

***Sympathetic Part of the
Autonomic System***

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Session ILOs

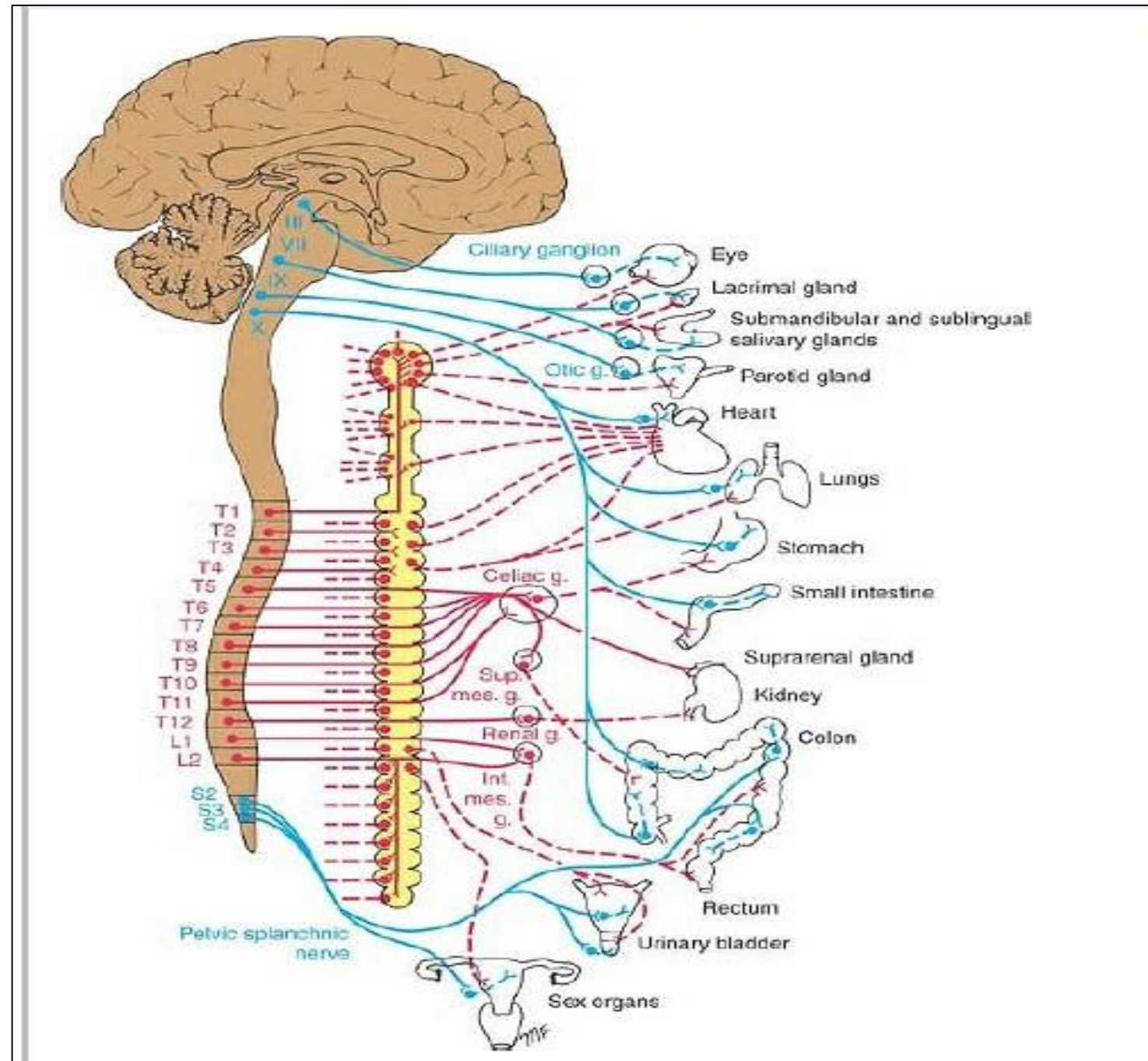
By the end of this lecture, the student should be able to:

- 1. Outline parts of autonomic nervous system**
- 2. describe the distribution and function of sympathetic part of nervous system**
- 3. describe the cervical part of sympathetic trunk**
- 4. describe the splanchnic nerves and their function**

