

GUIDELINES

Students' independent work during preparation to practical lesson

Academic discipline	HUMAN ANATOMY
Topic	THE ABDOMINAL AORTA. THE ARTERIES OF THE PELVIS.

1. Relevance of the topic

Cardiovascular diseases are reasons of high mortality nowadays. The most common causes of death are an abdominal aortic aneurysm, Leriche syndrome, occlusion of the abdominal aorta and iliac arteries. These pathologies are actual medical problems for physicians of any specialty, but especially for surgeons, obstetrician-gynecologists, neonatologists. Knowledge of the abdominal aorta and its branches, pelvic arteries and their branches, areas of blood supply is required in medical practice of future doctors for differential diagnostics in patients with various lesions of vitally important vessels.

2. Specific goals

- demonstrate the abdominal aorta, define its branches.
- classify branches of the abdominal aorta.
- name parietal branches of the abdominal aorta.
- name visceral branches of the abdominal aorta.
- name paired visceral branches of the abdominal aorta.
- name and demonstrate sources of common iliac artery.
- name and demonstrate branches of external iliac artery.
- name and demonstrate branches of the internal iliac artery.

3. Basic level of knowledge

- define the organs of abdomen and pelvic cavities and demonstrate them on the preparations.
- define the walls of abdominal and pelvic cavity and demonstrate them on the preparations.
- demonstrate and name the formation of peritoneal cavity in upper, middle and lower storey.
- demonstrate and name the parts of the aorta.

4. Tasks for independent work during preparation for the lesson.

4.1. The list of key terms, parameters, characteristics which the student must assimilate while preparing for lesson

The term	Definition
ABDOMINAL PART OF THE AORTA (ABDOMINAL AORTA), PARS ABDOMINALIS AORTAE (AORTA ABDOMINALIS)	This is a direct continuation of the thoracic aorta, which ends with bifurcation into right and left common iliac artery, the terminal branches of the abdominal aorta.
BIFURCATION OF AORTA, BIFURCATIO AORTAE	Separation of the abdominal aorta to the right and left common iliac arteries.
CELIAC TRUNK, TRUNCUS COELIACUS	This is a thick and short (1-2 cm) vessel that goes from the aorta at the level of the XII thoracic vertebra.
SUPERIOR MESENTERIC ARTERY, ARTERIA	It arises from the abdominal aorta 1 cm

MESENTERICA SUPERIOR	below the celiac trunk, goes down behind the pancreatic head to the root of the mesentery of the small intestine and reaches the right iliac fossa.
INFERIOR MESENTERIC ARTERY, ARTERIA MESENTERICA INFERIOR	It arises from the abdominal aorta at the level of the third lumbar vertebra, 3-4 cm above the bifurcation of the aorta, retroperitoneally, goes down and to the left.
MIDDLE ADRENAL ARTERY, ARTERIA SUPRARENALIS MEDIA	It arises from the lateral surface of the aorta just below the place of departing of the superior mesenteric artery.
RENAL ARTERY, ARTERIA RENALIS	This is a paired thick vessel that departs from the lateral abdominal aorta at the level of I lumbar vertebrae.
OVARIAN ARTERY, ARTERIA OVARICA	This is a paired thin vessel, which departs from the anterior surface of the abdominal aorta at the level of the second lumbar vertebra and reaches the gonads. It goes deeply in suspensory ovarian ligament.
TESTICULAR ARTERY, ARTERIA TESTICULARIS	Paired, starts at the level of the second lumbar vertebra and reaches the gonads. It goes through the inguinal canal as a part of structures of the spermatic cord.
COMMON ILIAC, ARTERIA ILIACA COMMUNIS	This is a paired artery coming from the aorta at the level of the sacroiliac joint and divided further into internal and external iliac arteries.
EXTERNAL ILIAC ARTERY, ARTERIA ILIACA EXTERNA	This is a direct continuation of the common iliac artery. It goes forward and down, gets under the inguinal ligament through the vascular gap and goes out on the front of the thigh, which gets the name of the femoral artery.
INTERNAL ILIAC ARTERY, ARTERIA ILIACA INTERNA	Going down to the pelvic cavity to the large sciatic opening and near the top edge it divides on the anterior and posterior branches. Anterior branch usually gives rise to viscera, or visceral branches, and posterior – to the parietal branches.

