

Discussion

Clinical Cases

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A 45-year-old man presents to the emergency department with a 2-week history of diarrhea that has gotten progressively worse during the past several days. He has minimal urine output and is admitted to the hospital for dehydration. His stool specimen is positive for parasitic eggs. Which type of WBC would have an elevated number?

- A. Eosinophils
- B. Neutrophils
- C. T lymphocytes
- D. B lymphocytes
- E. Monocytes



A 24-year-old man came to the emergency department with a broken leg. A blood test revealed his WBC count to be $22 \times 10^3/\mu\text{l}$. Five hours later, a second blood test revealed values of $7 \times 10^3/\mu\text{l}$. What is the cause of the increased WBC count in the first test?

A) Increased production of WBCs by the bone marrow

B) Release of pre-formed, mature WBCs into the circulation

C) Decreased destruction of WBCs

D) Increased production of selectins



A 62-year-old man who was known to have a normal blood cell count and differential count 3 months ago presents with pallor, bone pain, bruising, and a WBC count of 42,000. Eighty-five percent of cells in the circulation appear to be immature granulocytes. What is the diagnosis?

- A) Acute lymphocytic leukemia
- B) Acute myelocytic leukemia
- C) Chronic lymphocytic leukemia
- D) Chronic myelocytic leukemia

B) The WBC count of 42,000 is higher than the range usually seen as a response to infection and suggests leukemia. The patient's florid clinical presentation suggests an acute process, and findings of a normal CBC 3 months previously confirm that this patient has an acute leukemia. Granulocytes are myeloid cells, and the fact that they are in the circulation while still being immature is wholly compatible with leukemia. Thus the patient has acute myelocytic (also referred to as "myelogenous" or "myeloid") leukemia

65-year-old alcoholic experienced chest pain and cough with an expectoration of sputum. A blood sample revealed that his WBC count was $21,000/\mu\text{l}$. What is the origin of these WBCs?

- A) Pulmonary alveoli
- B) Bronchioles
- C) Bronchi
- D) Trachea
- E) Bone marrow



• An 8-year-old boy frequently comes to the clinic for persistent skin infections that do not heal within a normal time frame. He had a normal recovery from the measles. A check of his antibodies after immunizations yielded normal antibody responses. A defect in which of the following cells would most likely be the cause of the continual infections?

- A) B lymphocytes
- B) Plasma cells
- C) Neutrophils
- D) Macrophages
- E) CD4 T lymphocytes



year-old child who has had frequent ear infections is found to have reduced immunoglobulin levels and is unresponsive to vaccination with tetanus toxoid. However, the child has normal skin test reactivity (delayed redness and induration) to a common environmental antigen. Which cell lineage is not functioning normally?

- A) Macrophages
- B) Helper T cells
- C) Cytotoxic T cells
- D) B cells



A patient with human immunodeficiency virus (HIV) exhibit abnormal functioning of which of the following mechanisms?

- A) Antibody production only
- B) T cell–mediated cytotoxicity only
- C) Degranulation of appropriately stimulated mast cells
- D) Both antibody production and T cell–mediated cytotoxicity



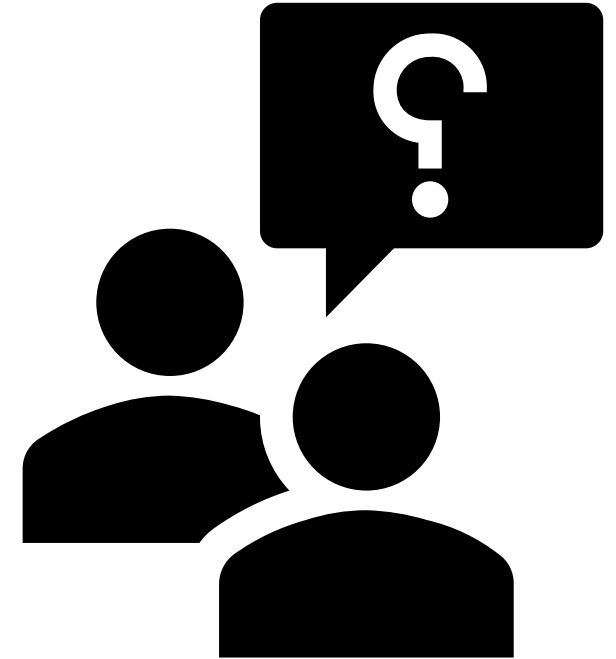
• A woman whose blood type is A, Rh positive, and a man whose blood type is B, Rh positive, come to the clinic with a 3-year-old girl whose blood type is O, Rh negative. If they told you that they are natural parents of this child, are blood types correct regarding their claim?

- A) The woman can be the child's natural mother, but the man cannot be the natural father
- B) The man can be the child's natural father, but the woman cannot be the natural mother
- C) Neither adult can be the natural parent of this child
- D) This couple can be the natural parents of this child



A woman whose blood type is A positive and who has always been healthy just delivered her second child. The father's blood type is O negative. Because the child's blood type is O negative (O, Rh negative), what would you expect to find in this child?

- A) Erythroblastosis fetalis due to rhesus incompatibility
- B) Erythroblastosis fetalis due to ABO blood group incompatibility
- C) Both A and B
- D) The child would not be expected to have HDN



Which statement is true?

- A) In a transfusion reaction, agglutination of the recipient blood occurs
- B) Shutdown of the kidneys after a transfusion reaction occurs slowly
- C) Blood transfusion of Rh-positive blood into any Rh-negative recipient will result in an immediate transfusion reaction
- D) A person with type AB Rh-positive blood is considered a universal recipient

The recipient blood has the larger amount of plasma and thus antibodies. These antibodies will act on the donor RBCs. The donor's plasma will be diluted and have minimal effect on the recipient's RBCs. With any antigen–antibody transfusion reaction a rapid breakdown of RBCs occurs, releasing hemoglobin into the plasma, which can cause rapid acute renal shutdown. Transfusion of Rh-positive blood will only result in a transfusion reaction if the Rh-negative person has previously undergone a transfusion or been exposed to Rh-positive antibodies. Type AB Rh-positive people have no antibodies to the A, B, or Rh(D) antigens in their plasma, so they can receive any blood type