Autonomic nervous system

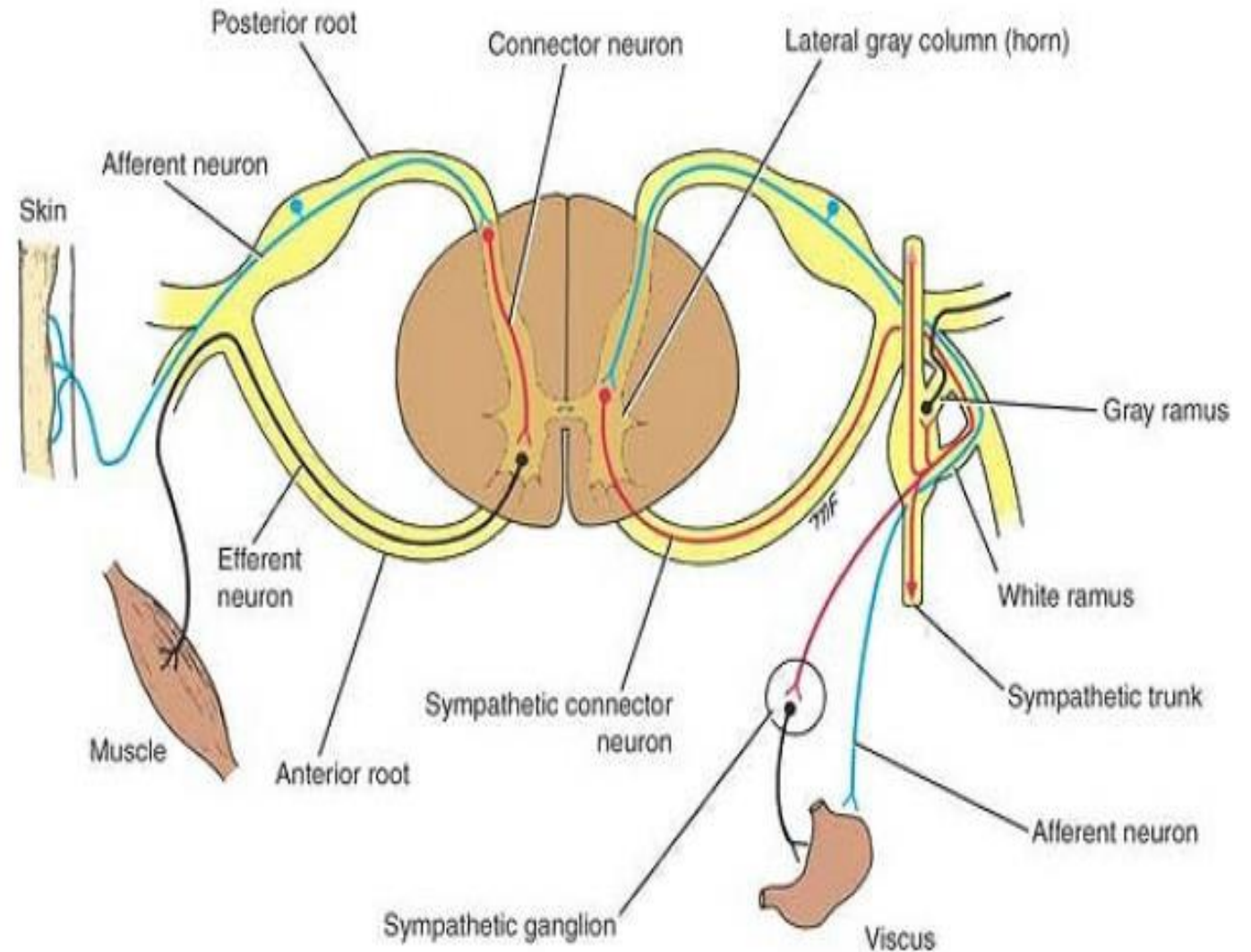
Sympathetic

Parasympathetic



Sympathetic

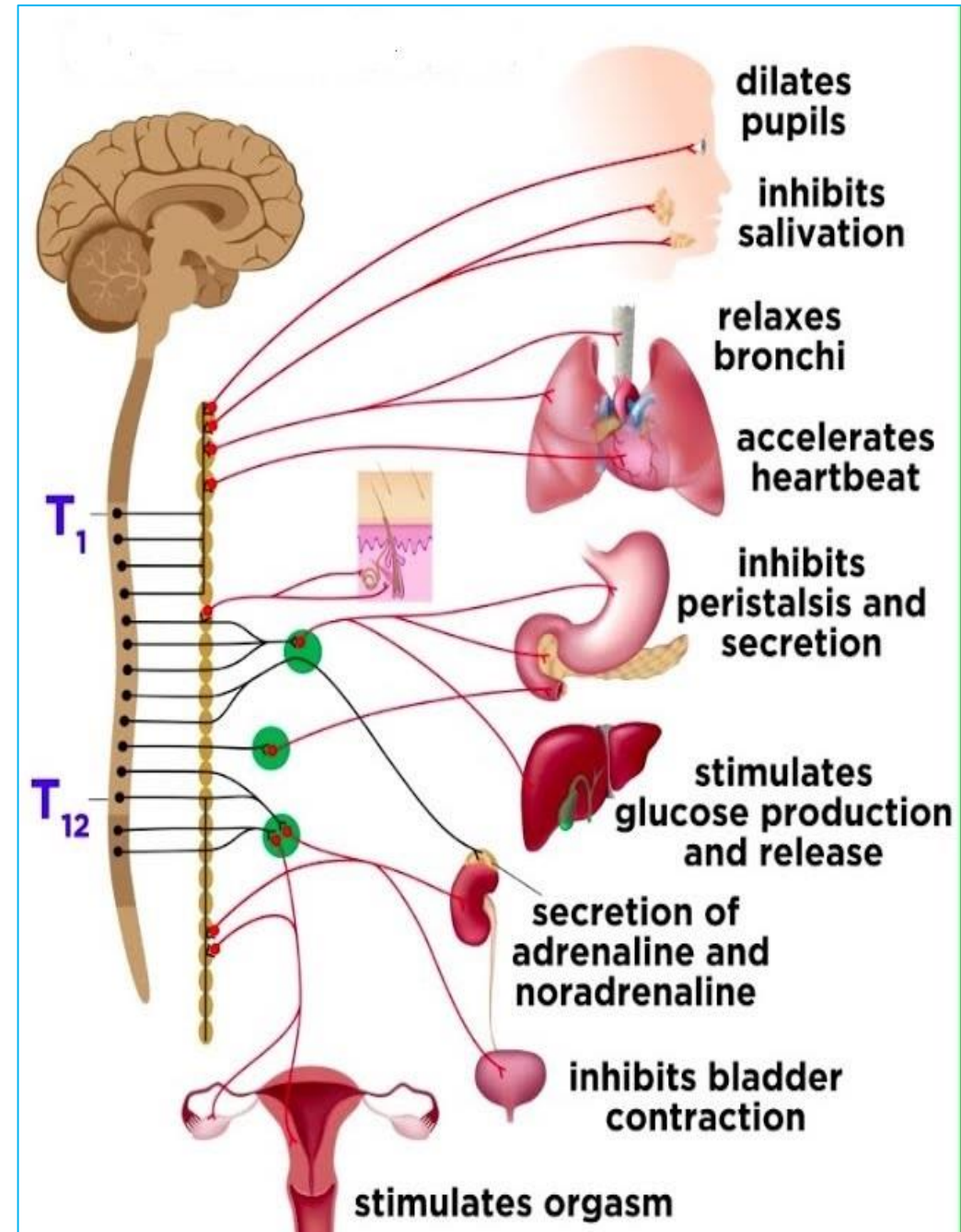
- **Thoracolumbar**
- It originates from the lateral gray columns (horns) of the spinal cord
- **Consists of fibers which accompany all thoracic and 1,2,3 lumbar nerves.**
- **They communicate with 2 sympathetic chains on either sides of vertebral column**



