

GUIDELINES

Students' independent work during preparation to practical lesson

Academic discipline	HUMAN ANATOMY
Topic	AORTA. EXTERNAL CAROTID ARTERY.

1. The relevance of the topic

Common carotid artery is often used for measuring heart rate, particularly in those patients whose heart rate in peripheral arteries are not determining. External carotid artery supplies the organs of the head and neck, where it gives a big number of branches. Examination of the carotid arteries is very important in medicine, particularly in the diagnosis of emergency conditions, monitoring the patient during surgery, etc. The nature of the pulsating artery indicates the state of central hemodynamics, blood pressure and heart rate.

2. Specific objectives

- Know and be able to demonstrate parts of aorta and branches of aortic arch.
- Determine and demonstrate the origin of left and right common carotid arteries and know differences of their anatomy.
- Determine and demonstrate the area of branching of the common carotid artery to its terminal branches.
- Determine and demonstrate three groups of branches of the external carotid artery.
- Name and demonstrate organs and groups of organs, which receive blood from the external carotid artery.

3. Basic level of student's knowledge

Main knowledge of medical biology
Anatomy of the chest
Anatomy of internal organs
Anatomy of muscles of the neck
Anatomy of organs of head, neck and thoracic cavity

4. Task for independent work during preparation to practical classes

Term	Definition
AORTA	Artery which starts from the left ventricle and carries blood from it.
Ascending aorta	It begins at the opening of the aortic valve in the left ventricle of the heart. It runs through a common pericardial sheath with the pulmonary trunk.
Aortic arch	The aortic arch loops over the left pulmonary artery and the bifurcation of the pulmonary trunk, to which it remains connected by the ligamentum arteriosum, a remnant of the fetal arterial duct that is obliterated a few days after birth. In addition to these blood vessels, the aortic arch crosses the left main bronchus.
Thoracic aorta	The thoracic descending aorta gives rise to the intercostal and subcostal arteries, as well as to the superior and inferior left bronchial arteries and numerous branches to the oesophagus, mediastinum, and pericardium. Its lowest pair of branches are the superior phrenic arteries, which supply the diaphragm, and the subcostal

	arteries for the twelfth rib.
Abdominal aorta	The abdominal aorta begins at the aortic hiatus of the diaphragm at the level of the twelfth thoracic vertebra. It gives rise to lumbar and musculophrenic arteries, renal and middle suprarenal arteries, and visceral arteries (the celiac trunk, the superior mesenteric artery, and the inferior mesenteric artery). It ends in a bifurcation into the left and right common iliac arteries. At the point of the bifurcation, there also springs a smaller branch, the median sacral artery.

4.1. Theoretical questions for the lesson:

1. Where do left and right common carotid arteries start?
2. At what level and in which branches common carotid artery divides?
3. Name arteries, which carry blood to sternocleidomastoid muscle.
4. Name arteries, which carry blood to large salivary glands.
5. Name branches of maxillary artery.
6. Name branches of third (terminal) group of the maxillary artery.
7. Name branches of the external carotid artery, which carries blood to the tympanic cavity.
8. Name branches of the external carotid artery, which carries blood to the dura mater encephali.
9. Name muscles of the neck, which receive blood from superior thyroid artery.
10. Name glands, which receive blood from lingual artery.

4.2. The list of practical skills:

- Aortic arch
- Common carotid artery
- The bifurcation of the common carotid artery
- External carotid artery.
- Superior thyroid artery
- Lingual artery
- Facial artery
- Occipital artery
- Posterior auricular artery
- The ascending pharyngeal artery
- Superficial temporal artery
- Maxillary 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. Choose arteries which provide blood supply of the palatum molle.

