

Hematology system

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1. Which of the following is *not* a feature of iron deficiency anemia?
 - A. Koilonychia
 - B. Angular cheilitis
 - ☒ C. Hyperpigmentation
 - D. Pica
2. The most common cause of megaloblastic anemia is:
 - ☒ A. Folate deficiency
 - B. Vitamin B12 deficiency
 - C. Pernicious anemia
 - D. Chronic alcoholism
3. A 10-year-old boy presents with pallor, jaundice, and splenomegaly. Blood smear shows spherocytes. The most likely diagnosis is:
 - 1 A. Autoimmune hemolytic anemia
 - 2 ☒ B. Hereditary spherocytosis
 - 3 C. Sickle cell anemia
 - D. Thalassemia major
4. Which of the following is an example of microcytic hypochromic anemia?
 - ☒ A. Iron deficiency anemia
 - B. Aplastic anemia
 - C. Sickle cell anemia
 - D. Megaloblastic anemia
5. In iron deficiency anemia, serum ferritin levels are typically:
 - A. Increased
 - ☒ B. Decreased
 - C. Normal
 - D. Absent

6. **Intrinsic factor for vitamin B12 absorption is secreted by:**
- A. Chief cells of the stomach
 - ☒ B. Parietal cells of the stomach
 - C. Enterocytes of the ileum
 - D. Hepatocytes
7. **Which of the following is a cause of aplastic anemia?**
- ☒ A. Radiation exposure
 - B. Chronic blood loss
 - C. Vitamin B12 deficiency
 - D. Hemolysis
8. **The most common type of hemophilia is:**
- ☒ A. Hemophilia A
 - B. Hemophilia B
 - C. Hemophilia C
 - D. Von Willebrand disease
9. **Sickle cell anemia results from a mutation in the:**
- A. Alpha-globin gene
 - ☒ B. Beta-globin gene
 - C. Gamma-globin gene
 - D. Delta-globin gene
10. **In thalassemia major, the most frequent cause of death is:**
- ☒ A. Heart failure
 - B. Liver failure
 - C. Infection
 - D. Stroke
11. **Which laboratory finding is most suggestive of iron deficiency anemia?**
- A. Increased serum ferritin
 - ☒ B. Increased total iron-binding capacity (TIBC)
 - C. Low TIBC
 - D. High serum iron
12. **Vitamin B12 deficiency can lead to which neurological manifestation?**
- A. Peripheral neuropathy
 - B. Optic neuritis
 - ☒ C. Subacute combined degeneration of the spinal cord
 - D. Bell's palsy

13. Which of the following is a normocytic normochromic anemia?

- ☒ A. Anemia of chronic disease
- ☐ B. Iron deficiency anemia
- ☐ C. Thalassemia minor
- ☐ D. Sideroblastic anemia

14. The gold standard diagnostic test for aplastic anemia is:

- ☐ A. Peripheral blood smear
- ☒ B. Bone marrow aspiration and biopsy
- ☐ C. Serum ferritin level
- ☐ D. Reticulocyte count

15. Pernicious anemia is caused by:

- ☐ A. Dietary folate deficiency
- ☒ B. Autoimmune destruction of parietal cells
- ☐ C. Chronic alcoholism
- ☐ D. Hemolysis

16. Which of the following is an example of macrocytic anemia?

- ☒ A. Vitamin B12 deficiency anemia
- ☐ B. Iron deficiency anemia
- ☐ C. Anemia of chronic disease
- ☐ D. Sideroblastic anemia

17. What is the inheritance pattern of hemophilia A?

- ☐ A. Autosomal dominant
- ☐ B. Autosomal recessive
- ☒ C. X-linked recessive
- ☐ D. X-linked dominant

18. The primary treatment for iron deficiency anemia is:

- ☐ A. Parenteral iron
- ☒ B. Oral iron supplementation
- ☐ C. Blood transfusion
- ☐ D. Erythropoietin

19. Which coagulation factor is deficient in hemophilia B?

- ☐ A. Factor VIII
- ☒ B. Factor IX
- ☐ C. Factor XI
- ☐ D. Factor XIII

↳ ↓ Factor IX

20. Which laboratory finding is typical of hemolytic anemia?

- A. Low reticulocyte count
- B. Elevated reticulocyte count
- C. Low lactate dehydrogenase (LDH)
- D. Low bilirubin

21. The Howell–Jolly body seen on a peripheral smear indicates:

- A. Iron deficiency anemia
- B. Functional asplenia or hyposplenia
- C. Vitamin B12 deficiency
- D. Hemolysis

22. Which of the following is a complication of repeated blood transfusions in thalassemia major?

- A. Iron overload
- B. Folate deficiency
- C. Vitamin C toxicity
- D. Zinc deficiency