Sympathetic distribution

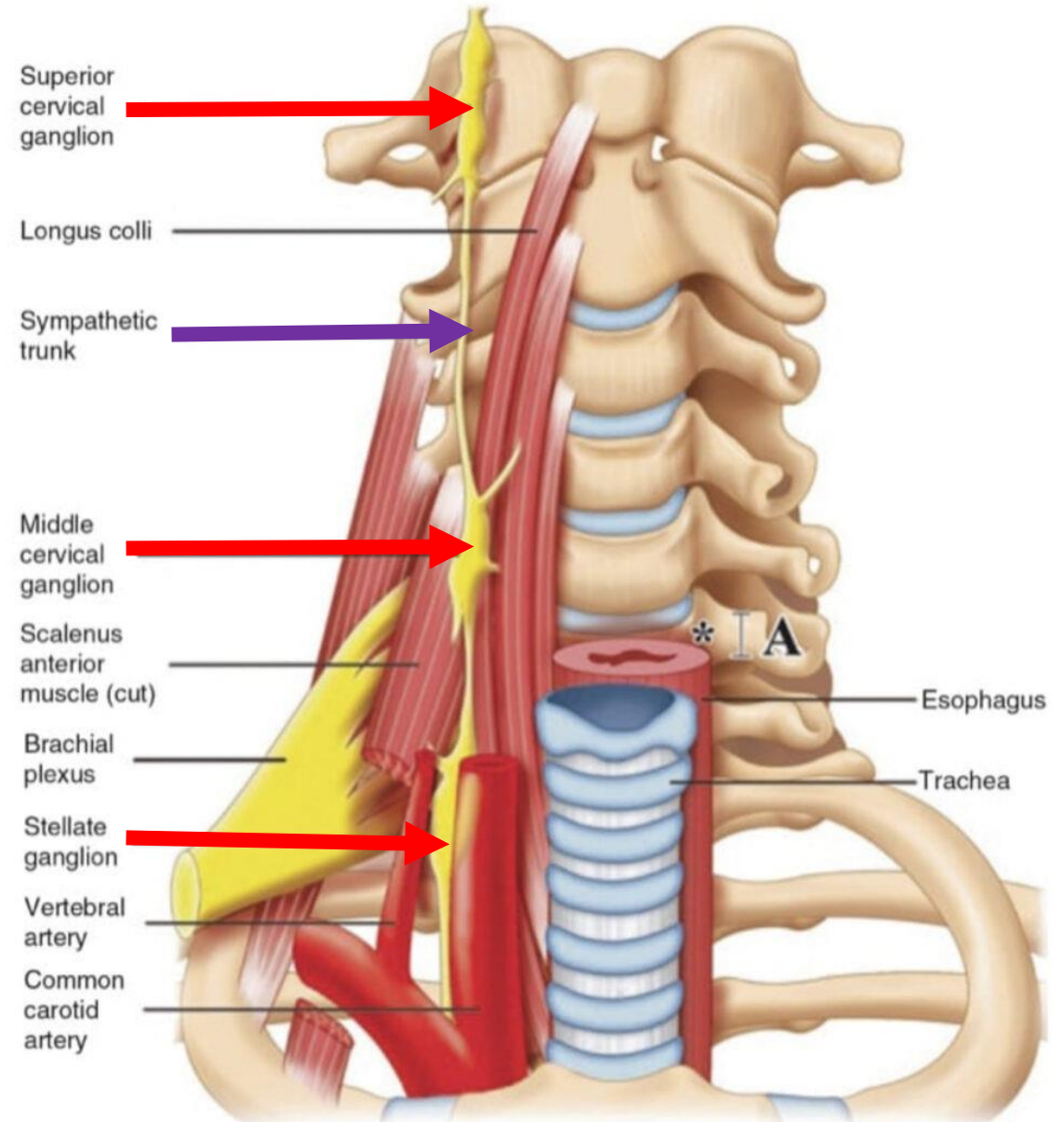
The function of the sympathetic system is: to prepare the body for an emergency.

- The heart rate is increased
- arterioles of the skin and intestine are constricted, arterioles of skeletal muscle are dilated
- the blood pressure is raised.
- There is a redistribution of blood; thus, it leaves the skin and gastrointestinal tract and passes to the brain, heart, and skeletal muscle.
- In addition, the sympathetic nerves dilate the pupils; inhibit smooth muscle of the bronchi, intestine, and bladder wall; and close the sphincters.
- The hair is made to stand on end, and sweating occurs.



