What are Cranial Nerve Pathways?

Worksheet

Cranial nerves are 12 pairs (CN I-XII) that originate from the brainstem. They carry sensory (afferent) and motor (efferent) fibres to and from the head, neck, thorax and abdomen, bypassing the spinal cord.

Questions

1. Which cranial nerves control eye movements?

A) CN V, VII, and VIII
B) CN III, IV, and VI
C) CN II, III, and IV
D) CN I, II, and III

2. A patient has lost sensation to the right side of the face. Which cranial nerve is involved?

A) CN V (Trigeminal)
B) CN VII (Facial)
C) CN VIII (Vestibulocochlear)
D) CN IX (Glossopharyngeal)

3. The vagus nerve (CN X) is named for a Latin word meaning 'wandering'. Why?

A) It has the longest peripheral pathway
B) It innervates multiple unrelated structures (brainstem to abdomen)
C) It is the most variable nerve
D) It can change its pathway in different people

4. Which cranial nerve provides motor innervation to the tongue?

A) CN VII (Facial)
B) CN IX (Glossopharyngeal)
C) CN X (Vagus)
D) CN XII (Hypoglossal)

5. A patient cannot close their right eye or smile on the right side. Which cranial nerve is damaged?

6. A patient has loss of smell and taste. Which nerves are involved?

7. How would you test CN XII (Hypoglossal) function clinically?

8. Define: How many cranial nerves are there and what do they originate from?

9. Define: Which cranial nerve carries taste from the anterior 2/3 of the tongue?

10. Define: What are the three divisions of CN V (Trigeminal)?

Answer Key

1. B) CN III, IV, and VI - CN III (Oculomotor), CN IV (Trochlear), and CN VI (Abducens) control all voluntary eye movements.

2. A) CN V (Trigeminal) - CN V is the sensory nerve of the face via its three divisions (ophthalmic, maxillary, mandibular).

3. B) It innervates multiple unrelated structures (brainstem to abdomen) - CN X extends from the brainstem to thoracic and abdominal organs, innervating a vast array of structures - hence 'wandering'.

4. D) CN XII (Hypoglossal) - CN XII (Hypoglossal) provides motor innervation to the extrinsic and intrinsic muscles of the tongue.

5. Facial weakness on one side CN VII (Facial nerve) Ability to close the eye = orbicularis oculi muscle Ability to smile = zygomaticus major/minor muscles Both innervated by CN VII Bell's palsy or CN VII lesion

6. Smell CN I (Olfactory nerve) Taste anterior 2/3 tongue CN VII (Facial) Taste posterior 1/3 tongue CN IX (Glossopharyngeal) Combined loss suggests brainstem or multiple cranial nerve involvement

7. Ask patient to stick out their tongue Deviation toward weak side = lesion on that side (LMN) Deviation away from weak side = central lesion (UMN) Check for fasciculations and atrophy indicating denervation

8. 12 pairs (CN I-XII) emerging directly from the brainstem, not via the spinal cord.

9. CN VII (Facial nerve). The posterior 1/3 is supplied by CN IX (Glossopharyngeal).

10. Ophthalmic (V1), maxillary (V2), and mandibular (V3). Provide sensation to the face and motor innervation to muscles of mastication.