23. G6PD deficiency typically presents after exposure to:

- A. Antibiotics and antimalarials
- B. Vitamin supplements
- C. Alcohol
- D. Dairy products

24. Which test is used to confirm autoimmune hemolytic anemia?

- A. Coombs test
- B. Peripheral smear
- C. Reticulocyte count
- D. Hemoglobin electrophoresis

25. The “crew-cut” appearance on skull X-ray is seen in:

- A. Iron deficiency anemia
- B. Thalassemia major
- C. Aplastic anemia
- D. Sickle cell trait

26. In anemia of chronic disease, serum ferritin is usually:

- A. Low
- B. High

- C. Normal
- D. Absent

27. The most common cause of death in patients with sickle cell anemia is:

- A. Heart failure
- B. Stroke
- C. Infection
- D. Pulmonary embolism**

28. Aplastic anemia results in pancytopenia, which means:

- A. Anemia only
- B. Anemia and leukopenia
- C. Anemia and thrombocytopenia
- D. Anemia, leukopenia, and thrombocytopenia**

29. Which vitamin is essential for normal platelet function?

- A. Vitamin C
- B. Vitamin D
- C. Vitamin K**
- D. Vitamin B1

30. Which blood component is deficient in Von Willebrand disease?

- A. Factor VIII
- B. Factor IX
- C. Von Willebrand factor**
- D. Factor XIII

31. Target cells on a peripheral smear are most commonly seen in:

- A. Iron deficiency anemia
- B. Thalassemia**
- C. Megaloblastic anemia
- D. Aplastic anemia

32. The first step in evaluating anemia is to check:

- A. Reticulocyte count
- B. Mean corpuscular volume (MCV)**
- C. Serum ferritin
- D. Peripheral smear

33. Which of the following is not a cause of microcytic anemia?

- A. Iron deficiency
- B. Thalassemia

C. Anemia of chronic disease

D. Vitamin B12 deficiency

34. A key difference between iron deficiency anemia and thalassemia is:

A. Iron studies

B. Hemoglobin level

C. MCV value

D. Bone marrow findings

35. The Schilling test is used to diagnose:

A. Folate deficiency

B. Vitamin B12 deficiency

C. Iron deficiency

D. Hemolytic anemia

36. The first-line treatment for vitamin B12 deficiency is:

A. Oral B12 supplementation

B. Intramuscular B12 injections

C. Dietary modification

D. Blood transfusion

37. In G6PD deficiency, which cells are seen on blood smear?

A. Target cells

B. Spherocytes

C. Bite cells and Heinz bodies

D. Schistocytes

38. What is the genetic defect in sickle cell anemia?

A. Substitution of glutamic acid by valine at position 6 of beta-globin

B. Deletion of alpha-globin genes

C. Frameshift mutation in beta-globin

D. Duplication of gamma-globin genes

39. A reticulocyte count is elevated in:

A. Aplastic anemia

B. Iron deficiency anemia

C. Hemolytic anemia

D. Megaloblastic anemia

40. Which test is most useful for diagnosing thalassemia?

A. Serum ferritin

B. Hemoglobin electrophoresis

- C. Bone marrow biopsy
- D. Reticulocyte count

41. **Reed–Sternberg cells are characteristic of:**

- A. Non-Hodgkin lymphoma
- B. Hodgkin lymphoma
- C. Burkitt lymphoma
- D. Multiple myeloma

42. **The most common type of Hodgkin lymphoma is:**

- A. Nodular sclerosis
- B. Mixed cellularity
- C. Lymphocyte predominant
- D. Lymphocyte depleted

43. **Which lymphoma is associated with t(8;14) translocation?**

- A. Follicular lymphoma
- B. Burkitt lymphoma
- C. Mantle cell lymphoma
- D. Diffuse large B-cell lymphoma

44. **Bence–Jones proteins in urine are associated with:**

- A. Multiple myeloma
- B. CLL
- C. AML
- D. Hodgkin lymphoma

45. **Rouleaux formation on blood smear is seen in:**

- A. Multiple myeloma
- B. CLL
- C. AML
- D. ALL

46. **In multiple myeloma, bone lesions are typically:**

- A. Osteoblastic
- B. Osteolytic
- C. Mixed
- D. Normal

47. **Which virus is associated with Burkitt lymphoma?**

- A. EBV
- B. CMV

- C. HIV
- D. HPV

48. Hairy cell leukemia is best diagnosed with:

- A. Flow cytometry
- B. Bone marrow biopsy showing dry tap**
- C. Peripheral smear
- D. Cytogenetic testing

49. Which of the following is not a feature of chronic myeloid leukemia?

- A. Low leukocyte alkaline phosphatase
- B. Splenomegaly
- C. Philadelphia chromosome
- D. Pancytopenia at presentation**