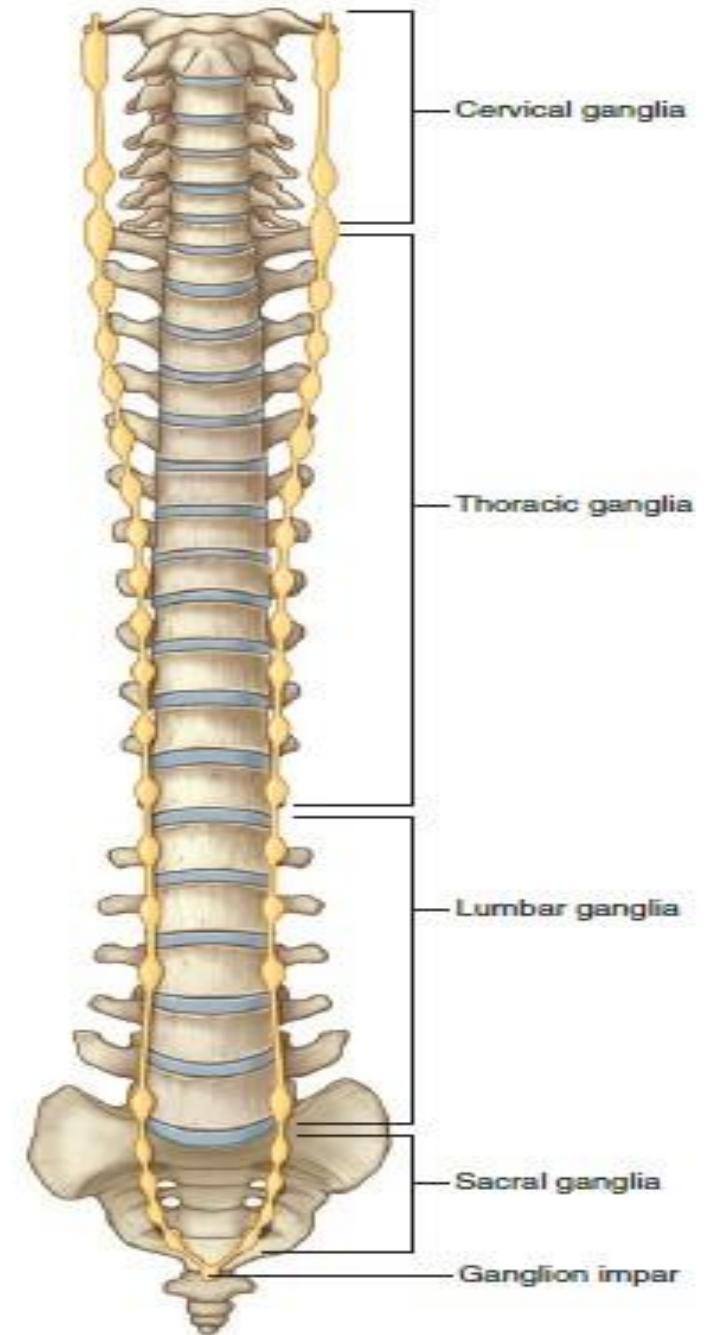
Cervical Part of Sympathetic trunk

- It is embedded in posterior wall of carotid sheath.
- It possesses 3 ganglia:
 1. Superior
 2. Middle
 3. Inferior



Sympathetic trunks

- The sympathetic trunks are two parallel nerve cords extending on either side of the vertebral column from the base of the skull to the coccyx
- three ganglia in the cervical region,
- eleven or twelve ganglia in the thoracic region,
- four ganglia in the lumbar region,
- four or five ganglia in the sacral region, and
- the ganglion impar anterior to the coccyx

