photophobia
CVS: No chest pain, palpitations, orthopnea, claudication, leg swelling, or PND
Chest: No cough, hemoptysis, sputum production, SOB, or wheezing

GI: No heartburn, nausea, abdominal pain, vomiting, diarrhea, constipation, or blood in stool
GU: Hematuria – presenting complaint for RCC in 2/08, No dysuria, frequency, urgency, or flank pain
Musculoskel: No myalgias, neck or back pain, joint pains, or falls
Endo/Heme: No easy bruising or bleeding
Neuro: No history of seizures, focal weakness, or dizziness
Psych: No history of psychiatric disease, insomnia, or substance abuse
Skin: No rash or itching

PE:
BP 128/71, Pulse 73, Temp 97.5F, Resp 20, BMI 31
Gen: Oriented x 3, well-nourished, no distress
HEENT: Normocephalic, atraumatic
Eye: Conjunctiva normal, EOMI, PERRL
Neck: ROM normal, neck supple, no thyromegaly, JVD, tracheal deviation, or stridor; no lymphadenopathy
CVS: RRR S1 S2 noted, no m/r/g, no clubbing, cyanosis, or edema, intact distal pulses
Chest: Effort normal, breath sounds normal; no respiratory distress, chest tenderness, wheezing, or rales
Abd: S/NT/ND, NABS, no guarding, no rebound
Musculoskel: Normal ROM, No edema, No tenderness
Neuro: Alert and oriented x 3
Skin: No rashes or change in pigmentation

Labs: None

Imaging: Indeterminate 7mm nodule in RLL on CT with contrast

Impression: Indeterminate lung nodule found incidentally on preop screening CT of the chest. Patient asymptomatic and recovering well from recent surgery.

Plan: Recommend that patient have serial CT scans to follow the lung nodule. He will have the next scan in one month and follow-up in the office after that time.

FAMILY MEDICINE-SOAP Note

Patient: CJ

S: CJ is a 35 y/o female with PMH obesity, HTN, and hyperfunctioning thyroid nodule (s/p thyroidectomy 2006) who presents with chief complaint of fatigue. She states that she is "always tired" and has felt this way for the last year. She has been working the night shift at her job for the past six months and thinks this may contribute to her fatigue, but also states she felt tired before her switch at work. She gets around 6 hours of sleep during the day and often does not feel well rested upon waking. She sleeps alone and does not know if she snores; she does not recall waking up gasping for air at night. She denies morning headaches and falling asleep while at work. The fatigue has not gotten any particularly worse, but she decided it was time to "get it checked out."

Past Medical History:
Medical
-HTN: diagnosed at age 32; well-controlled on HCTZ 12.5mg
-Thyroid nodule: hyperactive; s/p thyroidectomy 2006
-Obesity: BMI 44; currently researching gastric bypass surgery

Surgical
-s/p thyroidectomy 2006; patient thinks it was only partial; not on thyroid replacement

Medication
Hydrochlorothiazide 12.5mg once daily

Social
Smokes 7-10 cigarettes a day; is trying to quit
Denies EtOH, illicit drugs
Not currently sexually active

Review of Systems:
Constitutional: denies weight loss/gain, night sweats, chills, fevers
Cardiovascular: denies chest pain, palpitations, dyspnea at rest or with exertion.
Gastrointestinal: denies nausea, vomiting, diarrhea, constipation, melena, hematochezia, jaundice, abdominal pain.
Genitourinary: Admits to menorrhagia for 10+ years; uses 8 super tampons on the heaviest 1-2 days of her period. Her periods come every 28-30 days and last 5 days. Denies bleeding between periods, dysuria, dyspareunia.
Endocrine: denies polyuria, polydipsia, heat/cold intolerance, change in skin, hair or nails, change in bowel habits.
Psych: Admits to a depressed mood, difficulty concentrating at work over the last 6 months, decreased interest in activities that she used to enjoy. Denies change in appetite, excessive guilt, or suicidality.

O:
T: (not done) BP: 120/82 HR 68 RR 12 Weight: 275 Height: 5'6" (BMI: 44)
General: pleasant, overweight woman sitting in chair and reading
Neck: 5cm scar over thyroid, normal movements, trachea midline; no palpable masses
Cardiovascular: normal sounds; no murmurs, rubs or gallops; normal pulses, no edema, no clubbing or cyanosis
Respiratory: symmetric chest expansion and respiratory effort, clear to auscultation
Abdomen: no masses or tenderness, normal bowel sounds, no hepatosplenomegaly
Genitourinary: deferred; patient had just seen her gynecologist in AM

A:

1. Fatigue-the patient has several possible reasons for her fatigue. First, she is working the night shift at work, which she is still having difficulty adjusting to and may be affecting the quality of her sleep. Given her obesity, she is at risk for OSA, which may explain the reason why she does not feel well rested even after sleep. She also had thyroid surgery in 2006; this may have caused hypothyroidism resulting in her fatigue and symptoms of depression. The patient also complains of menorrhagia; her heavy periods may be causing anemia that is resulting in the patient's fatigue, although she is not complaining of chest pain or shortness of breath. Finally, the patient has noticed a depressed mood and difficulty concentrating lately; her fatigue may be a symptom of depression.
2. Hypertension-currently well-controlled on HCTZ.
3. Obesity-the patient has made several attempts to lose weight using diet and exercise; given her young age and motivation, she may benefit from gastric bypass surgery.
4. Depressed Mood- the patient currently has 3/9 criteria (depressed mood, fatigue, and difficulty concentrating) for MDD.
5. Menorrhagia-patient followed by gynecologist. She was told that she may have fibroids, but she has not followed up on this.

P:

1. Fatigue
    a. CBC-r/o anemia
    b. TSH-r/o hypothyroid
    c. Sleep study-r/o OSA; patient needs test for gastric bypass eval as well
    d. Discussed possibility of switching back to day shift at work
    e. Follow patient's mood and monitor for other symptoms of depression-consider trial of anti-depressant; patient was not ready to try one today; Wellbutrin may be a good option for mood improvement + smoking cessation.
2. HTN
    a. Continue HCTZ 12.5mg once daily with goal BPs <140/90
    b. Continue in office BP monitoring; encourage patient to check BP at home
3. Obesity
    a. Patient being evaluated for gastric bypass
    b. Sleep study
    c. Discussed importance of diet and exercise

4. Depressed Mood
    a. Patient wary of taking antidepressant at moment-counseled to call office if symptoms worsen or if she begins to feel hopeless/suicidal. Also discussed option of psychiatrist/psychologist involvement
5. Menorrhagia
    a. Consider pelvic US to r/o fibroids if not already done by gynecologist
    b. Patient refusing birth control; informed that birth control may help bleeding. She will consider and discuss with gynecologist
6. Health Maintenance-up to date with screening tests, immunizations
    a. Flu Shot in 10/2008
    b. Lipid Panel, SMA 7 in 6/2008
    c. Pap Smear 12/2008
    d. Smoking Cessation-discussed at this visit, patient said she would like to come back to discuss medication options for smoking cessation
    e. f/u in 1-2 weeks to go over CBC, TSH results, discuss smoking cessation and treatment for depression