Osh State University

Medical Faculty

Department "Biochemistry, Pathophysiology and Pharmacology"

**«APPROVED»**

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GUIDELINES FOR TRAINEES

TO EXTRACURRICULAR WORK INDEPENDENTLY

SECTION: **PATHOPHYSIOLOGY OF BLOOD**

TOPIC: **Pathology of circulating blood volume. Bleeding.**

Developed: teacher Ismailov I.Dzh.

Methodical instructions approved at a meeting of the department

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OSH

**Study subject:** Pathology of circulating blood volume. Bleeding.

**Format:** Preparing for the practical exercises.

**Aim of the lesson**: to study the types of circulating blood volume disorders, their causes and mechanisms of development, to study pathogenesis and compensatory mechanisms after acute bleeding.

**Questions for self-study:**

1. Blood, its composition and functions. Hematocrit.

2. Categorization of disorders of circulating blood volume (hypervolemia, hypovolemia).

3. Hypervolemia. Types (simple, polycythemic, oligocythemic). Causes and outcomes.

4. Hypovolemia. Types (simple, polycythemic, oligocythemic). Causes and outcomes.

5. Erythrocytosis. Polycythemia or Wakes’s disease.

6. Bleeding. Types and causes. Pathogenesis and main clinical symptoms of acute bleeding.

7. Compensatory-adaptative reactions of organism at acute bleeding. Stages of compensation (reflectoric, hydremic, bone-marrow initiation).

8. Parameters of severity of bleeding.

9. Factors which affect bleeding outcome.

10. Blood rheological and plasma composition disturbances. Causes and outcomes.

**List of practical skills**

1. To be able to calculate the color index

2. To be able to interpret the change in the main indicators of red blood.

**Recommendations to UIRS:**

1. Making the album with the relevant tasks relating to using learning and m e ological literature.

2. Master the techniques of creative use of the program material on this topic by using problem solving.

**Self-control on test tasks:**

*1. Hematocrit in oligocythemic normovolemia:*

a) increases

b) decreases

c) is normal

*2.* He*matocrit in polycythemic normovolemia:*

a) increases

b) decreases

c) is normal

*3. Hematocrite in simple normovolemia:*

a) increases

b) decreases

c) is normal

*4. What kind of normovolemia leads to the increase of blood viscosity, susceptibility to thrombosis?*

a) simple

b) polycythemic

c) oligocythemic

*5. In what normovolemia appeares anemia and hypoxia?*

a) simple

b) olygocythemic

c) polycythemic

*6. How is hematocrit changed in simple normovolemia?*

a) it is increased

b) it is decreased

c) it has no changes

*7. How is hematocrit changed in olygocytemic hypovolemia?*

a) it is increased

a) it is decreased

b) it has no changes

*8. How is hematocrit changed in simple hypovolemia?*

a) it is increased

b) it is decreased

c) it has no changes

*9. How is hematocrit changed in polycythemic hypovolemia?*

a) it is increased

b) it is decreased

c) it has no changes

*10. How is hematocrit changed in olygocytemic hypovolemia?*

a) it is increased

b) it is decreased

c) it has no changes

**Self-control on situational problems:**

§1.

Patient, 35 years old, male, arrives to the hospital after chest trauma.

*Clinical findings*: paleness, blood pressure 70/40 mm Hg, weak puls, frequent breath, X-ray chest examination reveals severe darkness in thoracic cavity.

Blood analysis, after 4 days of hemostatic operation: Нв – 71 g/l, RBC – 3 х 1012/l, Rt – 12 %, WBC – 10,2 х 109/l.

*Blood sample*: a lot of polychromatophills, 2 oxyphilic normocytes.

Make hematological conclusion according classification.

§2.

Patient, 42 years old, arrives to the genicological hospital after prolonged uteric bleeding (about 2-3 weeks).

*Clinical findings*: paleness, rapid puls, uteric myoma (benign tumor).

*Blood analysis*: Нв – 68 g/l, RBC – 2,8 х 1012 /l, Rt – 0,05 %, WBC– 4 х 109/l, erythrocyte sedimentation rate (ESR)– 8mm/hr.

*Blood sample:* hypochromia of erythrocyties, anyzocytosis, microcytosis, poikilocytosis, and single polychromatophills.

*Biochemical analysis:* serum Fe concentration 6 μM

What pathology has got the patient?

Make hematological conclusion.

**References:**

1. Lecture material.

2. General and clinical pathophysiology/ Ed. by A. V. Kubyshkin – Vinnytsa: Nova Knyha Publishers. – 2011. – P. 371-409.

3. Pathology/ ed. by E. Rubin, J.L. Farber. – 2nd ed. – 1994. – P.1010 – 1029.

4. Pathophysiology of disease: an introduction to clinical medicine/ ed. By S. J. McPhee, W. F. Ganong. – 2006. – P.127 –133.

5. Internal medicine/ ed. by Harrisons. – 17th edition. – N. Y. – 2008. – P. 355–362, 628–6

**Study guide:**

1.Educational-methodical recommendations for Pathophysiology / RK Kalmatov, I.N Atabaev, .- Osh State University, 2014.

2.Pathophysiology Course / Tutorial., RK Kalmatov, Osh State University, 2011.