The Cranial Nerves 11&12

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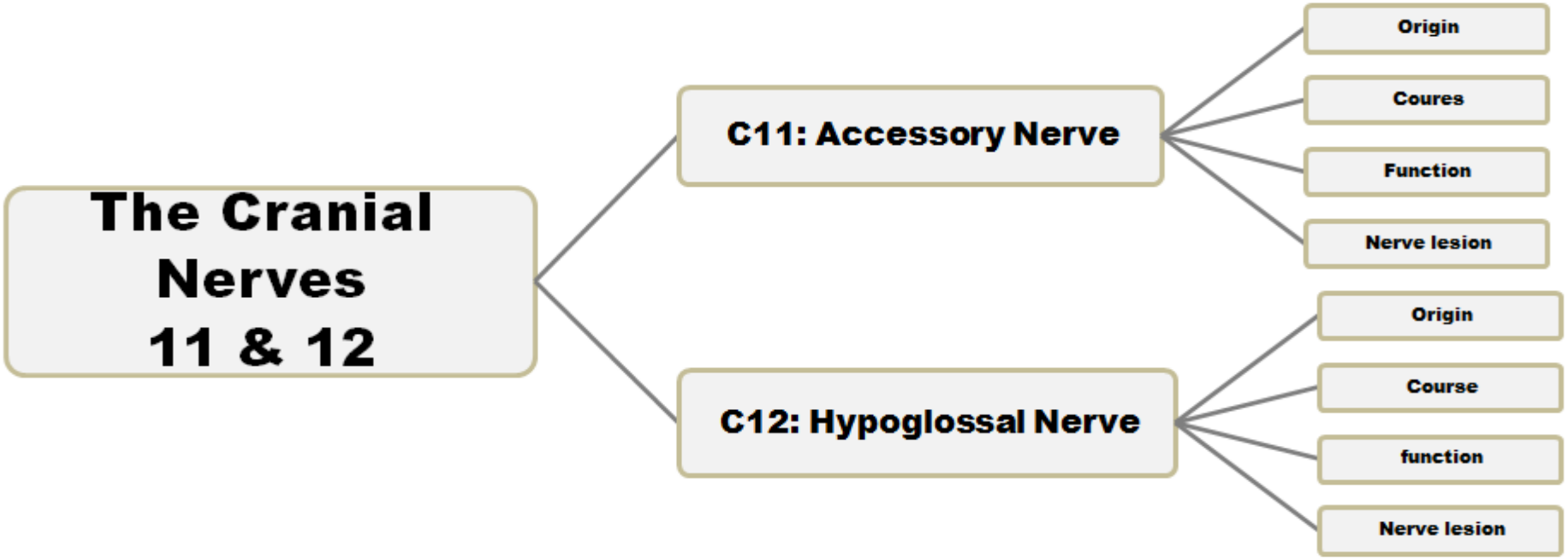
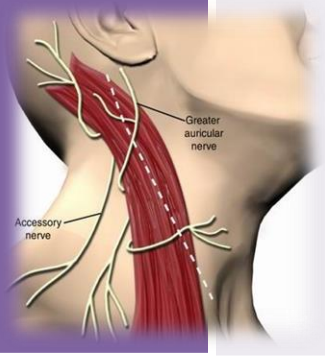
Objectives

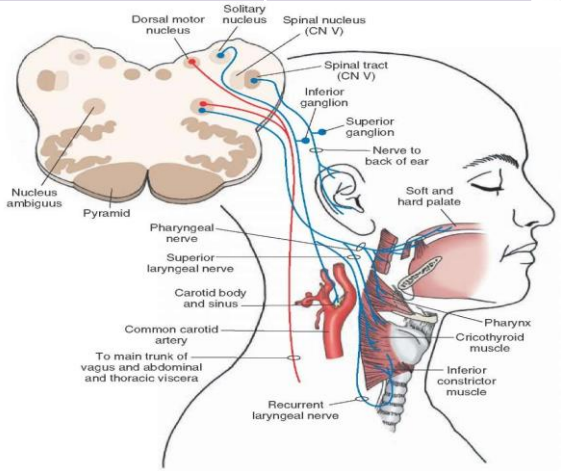
- List the nuclei related to accessory and hypoglossal nerves in the brain stem.
- Describe the type and site of each nucleus.
- Describe site of emergence and course of accessory and hypoglossal nerves.
- Describe important relations of accessory and hypoglossal nerves in the neck.
- List the branches of accessory and hypoglossal nerves.
- Describe the main motor effects in case of lesion of accessory and hypoglossal nerves.



