CN11-12 Disorders

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| **Damage Site** | **CN 11, 12 Findings** | **Other Findings** |
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| **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 2nd 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).

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| **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 >>](http://www.neurosurgeryresident.net/CN.%20Cranial%20Neuropathies\CN.%20Bibliography.pdf)

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