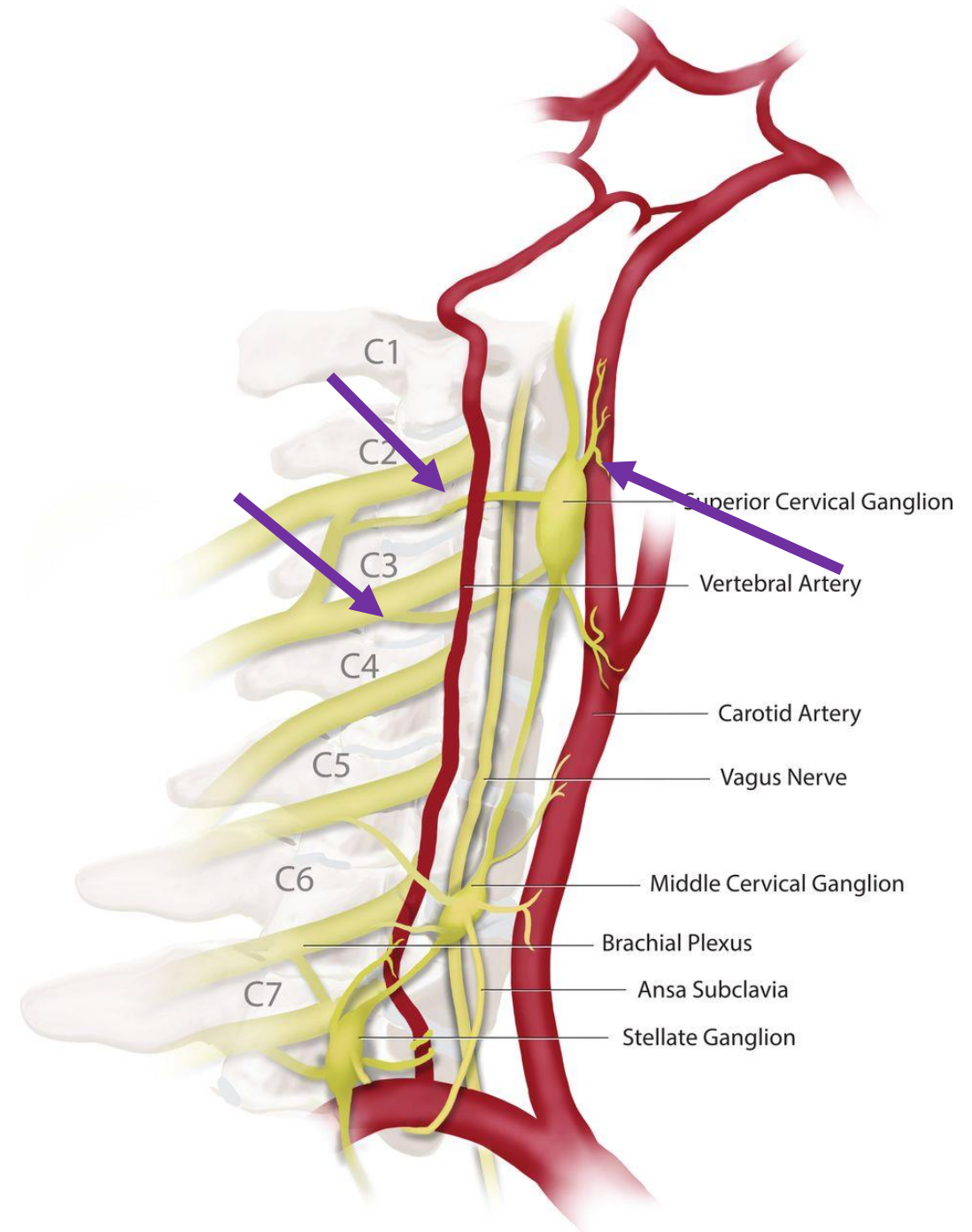


- **Superior cervical sympathetic ganglion**

- **Lies opposite C2&C3 cervical vertebrae**

- **Branches:**

1. **Internal carotid nerve**
2. **External carotid nerve**
3. **Grey rami communicants with upper 4 cervical nerves**
4. **Cranial nerve branches to 9th, 10th, & 12th.**
5. **Pharyngeal branches.**
6. **Superior cardiac branch**

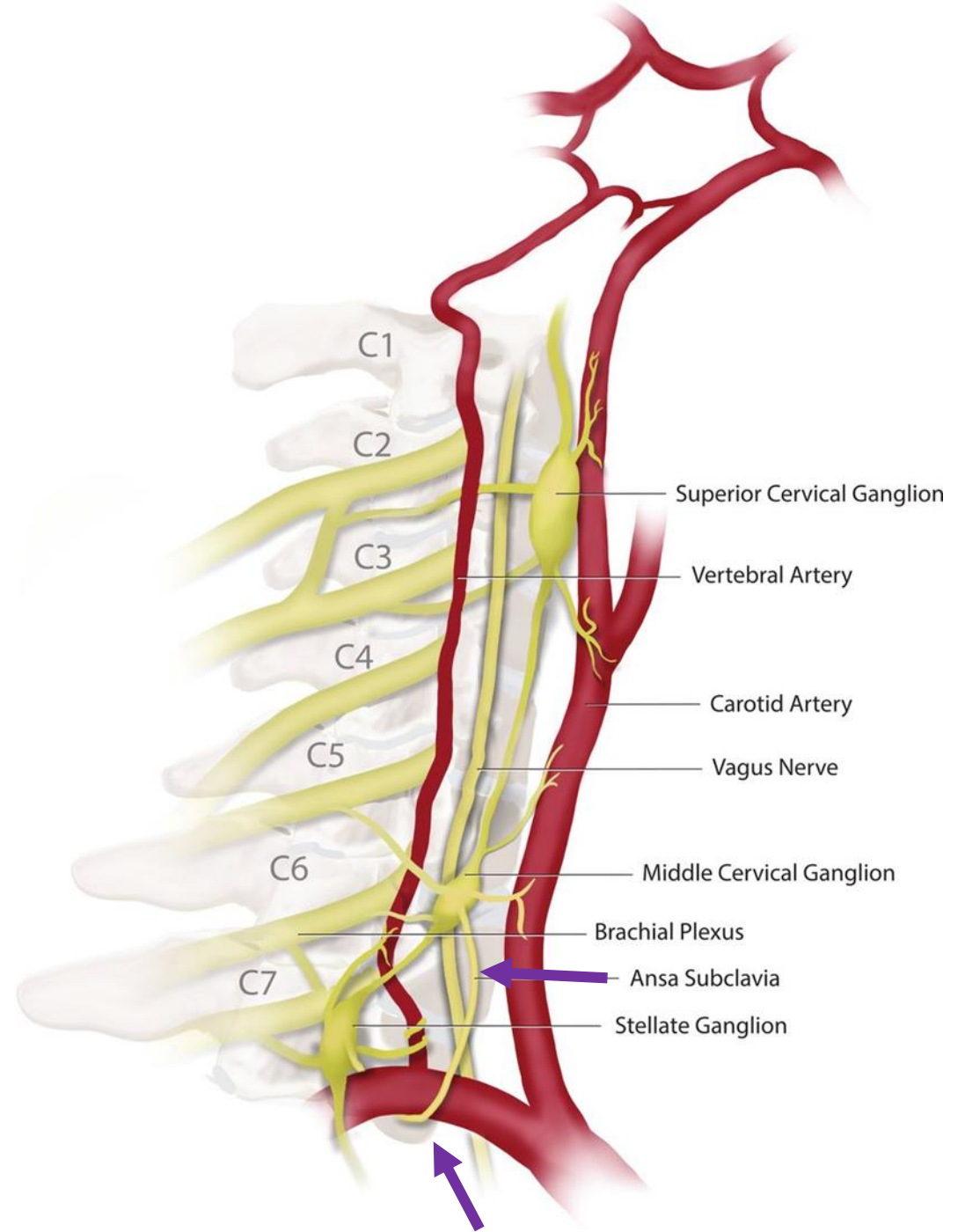


- **Middle cervical sympathetic Ganglion**

- Lies at level of C6 cervical vertebra (Cricoid cartilage)