4.2. Theoretical questions to the lesson:

1. Classify branches of the abdominal aorta.
2. Name and demonstrate parietal branches, paired and unpaired visceral branches of the abdominal aorta.
3. Describe the celiac trunk and its branches.
4. What is the area of blood supply of the splenic artery?
5. Name the branches of the hepatic artery?
6. Name and demonstrate artery, which runs in hepato-duodenal ligament.
7. Name the arteries that provide blood supply of stomach.
8. Name and demonstrate the arteries that provide blood supply of all parts of the small intestine.

9. Name and demonstrate the arteries that provide blood supply of all parts of the colon.
10. Name arteries that provide blood supply of adrenal glands.
11. Identify the features of blood supply of kidneys.
12. Name the branches of the abdominal aorta that provide the blood supply of walls and organs of lesser pelvis.
13. At what level the abdominal part of aorta divides into right and left common iliac arteries?
14. Name and demonstrate the artery that provides blood supply of the sacral plexus.
15. Which organs are being provided with blood supply by superior mesenteric artery branches?
16. Which organs are being provided with blood supply by inferior mesenteric artery branches?
17. Name the intersystemic and intrasystemic arterial anastomosis in organs of abdominal cavity.
18. Name the branches of external iliac artery and what areas do they provide with a blood supply?
19. Categorize branches of the internal iliac artery.
20. Name the parietal branches of internal iliac artery. What areas do they provide with a blood supply?
21. Name the visceral branches of the internal iliac artery. What areas do they provide with a blood supply?
22. Name and demonstrate the arteries that supply the urinary bladder.
23. What are the features of blood supply of the testicles and ovaries?
24. Which vessels do provide blood supply of the vagina?
25. Which arteries do provide blood supply of the external genital organs of males and females?
26. Name and demonstrate the vessels that provide blood supply of different parts of the rectum.
27. Name the intersystemic and intrasystemic arterial anastomoses in the pelvis.

4.3. The list of standardized practical skills:

- Aorta
- Parts of the aorta: the ascending, arch, descending
- Aortic bifurcation
- The abdominal aorta
- Common iliac artery
- Internal iliac artery
- External iliac artery

5. Sources:

Anatomy international nomenclature	http://anatom.ua/anatomical-terminology/
LECTURE	https://anatom.ua/basis/english/lectures/
Textbook 'Human anatomy'	PP. 292-301 http://anatom.ua/basis/english/online-book-in-english/
Work Book (Coloring book)	PP. 103-104
Atlas of human anatomy (Sobotta)	PP. 104, 112-114, 125-129
QUIZES	https://anatom.ua/basis/english/tests/
VIDEO	https://anatom.ua/basis/video/

6. Materials for self-control

1. At which vertebral level does the abdominal aorta terminate?
 - A. Th12
 - B. L2
 - C. L4
 - D. S2
 - E. C4

2. At what vertebral level does the aorta pass through the diaphragm and the coeliac trunk arise?
 - A. Th10
 - B. Th11
 - C. Th12
 - D. L1
 - E. L2

3. Choose arteries of blood supply of caecum and colon ascendens.
 - A. A.colica media, aa. pancreatoduodenales inferiores
 - B. A.iliolica, a.colica dextra
 - C. A.iliolica, a.colica sinistra
 - D. Aa. interstinales, aa. sigmoideae
 - E. A.colica sinistra

4. What are the paired visceral branches of the aorta abdominalis?
 - A. Aa. suprarenales superiores, renales, phrenici inferiores
 - B. Aa. testiculares (ovaricae), lumbales, mesenterici inferiores
 - C. Aa. renales, suprarenales mediae, testiculares (ovaricae)
 - D. Aa. suprarenales inferiores, aa. colicae, aa. renales
 - E. Aa. suprarenales mediae, iliaca interna, uterinae

5. Branches of which artery provide blood supply of the pancreas?
 - A. A. gastroduodenalis, a.lienalis, a.mesenterica superior
 - B. A.lienalis, a. suprarenalis superior
 - C. Aa. phrenicae inferiores, a. renalis, a.mesenterica superior
 - D. A.hepatica communis, a.colica media, a. suprarenalis inferior

6. Branches of what arteries form anastomosis with the oesophageal branches (rami oesophagei)?
 - A. Inferior thyroid artery
 - B. Superior thyroid artery
 - C. Left gastric artery
 - D. Inferior thyroid artery and left gastric artery
 - E. Superior thyroid artery and left gastric artery