A. A. facialis, a. maxillaris

B. A. lingualis, a. facialis

C. A. thyroidea superior, a. lingualis

D. A. occipitalis, a. pharyngea ascendens

E. A. maxillaris, a. temporalis superficialis

2. Choose the parts of aorta.

A. Aorta ascendens, arcus aortae, pars pelvina

B. Ascendens, arcus, descendens

C. Pars thoracica, pars abdominalis, pars pelvina

D. Descendens, arcus, cervicalis

E. Ascendens, arcus, femoralis

3. Choose the artery which is not a branch a. faciales.

A. A. palatina ascendens

B. A. palatina descendens

C. A. labialis superior

D. A. labialis inferior

E. A. angularis

4. Which branches (vessels) do not arise from the arcus aortae?

A. Truncus brachiocephalicus

B. Truncus thyrocervicalis

C. A. carotis communis sinistra

D. A. subclavia dextra

E. A. subclavia sinistra

5. What are the branches of the a. lingualis?

A. A. sublingualis, a. suprahyoideus, a. profunda linguae, rr. dorsalis linguae

B. Rr. dorsalis linguae, a. tonsillaris, a. palatina ascendens

C. A. sublingualis, a. thyroidea superior, a. profunda linguae

D. A. profunda linguae, a. facialis, a. maxillaris

E. A. tonsillaris, a. palatina ascendens, a. facialis, a. maxillaris

6. Does a. carotis communis have lateral branches?

A. Yes

B. No

C. Sometimes

D. Only in the neck

E. Only at the start

7. Choose arteries which arise from a. carotis externa and form anterior group.

A. A. thyroidea superior, a. temporalis superficialis, a. lingualis

B. A. pharyngea ascendens, a. lingualis, a. facialis

C. A. thyroidea superior, a. lingualis, a. facialis

D. A. thyroidea superior, a. maxillaris, a. facialis

E. A. thyroidea superior, a. maxillaris, a. lingualis

8. Choose the artery which is the direct continuation of external carotid artery.

A. A. facialis

- B. A. lingualis
- C. A. thyroidea superior
- D. A. occipitalis
- E. A. temporalis superficialis**

9. Choose an artery which is not a branch a. faciales.

- A. A. palatina ascendens
- B. A. palatina descendens**
- C. A. labialis superior
- D. A. labialis inferior
- E. A. angularis

10. Choose arteries which provide blood supply of the throat.

- A. A. lingualis, facialis, pharyngea ascendens
- B. A. thyroidea superior et inferior**
- C. A. thyroidea superior, facialis, maxillaris
- D. A. thyroidea inferior, maxillaris, occipitalis
- E. A. temporalis superficialis, facialis, maxillaris

11. In what trigone of the neck does a. lingualis pass?

- A. Trigonum omotrapezoideum
- B. Trigonum omoclaviculare
- C. Trigonum omotracheale
- D. Trigonum submandibulare et trigonum arteriae lingualis**
- E. Trigonum caroticum et trigonum arteriae lingualis**

12. Choose posterior branches of the a. carotis externa.

- A. A. lingualis, occipitalis, auricularis posterior, temporalis superficialis
- B. A. auricularis posterior, occipitalis, sternocleidomastoideus**
- C. A. auricularis posterior, occipitalis, temporalis superficialis
- D. A. pharyngea ascendens, occipitalis, auricularis posterior
- E. A. temporalis superficialis, occipitalis, maxillaris

13. What artery does pass through tragus?

- A. A. maxillaris
- B. A. temporalis superficialis**
- C. A. temporalis profunda
- D. A. occipitalis
- E. A. auricularis posterior

14. Choose arteries which form anastomosis at the area of the medial angle of the eye.

- A. A. temporalis superficialis, a. facialis
- B. A. facialis, a. ophthalmica**
- C. A. maxillaris, a. facialis
- D. A. auricularis posterior, a. temporalis superficialis
- E. A. pharyngea ascendens, a. dorsalis nasi

15. Choose arteries which provide blood supply of teeth of the upper and lower jaw.

- A. Aa. alveolares superiores et inferiores**
- B. A. alveolaris superior et facialis
- C. A. alveolaris inferior et lingualis
- D. A. facialis, lingualis et alveolares inferior
- E. A. labiales et lingualis

16. Which vessel does give a rise to a. subclavia dextra?

A. Aorta ascendens

B. Truncus brachiocephalicus

C. A. brachialis dextra

D. A. carotis communis dextra

E. Aorta descendens

17. What artery is located at the initial point of the a. carotis externa?

A. A. thyroidea superior

B. A. pharyngea ascendens

C. A. palatina descendens

D. A. laryngea superior

E. A. lingualis

18. Choose the artery which provides blood supply to the chewing muscles.

A. A. maxillaris

B. A. occipitalis

C. A. auricularis posterior

D. A. lingualis

E. A. thyroidea superior

19. What branches do start from the first part of the a. subclavia?

A. Aa. cerebri anterior, media et posterior

B. A. basilaris, a. cerebri posterior, a. thoracica interna

C. A. vertebralis, truncus thyreocervicalis, a. thoracica interna

D. A. vertebralis, a. cervicalis ascendens

E. A. cervicalis transversa

20. The child has a bleeding of the superficial temporal artery because of road accident. The father of the child managed to stop the bleeding pressing vessel to the zygomatic arch 1 cm ahead the ear. A branch of what vessel the superficial temporal artery is?

