Happy week 11 everyone!! There’s only 6 weeks left of the semester which means you are ALMOST DONE! Keep up the good work – I am so proud of all of you 😊.

Remember: The tutoring center offers free individual and group tutoring for this course. Our group tutoring session will be Thursdays from 6:45-7:45 PM in the basement of Sid Rich, room 74. You can reserve your spot at https://baylor.edu/tutoring. Hope to see you there!

Keywords: Parasympathetic pathways of CN III, VII, and IX, Anatomy of the heart, Great vessels, Fetal circulation, Posterior mediastinum, Heart defects

**Topic #1 of the Week: Parasympathetic Pathways of Cranial Nerves**

The three cranial nerves with parasympathetic pathways that we will cover are CN III, CN VIII, and CN IX.

*It’s helpful to draw your own diagrams for each nerve and list their functions and clinical correlates! Below are the diagrams I drew to help me study based on Dr. Parizi’s lectures.*

The following diagrams include: the name of the preganglionic nerve (if applicable), where the preganglionic nerve travels through in the skull, the ganglion where the preganglionic synapses with the postganglionic, the nerve the postganglionic travels with, and where the postganglionic travels to.

**CN III – oculomotor**

Functions:
- Innervates pupillary sphincter → constriction
- Innervates ciliary muscle → makes lens bigger
**CN VIII – facial** (2 nerve pathways)

**Greater Petrosal**

- **VII**
  - greater petrosal n.
  - vidian or pterygoid canal
  - (also transports deep petrosal n.)

- **V2** travels with zygomatic of V2
- AND lacrimal of V1

- Functions:
  - Taste from the palate
  - Increases secretions of palatine, nasal, and lacrimal glands

- Clinical correlates: loss of lacrimation and dry nasal cavity

**Chorda Tympani**

- **VII**
  - chorda tympani
  - travels thru middle ear

- **V3** travels with lingual n. of V3

- Functions:
  - Increases secretions of submandibular and sublingual glands
  - Taste from anterior 2/3 of the tongue

- Clinical correlates: loss of taste and reduction in salivation

**CN IX – glossopharyngeal**

**Lesser Petrosal**

- **IX**
  - lesser petrosal n.
  - foramen ovale

- V3 travels with auriculo temporal of V3

- Functions:
  - Increase secretions of the parotid gland
**Topic #2 of the Week: The Heart**

The **arch of aorta** takes oxygen rich blood from the left ventricle to the body. Trifurcates into 3 vessels:

1. **Brachiocephalic trunk**
   a. Right subclavian
   b. Right common carotid
2. **Left common carotid**
3. **Left common carotid**

Found at the level of the **sternal angle** (T4/T5)

**Superior vena cava**: takes oxygen poor blood from the head, neck, and upper limbs to the right atrium.

2 tributaries:

1. **Right brachiocephalic vein**
   a. Internal jugular vein
   b. External jugular vein
   c. Right subclavian vein
2. **Left brachiocephalic vein**
   a. Internal jugular vein
   b. External jugular vein
   c. Left subclavian vein

**Pulmonary trunk**: takes oxygen poor blood from the right ventricle to the lungs via right and left pulmonary arteries.

**Pulmonary veins**: take oxygen rich blood from the lungs to the **left atrium**.
**Abdominal aorta:**

- Common iliac arteries divide into external and internal iliac arteries.
  - **External iliac** becomes the **femoral artery** once it passes under the inguinal ligament.

**Coronary arteries:**

These are the first arteries to branch off the aortic arch.

**Right coronary artery branches:** supply the right atrium, right ventricle, SA nodes, and AV nodes
- Sinoatrial artery
- Right/acute marginal artery
- AV nodal artery
- Posterior descending artery

**Left coronary artery branches:**
- Left circumflex artery
  - Supplies the left atrium and left ventricle
- Left anterior descending/interventricular artery
  - Supplies the interventricular septum, most of the left ventricle, and the apex of the heart
  - Also called the “widowmaker”!
- Left/obtuse marginal artery

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**Highlight #1: Fetal Circulation**

This image was taken from Stanford Children’s Health.
1. The umbilical vein brings oxygenated blood to the fetus from the placenta.
   - Since the liver is not functioning in the fetus, the ductus venosus will help the blood bypass the liver and go straight into the inferior vena cava.
2. Blood will flow into the right atrium and then straight into the left atrium through foramen ovale. This is because the lungs are not functioning, so we do not want to send blood into the right ventricle to then go into the lungs via the pulmonary trunk.
   - Some blood may seep through the tricuspid valve (between right atrium and ventricle) and into the pulmonary trunk. To avoid blood going into the lungs, the blood will pass through ductus arteriosus straight into the aorta.
3. After the blood circulates through the fetus’s body, it will return to the placenta via the umbilical arteries.

After birth:
- Ductus venosus → ligamentum venosum
- Foramen ovale → fossa ovalis
- Ductus arteriosus → ligamentum arteriosum

**Highlight #2: Posterior mediastinum**

**Posterior mediastinum:**
1. Descending aorta
2. Azygos and hemiazygos veins
3. Thoracic duct
4. Esophagus
5. Sympathetic chain/ganglia
6. Splanchnic nerves
7. Lower end of vagus

4 “birds” of the posterior mediastinum:
- Esophagus – esophagee
- Vagus – vagoose
- Azygos – azygoose
- Thoracic duct – thoracid duck

**Highlight #3: Heart Defects**

**Congenital defects** – baby is born with
1. Atrial septal defect – hole in between atria
2. Ventricular septal defect – hole in between ventricles

**Tetralogy of Fallot** (PROV)
1. Pulmonary valve stenosis
2. Right ventricle hypertrophy
3. Over-riding aorta (due to VSD)
4. Ventricular septal defect

**Week 11 Knowledge Checkpoint:**

1. Which nerve increases secretions of the lacrimal gland?
   a. Chorda tympani
   b. Lesser petrosal
c. Greater petrosal
d. Lingual

2. Which fetal structure allows blood to bypass the liver?
   a. Ductus arteriosum
   b. Ductus venosus
   c. Ligamentum arteriosum

3. Which artery is known as the “widowmaker” and why?

4. If a patient loses taste in the anterior 2/3 of the tongue, which nerve is damaged?
   a. Facial nerve proper
   b. Chorda tympani
   c. Greater petrosal
   d. Oculomotor

THINGS YOU MAY STRUGGLE WITH!

1. Sympathetic pathways: It is super helpful to draw the diagrams and then write down what you know about each nerve. I suggest doing one nerve at a time that way you don’t get overwhelmed with the volume of information!

2. Great vessels: Draw these out too if it helps! Look at different diagrams and cadaveric images. Acland’s is always good for looking at real-life structures.

3. Images of the heart: Practice looking at these often. Watching videos was helpful for me to understand exactly how/where the images were taken.
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Answers
1. c
2. b
3. left anterior descending artery (LAD) – it supplies the left ventricle and can be deadly if blocked/damaged.
4. b