

Topic of the lesson: DISTURBANCES OF GENERAL BLOOD VOLUME. LOSS OF BLOOD.

Aim: To be able to make pathophysiologic analysis of situations associated with general blood volume disorders and with loss of blood.

Main questions to the topic of the lesson:

1. Types of general blood volume disturbances, etiology, and pathogenesis.
2. Loss of blood, etiology, pathogenesis, mechanisms of compensation by loss of blood.
3. Hemorrhagic shock, main pathogenetic links of its origin.

Literature:

1. General and clinical pathophysiology/Gozhenko A.I. - Odessa National Medical University. - 2002. - p. 124-143
2. Pathophysiology/Gozhenko A.I., Gurkalova I.P. - Odessa National Medical University. - 2003. - p. 186-201

CONTROL QUESTIONS

№	Instructions to the execution of the task	Answers of the students with complements at the lessons
1.	Name main types of general blood volume disorders - a, b, c.	
2.	Name main causes of general blood volume disorders a, b, c, d, e, f, g.	

3.	What is inherent by pathogenetic sense of hypovolemia?	
4.	What is pathogenesis of hypervolemia?	
5.	What is blood loss?	
6.	What causes of blood loss do you know? a, b, c.	
7.	What determines the outcome of blood loss - a, b, c. ?	
8.	What stages of the pathogenesis of acute loss of blood do you know? – a, b, c.	
9.	What mechanisms of compensation according to the period of blood loss development do you know- a, b.	

10	What is orientation of compensation reactions that develop by loss of blood?- a, b, c, d.	
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TASK 1. Name changes of indexes of CVS by hypovolemia

- . 1- _____
- 2- _____
- 3- _____

TASK 2. What is the main link in pathogenesis of blood loss?

- . 1- _____
- 2- _____

TASK 3. Name the factors that determine consequence of blood loss:

- . 1- _____
- 2- _____
- 3- _____

TASK 4. Name urgent mechanisms of compensation by loss of blood:

- . 1- _____
- 2- _____
- 3- _____
- 4- _____

TASK 5. What is entity of reactions of compensation that are directed on increase of blood volume by loss of blood?

- 1- _____
- 2- _____
- 3- _____

TASK 6. What reactions of compensation ensure the restoration of peripheral blood composition?

TASK 7. What properly pathologic changes develop by loss of blood?

- 1- _____
- 2- _____
- 3- _____
- 4- _____
- 5- _____

TASK 8. Name main pathogenetic links of hemorrhagic shock.

TASK 9. *Solve the clinic-patophysiological tasks.*

A 39-year-old patient that was at work suddenly felt bad- he experienced weakness, cold sweat, vertigo, tinnitus, palpitation, hematemesis. After an hour a patient was brought to the clinic. On analysis: A patient suffers of ulcerous disease of stomach during the period of 7 years.

On examination: Skin and mucous tunic are pale, cold extremities. Pulse is 120 in min. pulse of poor volume, Arterial pressure- 80/50 mm.m.c

On blood analysis: *by admission:* Hb- 14 g/l, erythrocytes- 4,2 T/l, reticulocytes- 1%, Ht- 48.

Presumptive diagnosis: “gastrorrhagia “

On blood analysis: *after 2 days in clinic:* Hb- 52 g/l, erythrocytes- 2,2 T/l, reticulocytes- 4%, Ht- 35.

Which hypervolemia developed after the loss of blood?

Explain the loss of blood changes after the two days

What prognostic value have these changes?

What type of path process developed in organism of patient in clinic? Do they maintain for the next 2-3 days?

Are these mechanisms equal in periods of observation?

TASK 10. *To solve tests for self-control*

1. In clinic was delivered a 32 -year - old patient with a massive loss of blood as a result of road trauma.

Pulse- 110 in min. arterial pressure- 100/60 mm. m. c. What changes of blood will be character after 1 hour after loss of blood?

- A. hypovolemia
- B. erythropenia
- C. hypochromia of erythrocytes
- D. leucopenia
- E. hypoproteinemia

2. General amount of blood in organism of adults on the average

- A. 3%
- B. 7%
- C. 5%
- D. 10%
- E. 15%

3. Mark normal indexes of Ht of adults

- A. 0,40- 0,55
- B. 0,45- 0,65
- C. 0,36- 0,48
- D. 0,32- 0,52

E. 0,50- 0,62

4. In first minutes after acute loss of blood developed moderately severe:

- A. oligocythemmic normovolemia
- B. oligocythemmic hypovolemia
- C. polycythemmic hypovolemia
- D. normocythemmic hypovolemia
- E. normocythemmic normovolemia

5. Towards the end of 1-2 days after acute loss of blood we can observe:

- A. oligocythemmic hypervolemia
- B. oligocythemmic hypovolemia
- C. oligocythemmic normovolemia
- D. normocythemmic hypovolemia
- E. polycythemmic hypovolemia

6. What type of hypoxia develops in first minutes after massive acute loss of blood?

- A. hematic
- B. circulatory
- C. tissue
- D. respiratory
- E. mixed (tissue and circulatory)

7. What type of hypoxia develops after 2-3 days after the moderately severe loss of blood with successful therapy?

- A. mixed
- B. tissue
- C. hematic
- D. circulatory
- E. respiratory

8. Mark the period of time during which restored the volume of blood circulation (by loss circa 1000 ml) at the expense of entering in vessels the tissue liquid

- A. 1-2 hours
- B. 1-2 days
- C. 2-3 days
- D. 4-5 days
- E. 5-6 days

9. Mark the period of time during which the volume of blood circulation (by loss circa 1000 ml) at the expense of activation of erythropoiesis restored

- A. 1-2 hours
- B. 1-2 days
- C. 2-3 days
- D. 4-5 days
- E. 8-9 days

10. Mark the period of time during which the protein composition of blood plasma after acute loss of blood restored?

- A. 1-2 hours
- B. 1-2 days
- C. 3-4 days
- D. 5-7 days
- E. 8-10 days

For notes
