

What are Spinal Nerve Plexuses?

Worksheet

Spinal nerve plexuses are tangles of nerve fibres from adjacent spinal nerves that unite and rearrange to form peripheral nerves. This allows fibres from multiple spinal segments to supply a single limb region.

Questions

1. The phrenic nerve, which innervates the diaphragm, arises from which plexus?
 - A) Brachial plexus
 - B) Cervical plexus
 - C) Lumbar plexus
 - D) Sacral plexus
2. A patient has weakness in knee flexion after a sciatic nerve injury. Which muscle is paralysed?
 - A) Rectus femoris
 - B) Vastus medialis
 - C) Biceps femoris
 - D) Quadriceps
3. Which spinal levels contribute to the lumbar plexus?
 - A) L1-L4
 - B) L2-L5
 - C) L1-L5
 - D) L4-S1
4. A patient has weakness in ankle plantarflexion. Which nerve is affected?
 - A) Common peroneal nerve
 - B) Tibial nerve
 - C) Femoral nerve
 - D) Obturator nerve
5. A patient with a Erb's palsy (brachial plexus birth injury) cannot abduct the shoulder. Which nerve root is affected?
6. A patient presents with foot drop and loss of ankle dorsiflexion. Which nerve is damaged?
7. A patient cannot straighten the leg at the knee after a femoral nerve injury. Why?
8. Define: What do spinal nerve plexuses do?
9. Define: Name the four spinal nerve plexuses and the spinal levels they involve.
10. Define: What is the largest peripheral nerve in the body?

Answer Key

1. B) Cervical plexus - The phrenic nerve arises from the cervical plexus (C3-C5), making phrenic nerve injury a serious concern in neck trauma.
2. C) Biceps femoris - Knee flexion is performed by the hamstrings (biceps femoris, semitendinosus, semimembranosus), which are innervated by the sciatic nerve.
3. A) L1-L4 - The lumbar plexus forms from spinal nerve roots L1 through L4. L5 contributes to the sacral plexus.
4. B) Tibial nerve - Plantarflexion is performed by the soleus and gastrocnemius muscles, innervated by the tibial nerve (sacral plexus, L5-S2).
5. Erb's palsy = injury to C5-C6 nerve roots (upper trunk of brachial plexus) Abduction of shoulder = supraspinatus and deltoid muscles Deltoid innervated by axillary nerve (from posterior cord, derived from C5-C6) C5-C6 lesion produces Erb's palsy with arm adduction and internal rotation
6. Foot drop and inability to dorsiflex = common peroneal nerve (branch of sciatic) Common peroneal = L4-S2 nerve roots via sacral plexus Common cause: compression at fibular neck (trauma, prolonged crossing of legs) Result: foot hangs in plantarflexion (foot drop)
7. Knee extension = quadriceps muscle Quadriceps innervated by femoral nerve (L2-L4) Femoral nerve from lumbar plexus (L1-L4) Femoral nerve injury quadriceps paralysis inability to extend knee
8. They are networks where adjacent spinal nerves mix and reorganise, allowing fibres from multiple spinal segments to supply a single peripheral nerve and body region.
9. Cervical (C1-C4), Brachial (C5-T1), Lumbar (L1-L4), Sacral (L5-S4), and Coccygeal (S4-Co1).
10. The sciatic nerve, which arises from the sacral plexus (L5-S3). It is the thickest and longest peripheral nerve.

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