- **Branches:**

1. Grey rami communicants with C5, C6 cervical nerves.
2. Thyroid branch
3. Middle cardiac branch
4. Ansa subclavia

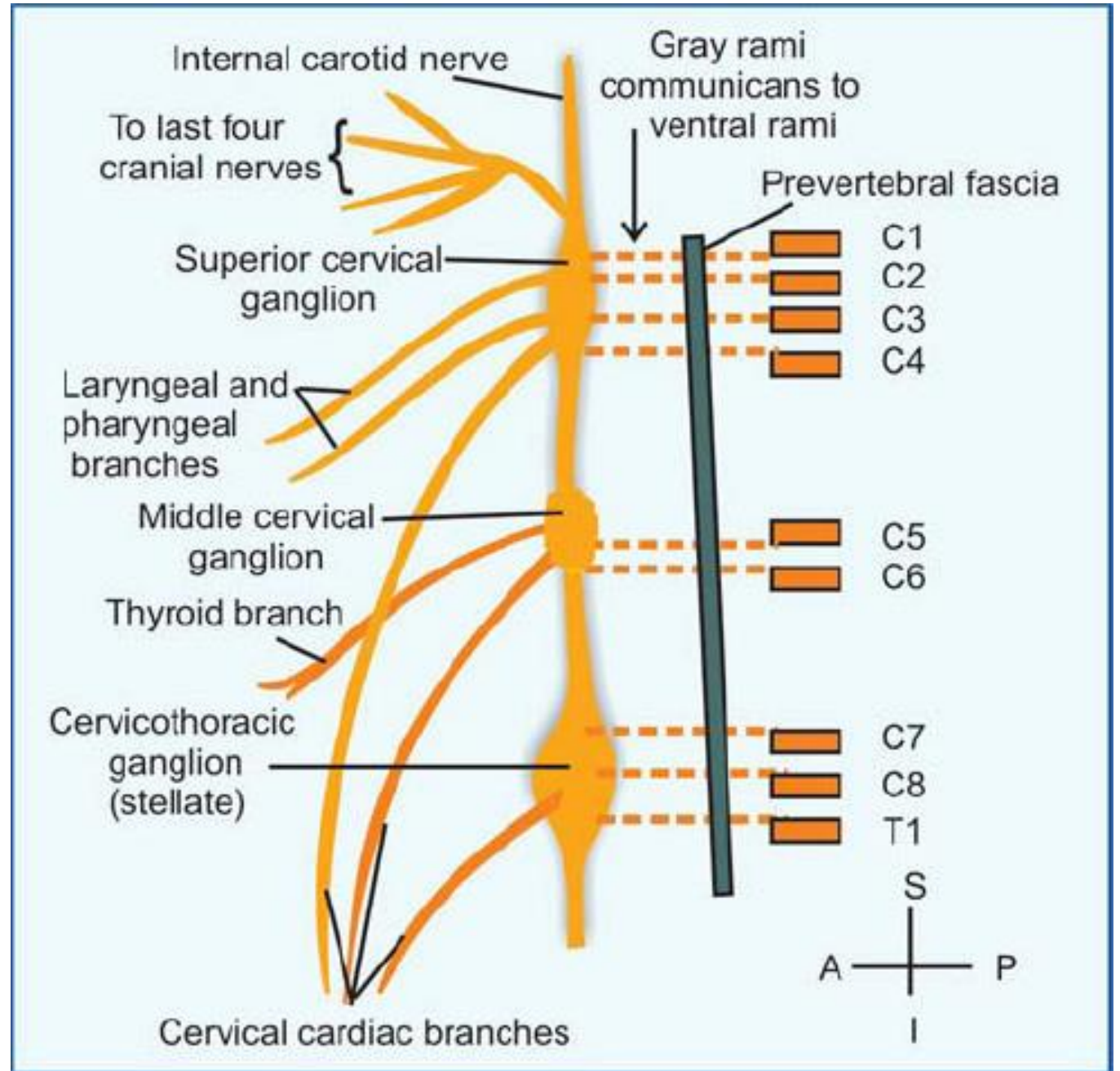


- **Inferior cervical sympathetic ganglion:**

