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Medical Committee
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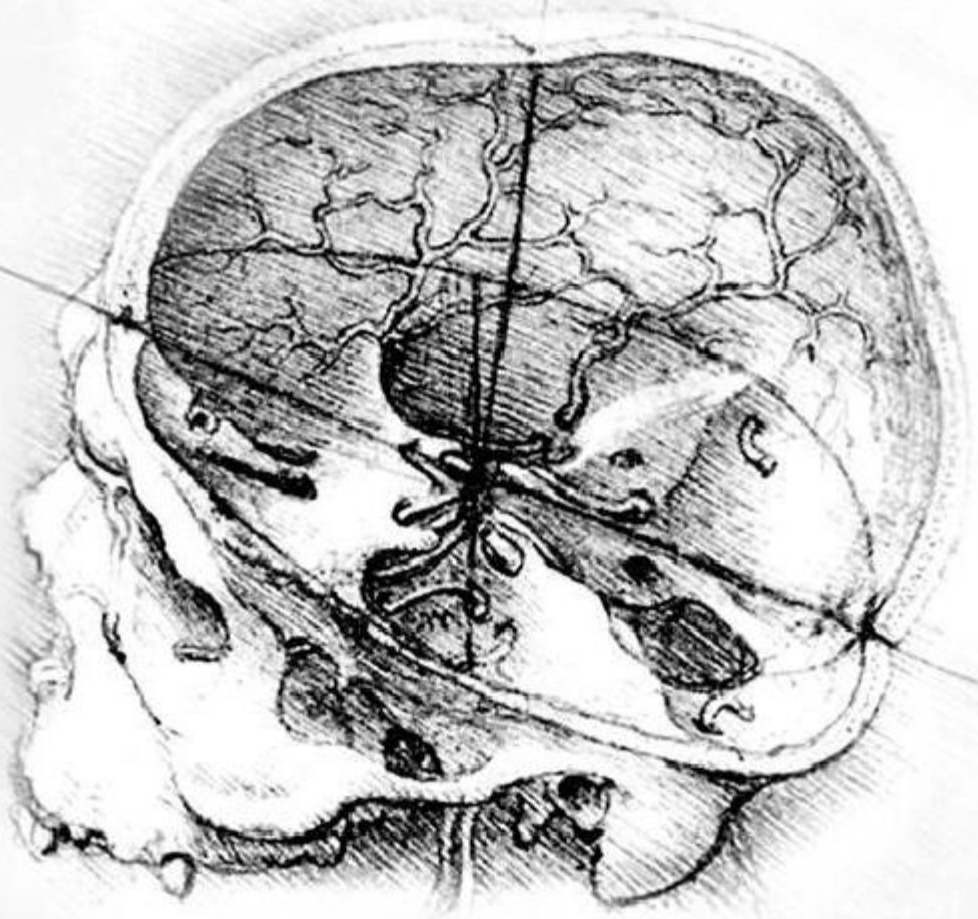
Anatomy & Embryology



LECTURE #: 3 DOCTOR: Mohammad Al-Mohtasib SHEET ■

DONE BY Areej Mosleh SLIDES □

<<Muscles>>

***Muscles Connecting the Upper Limb to the Vertebral Column

1.Trapezius Muscle

***The first muscle on the back is trapezius muscle, it's called so according to the shape on the muscle fibers(Triangular Shape)

**origin : from 5 points

1. the back on the skull (external occipital protuberunce)
2. superior nuchal line
3. the spine of seventh cervical vertebrae
4. all thoracic spine "dorsal spine"
5. supraspinous ligament.

** insertion: lateral third of the clavicle , acromial process of the scapula and dorsal spine of scapula

NOTE : the insertion of trapezius is opposite to the origin of deltoid.

Nerve supply : spinal accessory nerve.
the accessory nerve is 2 parts:

1. Cranial
2. Spinal: gives motor nerve to trapezius
   spinal nerves of c3 "cervical 3 " and c4 :sensory is +proprioceptive for temperature and touch.