50. The drug of choice for CML is:

- A. Imatinib**
- B. Hydroxyurea
- C. Busulfan
- D. Cyclophosphamide

51. Which of the following is the most common inherited bleeding disorder?

- A. Hemophilia A**
- B. Hemophilia B
- C. Von Willebrand disease
- D. Factor VII deficiency

52. The primary treatment for immune thrombocytopenic purpura (ITP) is:

- A. Platelet transfusion
- B. Corticosteroids**
- C. Splenectomy
- D. Fresh frozen plasma

53. Which test is most useful for monitoring warfarin therapy?

- A. Activated partial thromboplastin time (aPTT)
- B. Prothrombin time (PT) / INR**
- C. Thrombin time
- D. Bleeding time

54. Which blood group is considered the universal donor for packed red blood cells?

- A. AB positive
- B. AB negative**

- C. O positive
- D. O negative**

55. Which blood group is considered the universal recipient for packed red blood cells?

- A. AB positive**
- B. AB negative
- C. O positive
- D. O negative

56. The most common cause of vitamin B12 deficiency worldwide is:

- A. Pernicious anemia**
- B. Vegan diet
- C. Tropical sprue
- D. Malabsorption due to gastric surgery

57. Which of the following is a common finding in chronic myeloid leukemia (CML)?

- A. Philadelphia chromosome**
- B. JAK2 mutation
- C. Hypersegmented neutrophils
- D. Reed–Sternberg cells

58. Which of the following conditions is characterized by tear-drop-shaped red blood cells?

- A. Myelofibrosis**
- B. Iron deficiency anemia
- C. Thalassemia minor
- D. Sickle cell anemia

59. Which coagulation factor is deficient in Hemophilia A?

- A. Factor VIII**
- B. Factor IX
- C. Factor XI
- D. Factor VII

60. Which coagulation factor is deficient in Hemophilia B?

- A. Factor VIII
- B. Factor IX**
- C. Factor XI
- D. Factor VII

61. A 50-year-old male presents with fatigue, weight loss, and splenomegaly. Blood smear shows myeloblasts. The most likely diagnosis is:

- A. Acute myeloid leukemia (AML)**
- B. Chronic myeloid leukemia (CML) ✗

- C. Acute lymphoblastic leukemia (ALL)
D. Chronic lymphocytic leukemia (CLL) ✗
62. **Which leukemia is most commonly seen in children?**
A. AML
B. CML
C. ALL
D. CLL
63. **The Philadelphia chromosome is most commonly associated with:**
A. AML
B. CML
C. ALL
D. CLL
64. **Which of the following is a complication of sickle cell anemia?**
A. Splenic sequestration crisis
B. Megaloblastic anemia
C. Polycythemia vera
D. Pernicious anemia
65. **Which vitamin is essential for the synthesis of clotting factors II, VII, IX, and X?**
A. Vitamin A
B. Vitamin D
C. Vitamin E
D. Vitamin K
66. **In multiple myeloma, the most common cause of death is:**
A. Renal failure
B. Infection
C. Heart failure
D. Stroke
67. **Which test is most useful for diagnosing hereditary spherocytosis?**
A. Osmotic fragility test
B. Coombs test
C. Hemoglobin electrophoresis
D. Reticulocyte count
68. **Which of the following is a feature of polycythemia vera?**
A. Low red cell mass
B. Hyperviscosity of blood
C. Pancytopenia
D. Microcytosis
69. **What is the antidote for heparin overdose?**
A. Vitamin K
B. Protamine sulfate
C. Fresh frozen plasma
D. Platelet transfusion
70. **Which anemia is characterized by pancytopenia with a hypocellular bone marrow?**
A. Aplastic anemia
B. Megaloblastic anemia

- C. Hemolytic anemia
 - D. Iron deficiency anemia
71. **The commonest cause of vitamin B12 deficiency worldwide is:**
- A. Pernicious anemia
 - B. Vegetarian diet
 - C. Malabsorption
 - D. Tapeworm infestation
72. **Which clotting factor has the shortest half-life?**
- A. Factor II
 - B. Factor VII
 - C. Factor IX
 - D. Factor X
73. **Auer rods are a feature of:**
- A. AML
 - B. ALL
 - C. CML
 - D. CLL
74. **Which of the following is a normocytic normochromic anemia?**
- A. Iron deficiency anemia ✗
 - B. Aplastic anemia
 - C. Thalassemia ✗
 - D. Sideroblastic anemia ✗
75. **The drug of choice for chronic myeloid leukemia is:**
- A. Imatinib
 - B. Hydroxyurea
 - C. Cyclophosphamide
 - D. Methotrexate
76. **Which anemia is commonly associated with chronic kidney disease?**
- A. Iron deficiency anemia
 - B. Anemia of chronic disease
 - C. Megaloblastic anemia
 - D. Aplastic anemia
77. **Bence Jones proteins in urine are diagnostic for:**
- A. Multiple myeloma
 - B. Waldenström's macroglobulinemia
 - C. Amyloidosis
 - D. Lymphoma
78. **Which is the most common inherited bleeding disorder?**
- A. Hemophilia A
 - B. Hemophilia B
 - C. Von Willebrand disease
 - D. Factor VII deficiency
79. **Which of the following is an example of extravascular hemolysis?**
- A. G6PD deficiency
 - B. Hereditary spherocytosis