- **Lies opposite neck of 1st rib.**

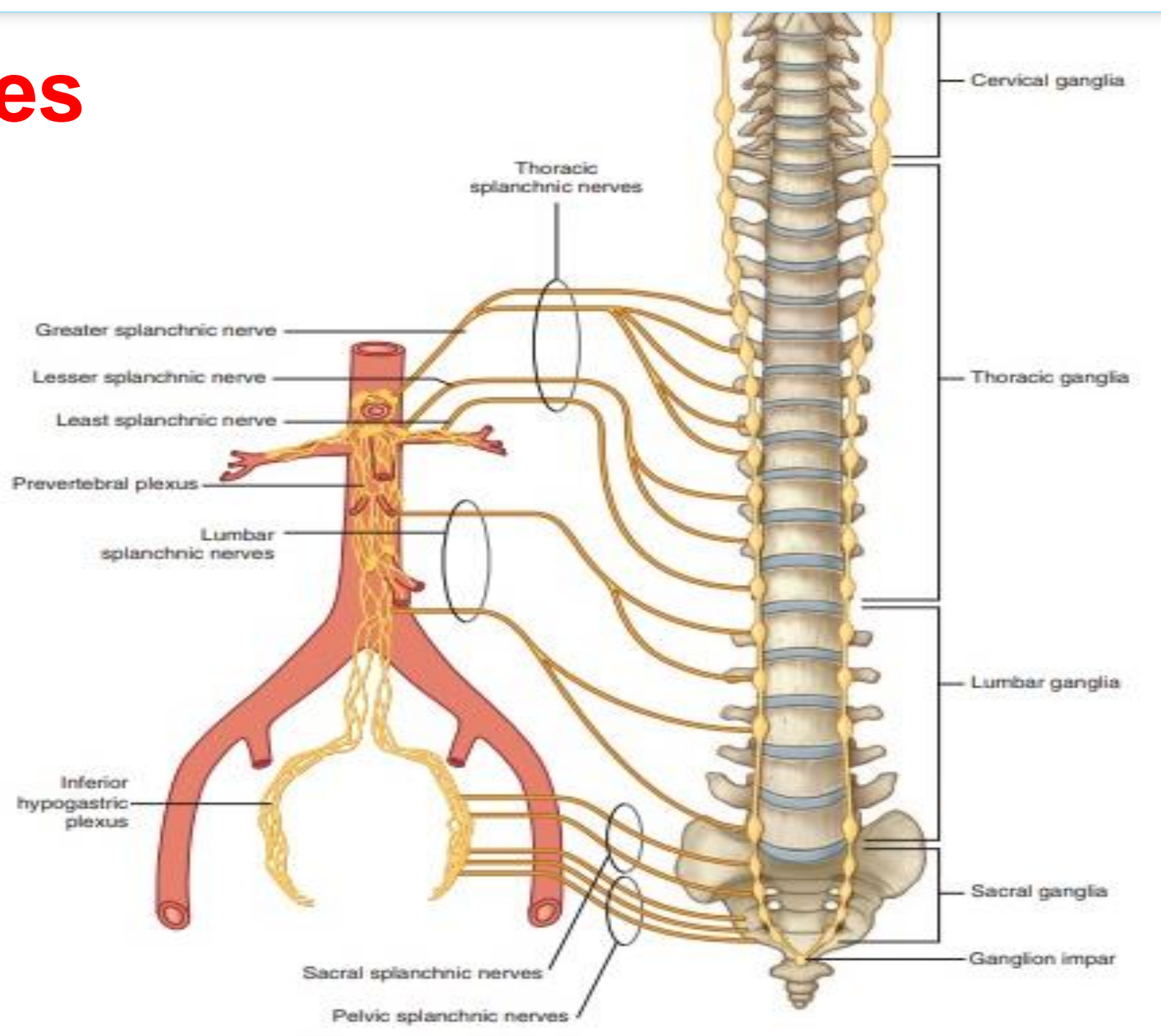
- **Branches:**

1. **Grey rami communicants with C7, C8 cervical nerves**
2. **Arterial to subclavian and vertebral arteries**
3. **Inferior cardiac branch**