***Action of trapezius:

1. **Elevation of scapula: by the upper fibers**
2. **Retraction: the middle fibers pull the scapula medially towards the ribs and that's called retraction of scapula.**
3. **Rotation of scapula (after 90 degrees) when putting our hand on the head (by lower fibers) . This movement is done in association with serratus anterior muscle.**

2.latissimu dorsi (climbing muscle)

****origin:**

1. **Iliac crest.**
2. **Lumber fascia**
3. **Dorsal spine**
4. **Lower ribs**
5. **Inferior angle of scapula**

****Insertion: Conversion of fibers to the bicipital groove of the humerus.**

****Nerve supply : thoracodrosal nerve whose origin is C6,7,8.**

**** Action: extension of the upper limb, adduction and medial rotation (climbing, it's also responsible for raising the trunk above the arm).**

3.Levator scapula

****action: elevation of the scapula –according to the name.**

****Origin: transverse process of cervical vertebrae especially the upper (1^{st} -4^{th}) .**

****Insertion: medial border of scapula (from superior angle to the root of the dorsal spine)**

**nerve supply: dorsal scapular nerve (c3,c4,c5 and also one of the cervical spinal nerves)

NOTE : cervical spinal nerves are 8.

4.Rhomboid muscles (minor and major)

***Their fibers are rhomboid that's why they are called so.

**Origin: Minor : Ligamentum nuchae, Spines of seventh Cervical and first Thoracic vertebrae. Major: Spines of second to fifth Thoracic vertebrae.

**Insertion : outer surface of medial border of the scapula

**Action: raises the medial border of scapula upwards and medially

**Nerve supply : dorsal scapular nerve C4,5.

Muscles connect scapula to the humerus

1. **Deltoid**

**origin: lateral third of the clavicle , acromial process of the scapula and dorsal spine of scapula.

**Insertion: deltoid tuberosity of humerus .

**nerve supply: axillary nerve(c5,6)

**Action: deltoid has 3 fibers:

1. Anterior fibers: it flexes and medial rotation the arm.
2. Middle fibers: abducts the arm from 18-90 degree. (remember: supraspinatus muscle initially abducts the arm "0-18 degree")
3. Posterior fibers: extension and lateral rotation of the arm.

2. **Supraspinatus**

**origin: supraspinous fossa

**insertion: greater tubercle of humerus and the capsule of the shoulder joint

**nerve supply: suprascabular nerve (c4,5,6)

**action: abducts the arm and stabilizes the shoulder joint. Muscle of initiation of abduction 0-18 degrees.

NOTE: injury of suprascabular nerve, can't do initiation of the abduction (the patient can't raise his hand to 18 degrees) but he could abduct it from 18 to 90 degrees after raising it to 18 with the help of the other hand.

3. **Infraspinatus**

**origin: infraspinous fossa of the scapula

**insertion: greater tuberosity and the capsule of the shoulder joint.

**nerve supply: suprascabular nerve (c4, 5, 6)

**action: lateral rotation of the arm, abduction and stabilization of the shoulder joint.

4. **Teres major**

**origin: lower third of lateral border of scapula.

****insertion: bicipital groove of the humerus. “medial lip”**

****nerve supply: lower subscapular nerve (c6 and c7)**

****action: medially rotation and adduction as well as stabilization of the shoulder joint.**

5. Teres minor

****origin: upper two third of lateral border of scapula**

****insertion: greater tuberosity of the humerus**

****nerve supply: axillary nerve (c4,5,6)**

****action: lateral rotation and stabilization of the shoulder joint.**

6. Subscapularis

****origin: subscapular fossa**

****insertion: lesser tubercle “anteriorly”**

****nerve supply: upper and lower subscapular nerves (c5,6,7)**

****action: medially rotation of the arm and stabilizing shoulder joint**

NOTE:

******Muscle fibers and their relation with the shoulder joint**

<>if the muscle is posterior , it laterally rotates the arm and abducts it.

<>if it’s anterior, it medially rotates and adducts.

<>if it’s above, it abducts.