A. A. palatina ascendens.

B. A. sphenopalatina.

C. A. carotis externa.

D. A. facialis.

E. A. maxillaris.

21. As a result of accident a man received knife wound of a neck and damaged external carotid artery. To temporarily stop the bleeding the finger pressure over the common carotid artery to the transverse process of the VI cervical vertebra needs to be done. In what triangle of the neck the compression of the carotid artery should be done to stop the bleeding?

A. The carotid triangle.

B. Inframandibular.

C. Triangle of Pirogov.

D. Scapulotrachealis.

E. Scapuloclavicularis.

22. What artery can be damaged when performing anesthesia in the openings of the lower jaw?

A. A. lingualis.

B. A. buccalis.

C. A. alveolaris inferior.

D. Rr. sphenoidales.

E. A. meningea media.

23. Patient has a tumor-like protrusion on the tongue. The surgeon revealed a malignant tumor. Planning the operation, he decided to ligate the artery that is in the triangle of Pirogov. What artery?
- A. R. suprahyoideus.
 - B. A. sublingualis.
 - C. A. profunda linguae.
 - D. A. lingualis.
 - E. A. palatina ascendens.
24. The patient went to the doctor with a complaint for swelling and pain under the lower jaw on the right side. The surgeon found a stone in the sublingual gland. During the surgery the doctor should take care to prevent bleeding from:
- A. A. lingualis.
 - B. A. palatina ascendens.
 - C. A. alveolaris inferior.
 - D. A. labialis inferior.
 - E. A. facialis.
25. Patient underwent deep tamponade of the nasal cavity because of profuse nasal bleeding. Damage of what artery did cause the bleeding.
- A. A. palatina major.
 - B. Aa. palatinae minores.
 - C. A. sphenopalatina.
 - D. A. palatina ascendens.
 - E. A. pharyngea ascendens.
26. The patient has a bleeding of common carotid artery, which runs in the carotid triangle composed of the neurovascular bundle of the neck. What elements do form this bundle?
- A. A. carotis communis, v. jugularis interna, n. hypoglossus.
 - B. N. vagus, a. carotis communis, v. jugularis interna.
 - C. V. jugularis externa, a. carotis communis, n. hypoglossus.
 - D. V. jugularis externa, a. carotis communis, n. phrenicus.
 - E. V. jugularis anterior, a. carotis communis, n. vagus.
27. Patient has a subcutaneous hematoma of the temporal area. Damage of which artery did cause an appearance of the hematoma?
- A. A. buccalis.
 - B. A. maxillaris.
 - C. A. auricularis posterior.
 - D. A. temporalis superficialis.
 - E. A. occipitalis.
28. Patient plans to remove tonsils. Damage of which artery topographically connected with the palatine tonsils can cause arterial bleeding?
- A. A. facialis.
 - B. A. buccalis.
 - C. A. lingualis.
 - D. A. maxillaries.
 - E. A. alveolaris inferior.
29. Patient with an incised wound of cheek and bleeding was taken to hospital. Examination revealed a damage of chewing muscles. Branches of what artery do supply chewing muscles?
- A. A. occipitalis.
 - B. A. temporalis superficialis.

- C. A. auricularis posterior.
 D. A. buccalis.
 E. A. maxillaris.

30. Normally in adult age the aorta and pulmonary trunk are joined with a ligament which is a remnant of:

- A. Azygos vein
 B. Capillary duct
 C. Venous duct
 D. Arterial duct
 E. Brachiocephalic trunk

ANSWERS:

1	A	28	A
2	B	29	E
3	B	30	D
4	B, D		
5	A		
6	B		
7	C		
8	E		
9	B		
10	B		
11	D, E		
12	B		
13	B		
14	B		
15	A		
16	B		
17	B		
18	A		
19	C		
20	C		
21	A		
22	C		
23	D		
24	A		
25	C		
26	B		
27	D		