- C. Paroxysmal nocturnal hemoglobinuria
D. Microangiopathic hemolytic anemia
80. Which of the following is a cause of secondary polycythemia? 
A. Chronic obstructive pulmonary disease 
B. Polycythemia vera
C. Myelofibrosis
D. Aplastic anemia
81. Which anticoagulant inhibits vitamin K-dependent clotting factors?
A. Heparin
B. Warfarin
C. Fondaparinux
D. Dabigatran
82. Aplastic crisis in sickle cell anemia is most commonly caused by:
A. Parvovirus B19 infection
B. Streptococcus pneumoniae
C. Salmonella typhi
D. Plasmodium falciparum
83. Which blood group is the universal donor for packed red blood cells?
A. AB positive
B. O positive
C. O negative
D. AB negative
84. Which blood group is the universal recipient for packed red blood cells?
A. AB positive
B. O positive
C. O negative
D. AB negative
85. Target cells on a peripheral smear are characteristic of:
A. Iron deficiency anemia
B. Thalassemia
C. Aplastic anemia
D. Hemolytic anemia
86. Which of the following is a common side effect of hydroxyurea?
A. Myelosuppression
B. Hepatotoxicity
C. Nephrotoxicity
D. Ototoxicity
87. Which clotting factor is deficient in Christmas disease? 
A. Factor VIII
B. Factor IX
C. Factor X
D. Factor XI
88. Which clotting factor is deficient in hemophilia A?
A. Factor VIII
B. Factor IX

- C. Factor X
 - D. Factor XI
89. **The reticulocyte count is increased in:**
- A. Aplastic anemia
 - B. Hemolytic anemia**
 - C. Megaloblastic anemia
 - D. Iron deficiency anemia
90. **Which anemia presents with basophilic stippling of red cells?**
- A. Lead poisoning**
 - B. Iron deficiency anemia
 - C. Sickle cell anemia
 - D. Aplastic anemia
91. **How many alpha-globin genes are present in a normal human genome?**
- A. Two
 - B. Three
 - C. Four**
 - D. Six
92. **Which condition is associated with a "hair-on-end" appearance on skull X-ray?**
- A. Sickle cell anemia
 - B. Thalassemia major**
 - C. Aplastic anemia
 - D. Megaloblastic anemia
93. **Which laboratory finding is most consistent with intravascular hemolysis?**
- A. Increased haptoglobin
 - B. Decreased haptoglobin**
 - C. Increased ferritin
 - D. Decreased bilirubin
94. **Which anticoagulant acts by inhibiting thrombin directly?**
- A. Heparin
 - B. Dabigatran**
 - C. Warfarin
 - D. Apixaban
95. **Which vitamin deficiency causes defective collagen synthesis and bleeding gums?**
- A. Vitamin A
 - B. Vitamin C**
 - C. Vitamin D
 - D. Vitamin K
96. **Which condition is characterized by the presence of schistocytes in blood smear?**
- A. Microangiopathic hemolytic anemia**
 - B. Aplastic anemia
 - C. Sickle cell anemia
 - D. Megaloblastic anemia
97. **Which of the following is *not* a feature of thalassemia major?**
- A. Bone deformities
 - B. Growth retardation

- C. Hepatosplenomegaly
 - D. Pancytopenia without transfusion
98. **Which drug is used for iron chelation in patients with chronic transfusions?**
- A. Deferoxamine
 - B. Imatinib
 - C. Methotrexate
 - D. Azathioprine
99. **Which of the following is an example of macrocytic anemia?**
- A. Vitamin B12 deficiency anemia
 - B. Iron deficiency anemia
 - C. Anemia of chronic disease
 - D. Thalassemia
100. **The most common cause of anemia worldwide is:**
- A. Iron deficiency
 - B. Vitamin B12 deficiency
 - C. Folic acid deficiency
 - D. Chronic disease
101. **Which of the following is the best initial investigation for suspected anemia?**
- A. Complete blood count (CBC)
 - B. Bone marrow biopsy
 - C. Serum ferritin
 - D. Reticulocyte count

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