

A Patient with Anemia

A 69-year old woman was admitted to the hospital because of severe anemia. She claimed that she had been healthy her entire life without any known medical problems other than occasional gastroesophageal reflux for which she takes a proton pump inhibitor. Her current problems began about 3 months ago when she began to notice a decreased appetite and fatigue. This progressed and recently she noted more fatigue, numbness in her distal extremities, and dyspnea when she walked upstairs. Her anorexia has continued and she states that she has a "sore throat all the time"; her weight has dropped 10 lbs over 3 months.

She denies any travel, unusual ingestions, chest pain, headache, cough, back pain, vaginal or rectal bleeding.

P.E. reveals a thin elderly woman in no acute distress. T 97⁹, P 110; R 16; BP 110/78; O2 saturation 96%. SKIN - pale, dry with decreased turgor; no rash or lesions noted. LN - none palp. HEENT - conjunctivae are pale; fundi are benign; oropharynx is red with a smooth tongue and cracked lips at the lateral margins. Chest is clear. COR-RRR II/VI SEM at LLSB radiating to L 2nd ICS; no diastolic murmurs; no S3. ABD - soft with a vague midepigastriac tenderness but no palpable masses or hepatosplenomegaly. G/R - pelvic exam is normal without adnexal masses or bleeding from cervix; rectal exam is benign with brown stool and no gross blood; hemoccult is positive. Neuro exam reveals impaired recent and distant memory; proprioception and vibration sense are abnormal in upper and lower extremities; otherwise exam is normal.

LABS: Na 143, K 3.9, Cl 106, HCO₃ 25, Cr 1.2, glu 119
Hb 6.0, Hct 18.2, WBC 3.9 (normal differential), MCV 89, plts 400 K
UA: clear/1.012/no protein, glucose, cells or casts
EKG: S tach 110/nl intervals/no ST-T changes
CXR: mild increased heart size/clear lung fields

QUESTIONS:

1. Describe where red cells are produced, what controls their production and what their normal life span is in the circulation.
2. What are the major pathophysiologic mechanisms by which anemia can develop? Give three examples of each.

3. What are the major morphologic classifications of anemia based on RBC volume? Give three examples of each.

4. What aspects of the history, physical exam and lab data suggest specific possibilities for this patient? What other information would you seek in the history and physical?

5. What would be your first diagnostic steps in evaluating this patient's anemia?

The intern orders a Fe studies which reveal the following:

Serum Fe 20 ug/dL
Serum TIBC 400 ug/dl
Serum ferritin 10ug/L

The patient is discharged with Fe supplementation, but returns to the Emergency Department with minimal change in her symptoms. Her repeat CBC shows:

Hb 8, Hct 24, WBC 3.8, MCV 112

6. What would your differential diagnosis be now, and what additional tests would you order?

The peripheral smear is reviewed and reveals two six lobed PMNs in addition to macroovalocytes.

7. Describe a plausible scenario to explain the patient's entire presentation.

