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Posterior Triangle of the Neck

Wednesday, February 13, 2008

1:00 PM

Osteology:

Foramen magnum (N 8) - opening in base of skull for spinal cord, two vertebral aa., two spinal accessory nerves

Occipital condyles (N 8) - projections around foramen magnum

Jugular foramen (N 6,8) - two openings for jugular vein, anterior to hypoglossal canal

Hypoglossal canal (N 6,8) - directly lateral to condyle, transmits hypoglossal nerve

Carotid canal (external opening) (N 8) - opening for internal carotid aa and plexus of nerves; anterior to jugular foramen

Styloid process (N 4,8) - needle like projection from skull, posterior to mandible, anterior to mastoid process

First rib

Grooves for subclavian a. & v. (N 186)

Transverse foramina of cervical vertebrae (N 18)

Muscles:

Anterior, middle, posterior scalene mm. (N 28,30,32) - elevate ribs and flex and laterally bend neck

Anterior - from ant tubercles of C3-C6 to scalene tubercle of first rib; C5-C7

Middle - from post tubercles of C2-C7 to upper surface of first rib behind subclavian artery; C3-C8

Posterior - from post tubercles of C5-C7 to lateral surface of second rib; C7-C8

Prevertebral & scalene fascia (N 35)

Interscalene triangle (N 30) - btwn anterior and middle scalene muscles; trunks of brachial plexus

Carotid sheath (review):

Common carotid artery

Carotid bifurcation (N 69,136)

External carotid artery (N 69,136) - supplies upper neck, face and scalp

Ascending pharyngeal a. (N 69,136) - supplies pharynx, arises close to bifurcation

Internal carotid artery (N 69,136) - brain, eye, forehead; primary blood supply to brain; anastomoses w/ vertebral aa.

Carotid sinus (N 130,136) - dilation near bifurcation; contains baroreceptors; site of plaques

Carotid body (N 130,136) - cluster of chemoreceptors near bifurcation

Internal jugular vein (N 74) - drains into brachiocephalic; brain, skull, viscera of neck

Pharyngeal plexus of veins (N 73) - drains pharynx

Vagus n. (X): (N 126) - refer to anterior triangle lab

Superior laryngeal n. (internal and external branches) (N 74,76)

Cardiac brs. (seen previously) (N 124)

Nerves:

Recurrent laryngeal n. (right & left) (N 75,232) - refer to anterior triangle lab

Accessory n. (XI) (N 71,127) - cranial and spinal roots; proprioceptive SCM and trapezius; CN XI; passes through jugular foramen; motor only

Phrenic n. (N 30,193) - VPR C3-C5; innervates diaphragm, pericardium, pleura; crosses anterior to anterior scalene

Cervical plexus (N 71,128) - see anterior triangle lab

Roots (C1-4) (N 71,128) -

Cervical sympathetic trunk - same as every other sympathetic trunk, runs along scalene muscles post to int carotid/common carotid

Superior cervical ganglion (N 129,130) - thickened part of sympathetic trunk near C1

Middle cervical ganglion (N 129) - near C5/C6 trunks

Carotid nn. (internal & external, plexus) (N 130) - from superior cervical ganglion; distribute along carotid artery branches to VSM, arrector pili muscles, sweat glands, dilator pupillae (internal)

Brachial plexus (N 30,430)

Roots (C5-T1)

Trunks: C5+C6 = superior; C7 = middle; C8+T1 = inferior

Suprascapular n. (N 424,430,477): comes off superior trunk; supplies supra/infraspinatus

Dorsal scapular n. (N 430,477): comes off superior trunk (C5 fibers only); supplies rhomboids and levator scapulae; passes through middle scalene mm.

Long thoracic n. (N 185 ,430): C5+C6+C7; supplies serratus anterior; prevents winging

Arteries:

Subclavian a. (N 33,136) - from brachiocephalic on right, aortic arch on left; posterior to ant. scalene, divides it into three parts

Vertebral a. (N 33,136) - from 1st part of subclavian; supplies deep neck, cervical spinal cord, hindbrain; anastomoses w/ int carotid in cerebral arterial circle through transverse foramina of C1-C6

Internal thoracic a. (N 33,136) - from 1st part of subclavian; supplies anterior chest wall, intercostal spaces

Thyrocervical trunk (N 33,136) - 1st part of subclavian; short thick trunk

Inferior thyroid a. (N 33,136) - supplies thyroid, lower larynx, upper trachea, esophagus and neck muscles

Transverse cervical a. (N 33,184) - supplies trapezius and surrounding tissues; may give off dorsal scapular a.

