

HAEMATOLOGIC PHARMACOLOGY

REVISION QUESTIONS

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Q1

A 62-year-old woman complained to her physician of nose bleeds and red eyes. The woman had been receiving warfarin for 1 month because of deep venous thrombosis.

Give three examples of drug-drug interactions involving warfarin that could account for the patient's symptoms

Explain the mechanisms involved in each example

Q2

A 56-year-old man admitted to the hospital with a myocardial infarction underwent a percutaneous coronary angioplasty for the revascularization of his left coronary.

Which class of anti-thrombotic drugs would you give intravenously during the procedure?

Explain your answer

Q3

A 69-year-old obese man presented to the clinic because of left calf swelling and pain of 1-day duration. He stated that a few days before the onset of symptoms, he had arrived home after a 14-hour flight from India. Duplex scanning was performed and revealed clot formation in the patient's left calf. The patient did not exhibit signs of pulmonary embolism.

Suggest two drugs that would be prescribed to the patient and explain the rationale for their use in this patient

Q4

A 48-year-old woman who had been suffering from breast cancer for 2 years was admitted to the hospital with a diagnosis of deep venous thrombosis. An intravenous (IV) loading dose of heparin was administered, followed by an IV infusion. After 6 hours of heparin therapy, the patient's activated partial thromboplastin time (aPTT) had not increased relative to her heparin pretreatment levels.

Give two possible explanations for this finding

Q5

A 32-year-old man suffering from hemophilia A was at his dentist's office for a tooth extraction. In preparation for minor surgery, the patient received a subcutaneous injection of desmopressin, a drug that was effective for him in the past.

Explain why desmopressin was an appropriate therapy for the patient

Q6

A 72-year-old man recently diagnosed with atrial fibrillation started a treatment that included dabigatran

What mechanism and mode of action mediates the therapeutic effect of dabigatran drug in this patient?

Q7

A 64-year-old man was admitted to the emergency department with the presumptive diagnosis of pulmonary embolism . He was started on an appropriate emergency therapy. Three days later, his fingers became discolored, and laboratory tests showed the following:

- White blood cell count: $10.2 \times 10^3/\text{cc}$ (normal $4.3-10.8 \times 10^3/\text{cc}$)
- Red blood cell count: $4.8 \times 10^6/\text{cc}$ (normal $3.5-5.0 \times 10^6/\text{cc}$)
- Platelets: $75 \times 10^3/\text{cc}$ (normal $140-440 \times 10^3/\text{cc}$)

Which anti-thrombotic drug could have caused the patient's signs and symptoms?

Explain your answer

Q8

A 65-year-old man developed sudden dyspnea and chest pain 2 days after surgery to remove a gastric carcinoma. Physical examination revealed an anxious man in severe respiratory distress with the following vital signs: temperature 37.5°C, pulse 120 bpm, blood pressure 90/50 mmHg, respirations 28 breaths/min. A computed tomography scan showed complete obstruction of a branch of the left pulmonary artery.

Which anti-thrombotic drug would you consider for acute parenteral treatment of this patient?

Explain your answer

Q9

A 68-year-old man with no past medical history was admitted to the emergency department because of severe substernal crushing chest pain with radiation to the left arm for the past 2 hours. An electrocardiogram confirmed the diagnosis of acute anterior myocardial infarction.

Which two anti-thrombotic drugs would you immediately give intravenously to the patient?

Explain your answer

Q10

A 57-year-old man was admitted to the emergency department because of unrelenting chest pain for the past 3 hours. After physical examination and lab tests, a diagnosis of unstable angina was made, and the patient received an emergency therapy that included abciximab.

What is the mechanism and mode of action that mediate the therapeutic effect of abciximab in this patient?

Q11

A 6-year-old boy recently diagnosed with thalassemia major was started on whole blood transfusion therapy

Which drug should be given during the transfusion to prevent transfusional iron overload?

Explain your answer

Q12

A 42-year-old man suffering from diffuse non-Hodgkin lymphoma was in the hospital for autologous bone marrow transplantation

Which drug should be administered after transplantation to hasten neutrophil recovery?