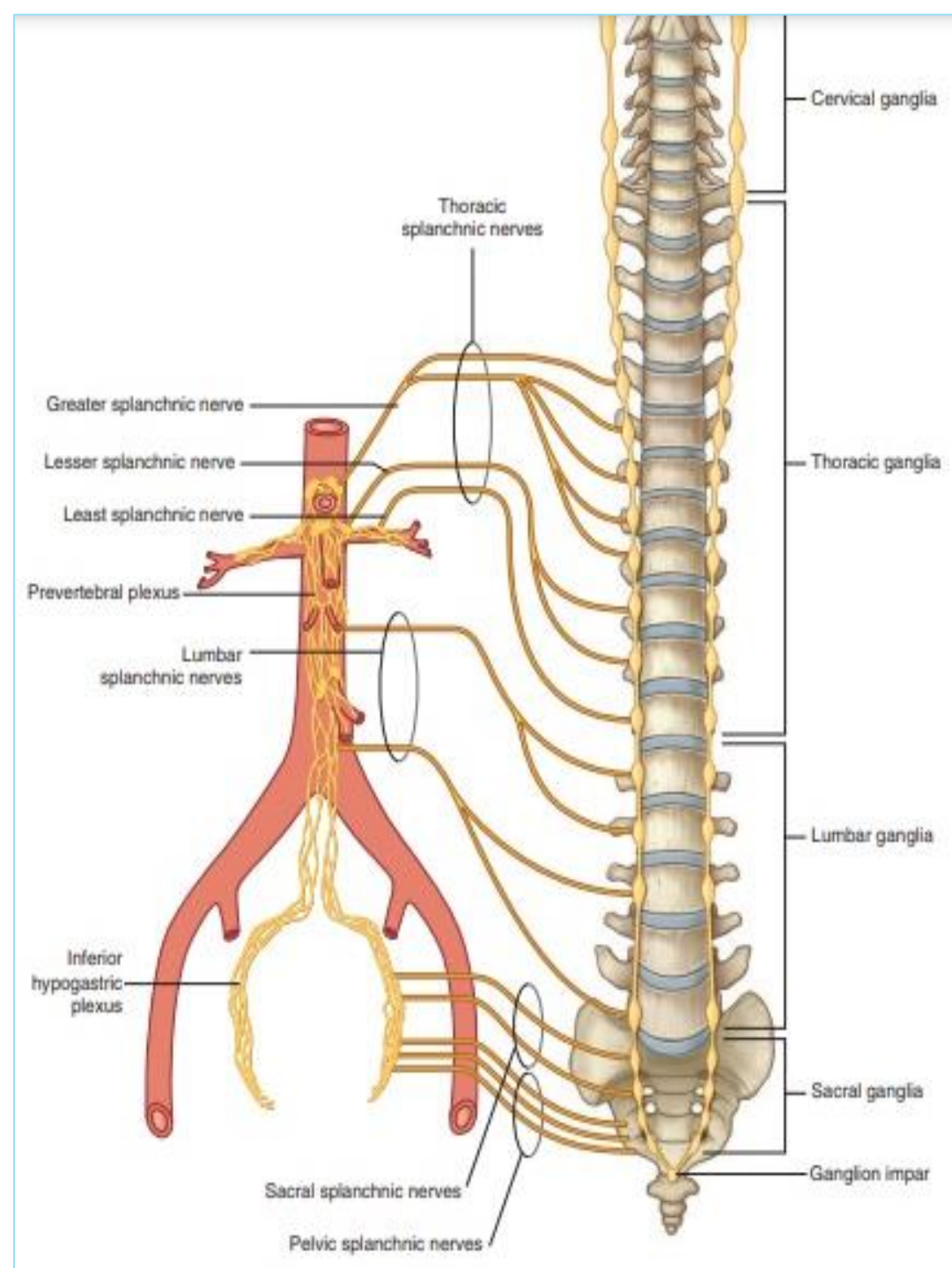
Splanchnic nerves

- The splanchnic nerves are important components in the innervation of the abdominal viscera.
- They pass from the sympathetic trunk or sympathetic ganglia associated with the trunk, to the prevertebral plexus and ganglia anterior to the abdominal aorta.



Splanchnic nerves

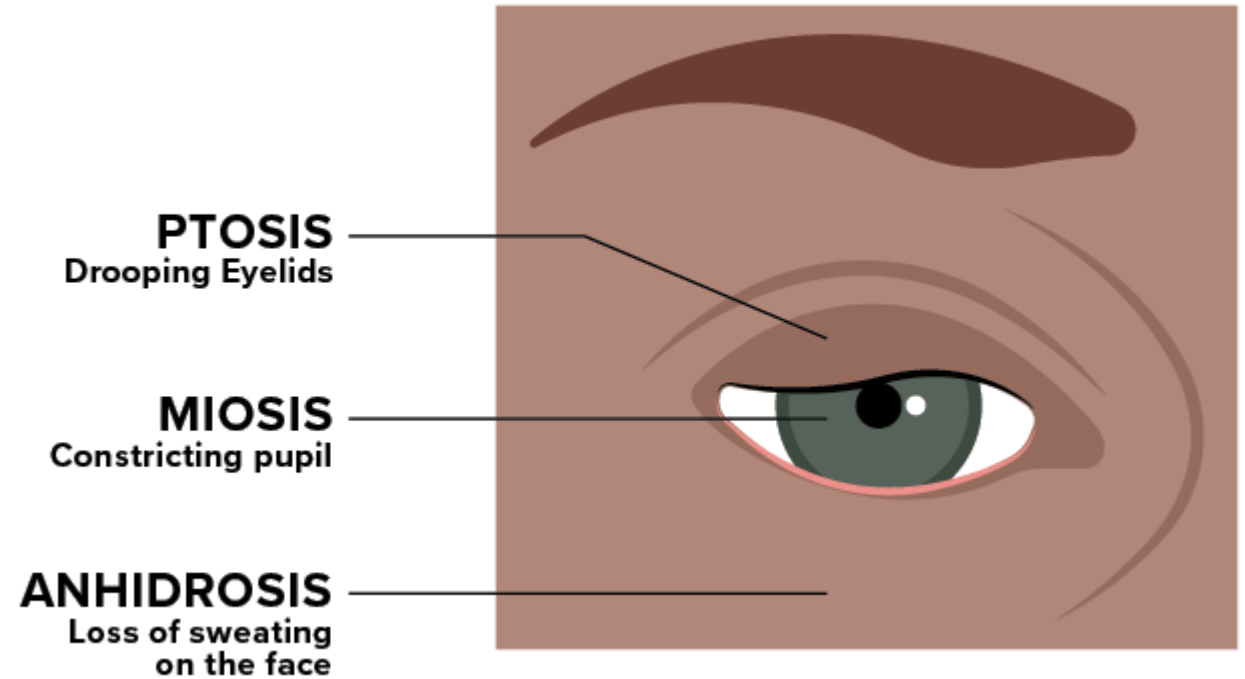
- Greater splanchnic nerve arises from thoracic sympathetic ganglia from 5-9
- Lesser splanchnic nerve arises from thoracic sympathetic ganglia 10-11
- Least splanchnic nerve arises from thoracic sympathetic ganglia 12
- Lumbar splanchnic nerve
- Sacral splanchnic nerve



Horner`s syndrome

A rare disorder caused by disrupted nerve pathways (sympathetic nervous system) from the brain to the eye and face.

- resulting in a classic triad of symptoms on one side of the face:
- a constricted pupil (**miosis**),
- drooping eyelid (**ptosis**)
- and decreased sweating (**anhidrosis**).



Thank
you