C11 Accessory Nerve

C11 Accessory Nerve.		Origin	Course		Function
Type: MOTOR	1. Cranial Part:	Caudal part of nucleus ambiguous	*Emerges from lateral aspect of the medulla as a linear series of rootlets caudal to rootlets of the vagus nerve. * At the side of medulla it joins the spinal root briefly	They separate once again as the nerve leaves the cranial cavity through the **Jugular foramen.**	At the level of jugular foramen these fibres join the vagus nerve and distribute with it to muscles of the soft plate, esophagus, pharynx and larynx	1-Movement of the soft palate ,larynx ,pharynx 2-controls the movements of neck
It has 2 parts (roots):	2. Spinal Part:	Motor neurons in ventral horn of the spinal gray matter at levels c1-c5 (spinal nucleus)	The axons leave the cord via series of rootlets, emerge laterally midway between the dorsal and ventral roots of the spinal nerves. Courses rostrally and enter the cranial cavity through the <u>foramen magnum</u>, and joins the cranial root briefly		Supplies the sternomastoid and trapezius muscles	





Nerve lesion

Nerve lesion

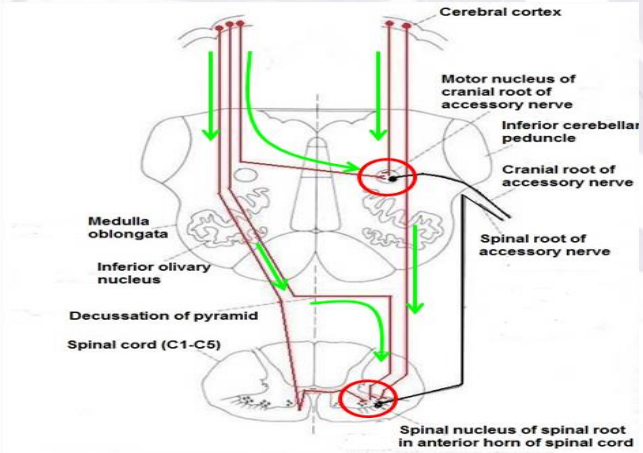
Injury of the Spinal Root:

Causes	Manifestation
It may be damaged by penetrating trauma as stab wounds because of the relatively superficial position in the posterior triangle. It is considered the most commonly iatrgenically injured nerve as during removal of malignant lymph nodes in the posterior triangle	▪ Atrophy and weakness of trapezius. ▪ Unilateral paralysis of trapezius is evident by inability to elevate &retract the shoulder, difficulty in elevating the arm &winging of scapula. ▪ Dropping of the shoulder. ▪ Difficulty in swallowing and speech. ▪ Inability to turn the head

winging of scapula

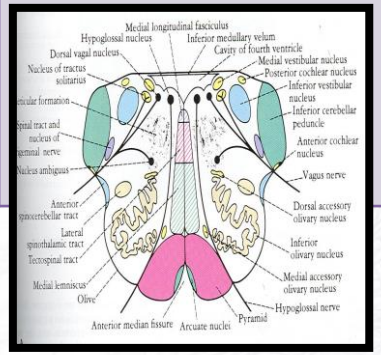
Note:

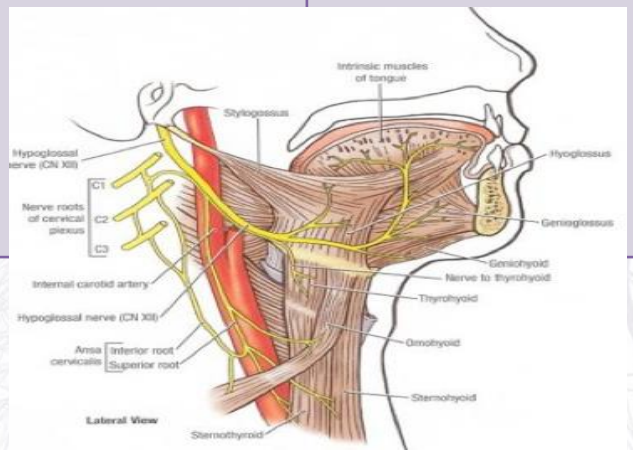
The nucleus ambiguus and the spinal nucleus receive bilateral **corticonuclear fibers** (from both cerebral hemispheres)→