Explain your answer

Q13

A 13-year-old boy suffering from acute lymphoblastic leukemia was admitted to the hospital for the third cycle of anticancer therapy, which included high-dose methotrexate.

Which drug would you recommend to counteract methotrexate toxicity?

Explain your answer

Q14

A 66-year-old woman complained to her physician of bleeding gums. The woman had been receiving her third cycle of chemotherapy for metastatic ovarian cancer.

A blood analysis showed the following results:

- Red blood cell count (RBC) $3.2 \times 10^6/\text{cc}$ (normal female $3.5\text{--}5.5 \times 10^6/\text{cc}$)
- Mean corpuscular volume (MCV) 96 fL (normal 80–100 fL)
- Hemoglobin (Hb) 9 g/dL (normal female > 12 g/dL)
- Neutrophil count 4600/cc (normal 3000–7000/cc)
- Platelet count 7000/cc (normal 130,000–400,000/cc)

A hematopoietic agent was administered intravenously

Which haematopoietic agent would be appropriate for this patient?

Explain your answer

Q15

A 72-year-old man was admitted to the hospital with a 2-week history of weakness, decreased appetite, and exercise intolerance.

Pertinent laboratory values on admission were: RBC $3.0 \times 10^6/\text{cc}$ (normal male $4.3\text{--}5.9 \times 10^6/\text{cc}$), MCV 96 fL (normal 80–100 fL), Hb 6 g/dL (normal male > 13.5 g/dL), serum iron 45 $\mu\text{g}/\text{dL}$ (normal 50–150 $\mu\text{g}/\text{dL}$), serum creatinine 4.7 mg/dL (normal 0.6–1.2 mg/dL).

Which two haematopoietic drugs would be most appropriate to treat the patient's disease?

Explain your answer

Q16

A 33-year-old malnourished woman in her eighth month of pregnancy presented to the clinic complaining of extreme lethargy. The woman was multiparous and living in a poor suburban area with her two daughters. Laboratory values on admission were: RBC count $2.9 \times 10^6/\text{mm}^3$ (normal female $3.5\text{--}5.5 \times 10^6/\text{m m}^3$), MCV 90 fL (normal 80–100 fL), Hb 7 g/dL

(normal female > 12 g/dL), serum ferritin 8 $\mu\text{g}/\text{dL}$ (normal 30–300 $\mu\text{g}/\text{dL}$), serum vitamin B12 350 pg/mL (normal > 280 pg/mL), RBC folate 45 ng/mL (normal 150–800 ng/mL). Blood stain demonstrated both micro- and macrocytic erythrocytes and blood hypochromia.

Which two haematopoietic drugs would be appropriate treatment for this patient?

Explain your answer

Q17

A 71-year-old man complained to his physician of tiredness, breathlessness, and fatigue. Four years earlier, the patient had undergone total gastrectomy for advanced Zollinger–Ellison syndrome. A blood analysis showed megaloblastic anemia.

Explain why folic acid supplementation would be contraindicated in this patient

Q18

A 22-year-old man complained to his physician of increasing fatigue, anorexia, and irritability over the past 2 months. The man had been suffering from gluten enteropathy since his infancy. Physical examination revealed pallor, glossitis, paresthesias, and muscle weakness.

Laboratory values: RBC $3.4 \times 10^6/\text{cc}$ (normal male $4.3\text{--}5.9 \times 10^6/\text{cc}$), MCV 116 fL (normal 80–100 fL), serum vitamin B12 330 pg/mL (normal > 280 pg/mL), serum ferritin 200 ng/mL (normal 30–300 ng/mL). Blood stain showed macro-ovalocytic red blood cells and hypersegmentation of neutrophils. An appropriate drug was started, and 10 days later, the RBC was normal.

Which action most likely mediated the therapeutic effect of the drug in the patient's disease?

Explain your answer

Q19

A 34-year-old woman recently diagnosed with iron deficiency anemia started a treatment with ferrous sulfate

What mechanism is involved in the delivery of iron to the patient's erythroblasts?

Explain your answer

Q20

A 53-year-old man recently diagnosed with pernicious anemia started a treatment with vitamin B12

What molecular action mediates the haematinic effect of the drug in this patient?

Explain your answer

END