# Texas Tech MedCast Podcast Episode Fact Sheet

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<tr>
<th>Podcast Series</th>
<th>Reynolds Geriatrics Series • USMLE Step 2CK Prep</th>
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<tbody>
<tr>
<td>Episode Title &amp; Question Number</td>
<td>“I’m Healthy But My Bloodwork Says Otherwise,” based on Question 100 of the 2010 USMLE sample exam</td>
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<tr>
<td>Personnel</td>
<td>Andrew Estrada &amp; Patrick Shepherd</td>
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<td>Recording Date</td>
<td>April 22, 2011</td>
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| Episode Description         | Question 100, p. 61  
http://download.usmle.org/2010Step2CK.pdf |

A 62-year-old woman comes to the physician for an annual health maintenance examination. She has had fatigue for 3 months but has been able to carry out all of her usual activities. She takes estrogen therapy; she also takes daily aspirin because she read about it in the paper. Her temperature is 37.3°C (99.1°F), pulse is 88/min, respirations are 14/min, and blood pressure is 150/88 mm Hg. There is no lymphadenopathy. Cardiopulmonary examination shows no abnormalities. The liver span is 9 cm, and the edge is palpated in the right midclavicular line. The spleen is not palpable. Laboratory studies show:

- **Hematocrit**: 37%
- **Erythrocyte count**: 3.6 million/mm³
- **Mean corpuscular volume**: 90 μm³
- **Leukocyte count**: 40,000/mm³
  - **Segmented neutrophils**: 10%
  - **Lymphocytes**: 89%
  - **Monocytes**: 1%
- **Platelet count**: 160,000/mm³

A blood smear shows numerous mature-appearing small lymphocytes. Which of the following is the most likely diagnosis?

- (A) Acute lymphocytic leukemia
- (B) Acute myelogenous leukemia
- (C) Chronic lymphocytic leukemia
- (D) Chronic myelogenous leukemia
- (E) Leukemoid reaction

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http://www.ttuhsc.edu/som/fammed/ttmedcast/gerseries/gerstep2ckprep.aspx
### Learning Objectives

*The listener should be able to:*

1. Understand what leukemia is and the cells affected
2. Differentiate between an acute and a chronic leukemia
3. Differentiate between a lymphocytic and myeloid leukemia
4. Know the main ages affected by the different types of leukemias
5. Understand what a leukemoid reaction is and how it is different from a leukemia

### Key Teaching Points

- Leukemias are characterized by neoplastic proliferation of abnormal WBC’s. As these abnormal WBC’s accumulate, they interfere with the production of normal WBC’s, as well as the production of erythrocytes and platelets, resulting in anemia and thrombocytopenia.
- If granulocytes or monocytes are affected, myelogenous leukemia is present
- If lymphocytes are affected, lymphocytic leukemia is present
- Acute leukemias are characterized by rapid progression and affect immature cells (immature cells proliferate before maturation)
- Chronic leukemias progress slowly and affect mature cells
- Acute Lymphoblastic Leukemia (ALL) a neoplasm of early lymphocytic precursor. It is the most common malignancy in children under the age of 15 and is the most responsive to therapy.
- Acute Myelogenous Leukemia (AML) is a neoplasm of myelogenous progenitor cells. It occurs mostly in adults and accounts for 80% of adult leukemias. Auer rods (granules and eosinophilic rods inside malignant cells) are present in AML but not ALL.
- Chronic Lymphocytic Leukemia (CLL) is monoclonal proliferation of lymphocytes that are morphologically mature but functionally defective. It is the most common leukemia that occurs after age 50, most patients with CLL are >60 years old. CLL is usually asymptomatic and discovered on a routine CBC (lymphocytosis). A peripheral blood smear is often diagnostic: absolute lymphocytosis – almost all the WBC’s are mature, small lymphocytes.
- Chronic Myelogenous Leukemia (CML) is a neoplastic, clonal proliferation of myeloid stem cells. Patients with CML are usually over 40 years of age. CML follows a chronic course for years before it transforms to acute leukemia. The end point of the disease is usually an acute phase (blast crisis), which is an accelerated phase of blast and promyelocyte production. CML is associated with translocation t(9,22), the Philadelphia chromosome, present in more than 90% of patients.
- A leukemoid reaction is an elevated white blood cell count, or leukocytosis, that is a physiologic response to stress or infection, unlike a leukemia which is a primary blood malignancy. It may be lymphoid or myeloid cells.

### Comments

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