Lecture #02 Nerves and Spinal Cord

Question 1: A knife wound to the back has caused the loss of sensation in the right leg. Where did the knife most likely enter?

a) Into a ventral root

b) The left cervical spine

c) The left lumbar spine

d) The right cervical spine

e) The right lumbar spine

Lecture #02 Nerves and Spinal Cord

Question 2: The A beta axons carry which signals?

a) Sharp, pricking painful sensations

b) Proprioception

c) Distressing painful sensations

d) Temperature

e) Touch, pressure, vibration

Lecture #02 Nerves and Spinal Cord

Question 3: Which is a characteristic of sensory axons of the dorsal column system?

a) They are divided into lateral (propriospinal) axons that represent the ipsilateral lower limb and medial (gelatinosa) axons that represent the contralateral upper limb

b) They are divided into medial (gracile) axons that represent the ipsilateral lower limb and lateral (cuneate) axons that represent the ipsilateral upper limb

c) They enter the cord relatively dorsolaterally and cross to the contralateral side

d) They are among the smallest axons of the spinal cord

e) They enter the cord ventrally and cross to the contralateral side

Lecture #02 Nerves and Spinal Cord

Question 4: How does spinal segment T5 compare to segment L5?

a) L5 is near the rostral junction with the medulla, T5 is near the caudal extreme of the spinal cord

b) T5 innervates the leg, L5 the arm

c) L5 lies below the cauda equina, T5 does not

d) L5 has Clarke's Nucleus (Nucleus Dorsalis), T5 has an enlarged substantia gelatinosa

e) L5 has large ventral horns, T5 has small ventral horns

Lecture #02 Nerves and Spinal Cord

Question 5: Which capacity is most intact in the Brown-Sequard (or cord hemi section) syndrome?

a) Ipsilateral mechanoreception and proprioception

b) Ipsilateral motor function below the segment of the lesion

c) Ipsilateral motor function at the segment of the lesion

d) Ipsilateral pain and temperature sense

e) Contralateral pain and temperature sense

Lecture #02 Nerves and Spinal Cord

Question 6: Which is a characteristic of the entry of large sensory axons into the spinal cord?

a) They enter the cord ventrally and cross to the contralateral side

b) They enter the cord relatively dorsomedially and remain on the ipsilateral side

c) They enter the cord relatively dorsolaterally and remain on the ipsilateral side

d) They enter the cord relatively dorsomedially and cross to the contralateral side

e) They enter the cord relatively dorsolaterally and cross to the contralateral side

Lecture #02 Nerves and Spinal Cord

Question 7: What explains the cauda equina?

a) Sparse innervation of the lower body

b) Length of the spine compared to the spinal cord

c) Trauma that affects the central spinal cord

d) Unilateral spinal cord trauma

e) Dorsal location of large sensory afferents vs ventral location of small afferents

Lecture #02 Nerves and Spinal Cord

Question 8: Which results from damage to the spinal cord ventral (anterior) commissure at lamina X?

a) Bilateral loss of pain and temperature sense

b) Contralateral loss of pain and temperature sense

c) Contralateral loss of touch, pressure, vibration, and proprioception

d) Ipsilateral loss of pain and temperature sense

e) Ipsilateral loss of touch, pressure, vibration, and proprioception

Lecture #02 Nerves and Spinal Cord

Question 9: How do the smallest spinal axons differ from large ones?

a) They are unmyelinated

b) They enter the spinal cord more medially than large axons

c) They leave the spinal cord via the ventral roots

d) They conduct more rapidly

e) They carry transient signals rather than tonic ones

Lecture #02 Nerves and Spinal Cord

Question 10: What is (are) the most notable exception(s) to the overall laterality of the spinal cord?

a) Dorsal spinocerebellar tract

b) Anterolateral system

c) Alpha motor neurons

d) Lateral corticospinal tract

e) Dorsal columns

Lecture #02 Nerves and Spinal Cord

Question 11: A syringomyelia, or central cord syndrome, presents which clinical picture?