C12 Hypoglossal Nerve

C12: Hypoglossal Nerve **Type: MOTOR**	**origin**	**Course**	**Function**
	Hypoglossal **nucleus of the medulla** (in the floor of 4th ventricle) The fibers emerge from the anterior surface of the medulla oblongata through **<u>the sulcus between the pyramid and the olive.</u>**	It exit the skull from Hypoglossal canal During its initial course, it carries **C1 fibers** which leave in a branch to take part in the formation of **ansa cervicalis** (a loop of nerves supplying neck muscles) The nerve courses downward with cervical neuro-vascular bundle (internal carotid artery, internal Jugular vein, vagus nerve) Then curves forward behind mandible to supply the tongue	1. Supplies motor innervation to all of the muscles of the tongue **Except** the **<u>palatoglossus</u>** (which is supplied by the **<u>vagus nerve</u>**). So, it Controls **the movements and shape of the tongue during speech and swallowing** 2. Carries proprioceptive afferents from the tongue muscles.

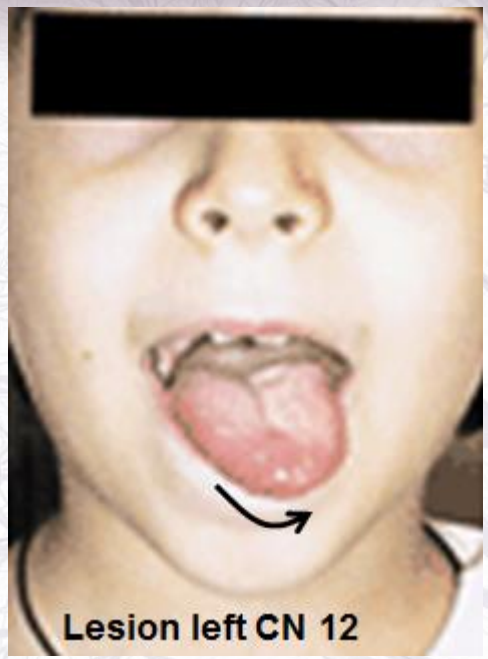




Nerve lesion

Nerve lesion

- Loss of tongue movements
- Difficulty in chewing and speech
- The tongue paralyses, atrophies, becomes shrunken and furrowed on the affected side (LMN paralysis)
- On protrusion, tongue **deviates to the affected side**
- If both nerves are damaged, person can't protrude tongue

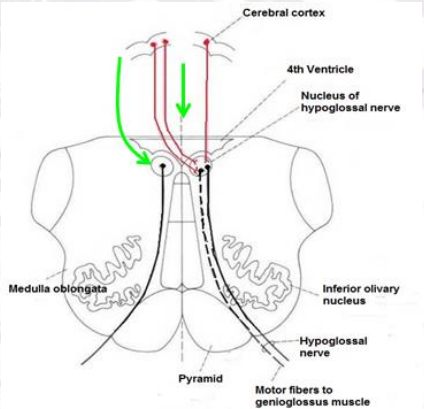


Note:

The hypoglossal nucleus receives corticonuclear fibers from both cerebral hemispheres **EXCEPT**

the region that supplies **genioglossus** muscle (receives contralateral supply only

Also receives afferent fibers from nucleus solitarius and trigeminal sensory nucleus. →



Questions

Q1-Where does the cranial part of the accessory nerve originate from:

A-Solitary nucleus
B-Nucleus ambiguous
C-Spinal nucleus

Q2-Hypoglossal nerve supplies:

a-The intrinsic muscles of tongue
b-The palatoglossus
C-All muscles of tongue except palatoglossus

Q3- The palatoglossus muscles supplied by:

a- Vagus nerve
b- Hypoglossal nerve
C- Accessory Nerve

Q4- the sternomastoid and trapezius muscles supplied by:

a-Cranial part of accessory Nerve

b-Spinal part of accessory Nerve

c-Hypoglossal Nerve

Answers:

1-B	2-C
3-A	4-B