

CN11-12 Disorders

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Damage Site	CN 11, 12 Findings	Other Findings
Supranuclear CEREBRAL HEMISPHERE	Neck weakness, tongue deviation; head deviates away from hemiparesis ("toward lesion")	Contralateral hemiparesis, pseudobulbar palsy, personality changes, etc
Supranuclear PONTINE*	Dissociated weakness (contralateral sternocleidomastoid and ipsilateral trapezius); deviation of head & eyes toward hemiparesis ("away from lesion")	Contralateral hemiparesis. *before 2 nd decussation of fibers for sternocleidomastoideus
Nuclear CN11	Bilateral lesions may result in diminished ability to rotate neck, inability to protrude tongue, slurred and indistinct speech, impaired swallowing, and possibly some respiratory difficulty.	
Nuclear CN12	Medial medullary syndrome - ipsilateral tongue weakness, contralateral hemiparesis & contralateral tactile and proprioceptive loss (medial lemniscus)	With vascular lesion (anterior spinal artery syndrome of medulla) signs are bilateral
Intracranial	Neck and tongue weakness	CN 9, 10 may be involved
Jugular foramen	VERNET syndrome (ipsilateral lesion of CN 9-11)	
Extracranial	COLLET-SICARD syndrome (Vernet syndrome + ipsilateral lesion of CN12)	

CN11 lesions

Paralysis of **STERNOCLEIDOMASTOID muscle**:

- UNILATERAL - no change in head position while in resting state.
- BILATERAL - diminished ability to rotate neck, neck falls **backward**. H: cervical orthotic device.
N.B. **intact other cervical muscles** (scaleni, splenii) prevent complete paralysis of neck even with bilateral CN11 lesions!

Paralysis of **upper TRAPEZIUS muscle**:

- altered scapula position – **winged scapula** (upper scapula part falls laterally away from shoulder and vertebral column, and interior part is drawn inward).

Scapular winging	m. trapezius	m. serratus anterior
degree	milder	more severe
at rest	present	negligible
becomes worse on	shoulder abduction	shoulder flexion

- BILATERAL - neck falls **forward**.

CN12 lesions

UNILATERAL lesion:

- 1) protruding tongue deviates toward lesion side (unopposed normal *genioglossus muscle*).
- 2) when tongue lies on mouth floor, it deviates slightly toward healthy side (unopposed normal *styloglossus muscle*).
- 3) ipsilateral tongue side atrophic and fasciculates (peripheral lesion)

Left CN12 lesion:



BILATERAL lesions

- 1) unable to protrude tongue at all
 - 2) lingual dysarthria (cannot pronounce "Yellow Lorry")
 - 3) swallowing and respiration may be impaired as tongue falls back into pharynx.
H: swallowing therapy (oral exercises, methods of postural facilitation).
- moderate tongue weakness may accompany **pseudobulbar palsy**, but is never as severe as weakness with destruction of both nuclei.
 - TONGUE APRAXIA may accompany **motor aphasia** (e.g. inability to protrude tongue on command, but presentation of associated movements in eating or licking lips).

Bibliography for ch. "Cranial Neuropathies" → follow this [LINK >>](#)

Viktor's NotesSM for the Neurosurgery Resident
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