a) Ipsilateral loss of proprioception and mechanoreception on the body corresponding to and below the segment of the lesion and less extensive contralateral loss of pain and temperature sense below the lesion

b) Contralateral flaccid paralysis at and below the segment of the lesion

c) Obstruction of CSF flow within the lateral ventricles

d) Bilateral loss of pain and temperature sense in a patch corresponding to the segments of the lesion

e) Unilateral, ipsilateral loss of proprioception, mechanoreception, and pain and temperature sense on the body corresponding to and below the segment of the lesion; flaccid paralysis over approximately the same extent

Lecture #02 Nerves and Spinal Cord

Question 12: Small afferent fibers enter the cord most ----- near the -----?

a) Contralaterally, Rexed lamina IX

b) Medially, Rexed lamina X

c) Laterally, alpha motor neurons innervating the trunk

d) Medially, spinocerebellar tracts

e) Laterally, substantia gelatinosa

Lecture #02 Nerves and Spinal Cord

Question 13: Where is the propriospinal tract?

a) in the spinal cord next to the gray matter

b) in the cerebellum

c) in a muscle nerve or mixed peripheral nerve

d) in the telencephalon beneath the cortex

e) in the spinal white matter running from the spinal cord to the cerebellum

Lecture #02 Nerves and Spinal Cord

Question 14: How does a spinal segment C7 compare to segment T5?

a) C7 lies in the cauda equina, T5 does not

b) C7 is nearer the caudal extreme of the spinal cord, T5 near the rostral junction with the medulla

c) C7 has large ventral horns, T5 has small ventral horns

d) C7 has Clarke's Nucleus (Nucleus Dorsalis), T5 has an enlarged substantia gelatinosa

e) C7 innervates the leg, T5 the arm

Lecture #02 Nerves and Spinal Cord

Question 15: What is the role of the propriospinal tract?

a) synapses within the dorsal root ganglia

b) the monosynaptic reflex (myotatic or deep tendon reflex)

c) complex reflexes

d) cerebellar efferent copy signals

e) cerebellar afferent signals

Lecture #02 Nerves and Spinal Cord

Question 16: When a syringomyelia, or central cord syndrome lesion, expands beyond the ventral commissure, which function is generally lost first?

a) Unilateral, ipsilateral motor function at and below the segment of the lesion

b) Bilateral proprioception and mechanoreception corresponding to and below the segment of the lesion

c) Unilateral, contralateral motor function at and below the segment of the lesion

d) Unilateral, ipsilateral proprioception and mechanoreception corresponding to and below the segment of the lesion

e) Bilateral motor function at and below the segment of the lesion

Lecture #02 Nerves and Spinal Cord

Question 17: The smallest diameter axons carry which signals?

a) Intrafusal fiber contraction to desensitize spindles

b) Fast motor unit contraction

c) Proprioception

d) Length of muscle spindles

e) Distressing painful sensations

Lecture #02 Nerves and Spinal Cord

Question 18: How do the functions or content of the spinal cord anterior commissure and spinal cord ventral commissure differ?

a) The anterior commissure contains proprioceptive and touch fibers; the ventral commissure contains pain and temperature fibers

b) The anterior commissure contains proprioceptive and touch fibers; the ventral commissure contains motor fibers

c) The anterior commissure contains sensory fibers; the ventral commissure contains motor fibers

d) They are the same commissure, which carries pain and temperature information

e) The anterior commissure contains motor fibers; the ventral commissure contains sensory fibers

Lecture #02 Nerves and Spinal Cord

Question 19: Which are C fibers?

a) Myelinated pain and temperature afferents

b) Tendon organ afferents

c) Autonomic nervous system preganglionic fibers

d) Unmyelinated pain and temperature afferents

e) Autonomic nervous system preganglionic fibers

Lecture #02 Nerves and Spinal Cord

Question 20: What is a spinal segment?

a) A part of the spinal cord associated with a sensory and motor pair of nerves and related to a dermatome and myotome

b) A length of a dorsal root

c) A length of a ventral root

d) The rostro caudal extension of gray matter tracts from coccygeal through cervical levels

e) The nerve fiber link between the primary sensory or motor neuron in the ventral or dorsal horn and the secondary neuron of the same pathway

Lecture #02 Nerves and Spinal Cord

Question 21: What levels of the spinal cord contain the most spinal nerve segments?

a) Sacral

b) Coccygeal

c) Thoracic

d) Cervical

e) Lumbar