7. Which of the following is NOT one of the three major branches of the coeliac trunk?
 - A. Left gastric artery
 - B. Right gastric artery
 - C. Splenic artery
 - D. Common hepatic artery

8. Which of the following is not one of the three major branches of the inferior mesenteric artery?
- A. Right colic artery
 - B. Left colic artery
 - C. Sigmoid artery
 - D. Superior rectal artery
9. Where does coeliac trunk arise from the aorta?
- A. anterior aspect of the aorta, at the aortic hiatus of the diaphragm (Th10 level)
 - B. posterior aspect of the aorta, at the aortic hiatus of the diaphragm (Th10 level)
 - C. anterior aspect of the aorta, at the aortic hiatus of the diaphragm (Th12 level)
 - D. posterior aspect of the aorta, at the aortic hiatus of the diaphragm (Th12 level)
 - E. laterally of the aorta, at the level of L2
10. The hepatic portal system delivers blood from the digestive organs to the _____.
- A. liver
 - B. hypothalamus
 - C. spleen
 - D. left atrium
 - E. stomach
11. What artery is the main in supplying the pelvic region?
- A. Median sacral artery
 - B. Superior rectal artery
 - C. Internal iliac artery
 - D. External iliac artery
 - E. Right colic
12. Where do middle suprarenal arteries arise from the aorta?
- A. anterior aspect of the aorta, at the aortic hiatus of the diaphragm (Th12 level)
 - B. posterior aspect of the aorta, at the aortic hiatus of the diaphragm (Th12 level)
 - C. on the either side posteriorly at the level of L1
 - D. laterally of the aorta, at the level of L2
 - E. posteriorly at the level of L4
13. What are the terminal branches of the proper hepatic artery?
- A. the proper hepatic, right and left hepatic, cystic arteries
 - B. the proper hepatic and gastroduodenal arteries
 - C. gastroduodenal, right gastric, right and left hepatic, cystic arteries
 - D. right gastric, right and left hepatic, cystic arteries
 - E. right gastroepiploic, superior pancreaticoduodenal
14. Arteries serving the stomach, pancreas, and liver are all the branches of:
- A. superior mesenteric artery
 - B. inferior mesenteric artery
 - C. celiac trunk
 - D. splenic artery
 - E. right colic artery
15. What are the parietal branches of the aorta abdominalis?
- A. A.a. intercostales, lumbales, phrenicae superiores

- B. Aa. lumbales, phrenicae inferiores
- C. Aa. epigastricae inferiores, phrenicae inferiores, intercostales posteriores
- D. Aa. iliacae externae, aa. lumbales
- E. Aa. phrenicae inferiores, aa. epigastricae superiores

16. Branches of which artery provide blood supply of the pancreas?

- A. A. gastroduodenalis, a.lienalis, a.mesenterica superior
- B. A.lienalis, a. suprarenalis superior
- C. Aa. phrenicae inferiores, a. renalis, a.mesenterica superior
- D. A.hepatica communis, a.colica media, a. suprarenalis inferior

17. Choose the source of blood supply of the glandulae suprarrenales.

- A. Truncus coeliacus, a. lienalis
- B. A.phrenica inferior, a. renalis, aorta
- C. A.suprarenalis media, truncus coeliacus
- D. A. renalis, a. mesenterica inferior
- E. A. renalis, a. mesenterica superior

18. Which of the following is NOT a branch of the superior mesenteric artery?

- A. Jejunal artery
- B. Ileocolic artery
- C. Right colic artery
- D. Left colic artery
- E. Sigmoid artery

19. Which arteries are not parietal branches of the a. iliaca interna?

- A. A. lumbales
- B. Aa. sacrales laterales
- C. Aa. iliolumbales
- D. Aa. gluteales superiores et inferiores
- E. A. obturatoriae

20. What are the terminal branches of the common hepatic artery?

- A. the proper hepatic, right and left hepatic, cystic arteries
- B. the proper hepatic and gastroduodenal arteries
- C. gastroduodenal, right gastric, right and left hepatic, cystic arteries
- D. right gastric, right and left hepatic, cystic arteries
- E. right gastroepiploic, superior pancreaticoduodenal

ANSWERS:

1	C
2	C
3	B
4	C
5	A
6	D
7	B
8	A
9	C
10	A
11	C
12	C
13	D
14	C
15	B
16	A
17	B
18	D
19	A
20	B