SPINAL NERVES

I. Spinal Nerves: part of the PNS, 31 pairs, all mixed (contain both sensory and motor neurons)

A. Structure

1. Dorsal (posterior) root (sensory neurons)

2. Ventral root (motor neurons; both voluntary and involuntary) - when these two

come together = Spinal Nerve (about 1" long)

3. Dorsal root ganglion – contains cell bodies of sensory neurons

4. Spinal nerve - divides into Dorsal (posterior) Ramus (short; goes posteriorly)

& Ventral (anterior) Ramus (long; goes laterally, anteriorly & extends out into extremities)

B. Nerve plexuses – networks formed by ventral rami ONLY.

1. Cervical plexus: anterior (ventral) rami of C1-C4

a. Phrenic n.- to diaphragm. If damaged, person can't breathe.

2. Brachial plexus: Anterior (ventral) rami of C5-T1; Primarily innervates upper extremity

a. Axillary n. – controls movement of shoulder muscles – deltoid and teres minor

b. Radial n. – controls muscles on posterior upper extremity: Primarily extensors of elbow, wrist & digits.

c. Musculocutaneous – controls muscles of arm. Primarily flexors of elbow.

d. Ulnar n. - Controls muscles on the anterior forearm & medial hand (4^{th} & 5^{th} finger) "Funny bone"

e. Median n. - Controls muscles on the lateral aspect of anterior forearm and lateral hand (1^{st}, 2^{nd}, and 3^{rd} fingers). Primarily flexors of wrist and 1^{st} 3 digits. "Grasping nerve"

3. Lumbar plexus: Anterior (ventral) rami of L1-L4

a. Femoral n. – controls muscles of anterior thigh quadriceps; for leg extension

b. Obturator n. – Controls muscles of medial thigh. Primarily adductors.

4. Sacral plexus: Composed of the ventral rami from L4-S4.

a. Many small nerves to lower back, posterior pelvis (gluteals) & perineum

b. Sciatic n. - Controls muscles of Posterior Thigh (Hamstrings; leg flexion and hip extension).

Largest nerve in body

Just above the knee the Sciatic N. divides into the;

i. Tibial Nerve – controls muscles on the posterior leg (primarily plantar flexors) and sole.

ii. Common Fibular Nerve – controls muscles on the anterior and lateral leg (primarily dorsiflexors) and foot.

Which of the following would be damaged if you were unable to extend your leg?

a. Sciatic
b. Femoral
c. Obturator
d. Tibial
e. Common fibular