Suprascapular a. (N 33,427) - supra/infraspinatus, shoulder joint; anastomoses w/ circumflex scapular, dorsal scapular and deep br of transverse cervical.

Costocervical trunk (N 33,130) - 2nd part of subclavian; supplies muscles of neck posteriorly; located in interscalene triangle

Dorsal scapular a. (N 33,410)- end of 3rd part; supplies levator scapulae, rhomboids

Veins:

Brachiocephalic v. (N 70,74) - union of subclavian and int jugular, vertebral, thymic, inf thyroid, int thoracic, 1st post intercostal, left sup intercostal; drains into SVC; drains head, neck, upper limb, ant chest wall; at origin, left brachiocephalic receives thoracic duct; right receives right lymphatic duct

Subclavian v. (N 70,75): follows subclavian a.

Lymphatics:

Deep cervical lymph nodes (superior & inferior groups) (N 72)

Thoracic duct (N 238,239,264)

Clinical Terms:

Subclavian "stick"/central venous line catheterization: rt subclavian pt of entry to venous system for central line; nutrition and CVP; insert needle along inf surface of middle part of clavicle and moves medially toward jugular notch; may tear vein and parietal pleura; too far posteriorly may enter artery

Thoracic outlet syndrome - compromise of blood vessels or nerve fibers between the armpit (axilla) and base of the neck

Cervical rib - a rib which arises from the seventh cervical vertebrae (above the normal first rib). Occurs in only about 0.5% of people. May cause nerve and artery problems

Scalenus anticus syndrome - a syndrome in which the nerves and vessels (lower brachial plexus and subclavian artery) passing between the anterior scalene muscle and a cervical rib are compressed causing pain over the shoulder and radiating down the arm or over the back of the neck.

Subclavian steal syndrome - aortic arch syndrome, also referred to by many as vertebral-basilar artery disease, carotid artery occlusive syndrome; characterized by signs and symptoms secondary to abnormalities in the major arteries which extend off of the aortic arch; most often secondary to the effects of atherosclerosis, blood clots, trauma or a congenital abnormality.

Symptoms of this condition include various neurologic symptoms, reduction in pulse and changes in blood pressure.

Virchow's node - also called a signal node. An enlarged supraclavicular lymph node, usually on the left side, which is often the first sign of an abdominal tumor (such as stomach cancer).

Radical neck dissection - the most commonly performed major operation for head and neck malignancies, most of which are squamous cell carcinomas. The neck is opened laterally, the majority of the sternocleidomastoid muscle is removed, as are the regional cervical lymph nodes, the jugular vein, the spinal accessory nerve, the submaxillary gland and most of the parotid gland. There are several modifications.

Carotid stenosis & endarterectomy - carotid stenosis is a result of atherosclerotic thickening of the intima of the carotid artery. Partial occlusion of this artery may cause transient ischemic attack - a sudden focal loss of neurological function (e.g., dizziness and disorientation) that disappears within 24 hours. Arterial occlusion can also lead to a minor stroke - loss of neurological function such as weakness or sensory loss on one side of the body that exceeds 24 hours but disappears within 3 weeks. The symptoms resulting from carotid stenosis depend on the degree of bloodflow obstruction. To help the situation endarterectomies are performed in which part of the atherosclerotic plaque on the intima is stripped off. The common site for this procedure is the internal carotid artery just superior to its origin. Drugs are administered after the procedure to inhibit clot formation. Cranial nerve injury can occur during this procedure to the following nerves: glossopharyngeal, vagus, accessory, hypoglossal, and superior laryngeal nerves.

Horner's syndrome - nerve condition which involves a drooping eyelid (ptosis), constricted pupil (miosis), enophthalmos and lack of sweating on one side of the face. Often seen in association with injury (for example neck fracture, penetrating injury) to the cervical sympathetic nerve trunk in the neck or a Pancoast tumor (tumor of the cupula region) involving both the upper and lower brachial plexus.