**Muscle that surround the shoulder joints are called rotator cuff muscles which are :

1. **Supraspinatus.**
2. **Subcapularis.**
3. **Teres minor.**
4. **Infraspinatus**

Quadrangular space

there're structures that pass there:

1. **Posterior circumflex humeral artery and vein.**
2. **Axillary nerve.**

<>Boundaries

****Above: teres minor (viewed posteriorly), Subscapularis and capsule of shoulder joint (viewed anteriorly)**

****below: teres major.**

****lateral: surgical neck of humerus**

****medial: long head of triceps.**

Triangular space

***Circumflex scapular artery and vein pass there.

Posteriorly, when viewed from the posterior scapular region, the triangular space is formed by:

- **the medial margin of the long head of triceps brachii;**
- **the superior margin of teres major;**
- **the inferior margin of teres minor.**

Triangular Interval: very closed to the shaft of humerous.

** Laterally: the shaft of humerous

** Medially: The long head of Triceps brachii

** Above: Teres Major

 The Radial Nerve and Profunda brachii artery pass through it

Axillary nerve

- Passes through quadrangular space.
- From c5 and c6 and posterior cord of the brachial plexus .
- Supplies teres minor, deltoid and the skin over the lower half of deltoid, Shoulder Joint.

NOTE: if the axillary nerve is injured around the surgical neck of the humerus, atrophy will occur to the deltoid muscle. And loss of action, the patient can't abduct to 90 degrees. Loss of sensation will also occur because it also supplies the skin over the deltoid.

- Gives upper lateral cutaneous nerve of the arm that supplies the skin covering the lower half of Deltoid.

Supracapular nerve

- Passes through the suprascapular notch then through the greater scapular (spinoglenoid) notch.

note: In the suprascapular notch the nerve passes deep to ligament and the artery passes above the ligamnet to prevent cut of blood flow in the artery.

- Supplies supraspinatus and infraspinatus.

Axilla

- **The armpit.**
- **Pyramidal in shape**
- **Has 4walls , apex and base.**
- **Base: skin between the anterior and posterior wall.**
- **Apex: triangle with 3 boundries:**

anterior: middle third of clavicle.

posterior: superior scapular border.

medial: first costal cartilage.

****The apex importance**: passes structures from root of the neck to the upper limb e.g: cords of brachial plexus and axillary artery. And also passes structures from the upper limb to the root of the neck e.g: axillary vein and lymphatic vessels and nodes (going to thoracic duct that ends in the brachiocephalic vein).**

- **Contents:**

1.axillary artery and its branches.(which I a continuation of subclavian artery)

2.axillary vein and its tributaries.

3.tail of breast

4. six groups of lymph nodes and lymphatic vessels

- **Walls:**

^^Anterior: pectoralis major, pectoralis minor and subclavius .

^^posterior: latissimus dorsi, teres major and subscapularis

^^medial: upper 4 or 5 ribs and serratus anterior muscle (supplied by long thoracic nerve "c5,c6,c7)

^^lateral: surgical neck of humerus or bicipital groove where there're coracobrachialis muscle and biceps muscle.

- **Floor: deep fascia, clavipectoral fascia(between the subclavius and pectoralis minor) and skinbetween anterior and posterior wall**

NOTE: there's CLAVIPECTORAL FASCIA between subclavios muscle and pectoralis minor and it's part of the deep fascia. It's white in color . it's a continuation of prevertebral fascia which extends downwards forming axillary sheath.

- **Attachment of clavipectoral fascia**

it's bounded to the lower surface of clavicle surrounding the subclavius muscle then it descends downwards and splits to surround pectoralis minor. It ends in the floor of the axilla. So it's located above the pectoralis minor and below subclavius and laterally bounded to coracoid process and medially to the 1st and 2nd costal cartilage.

- **its function is to protect the contents of the axilla.**
- **There're 4 structures that pierces it which are:**
  1-cephalic vein.
  2-thoraco-acromial artery.
  3- lymphatic vessels.
  4-lateral pectoral nerve.

Axillary artery

- **It begins at the lateral border of the first rib as a continuation of the subclavian artery (the left subclavian is originated from the arch of the aorta and the right one is originated from the brachiocephalic artery which is originally from the arch of the aorta).**
- **It ends at the lower border of teres major as brachial artery.**
- **Pectoralis minor divides the axillary artery into 3 parts:**

**1st part is above the pectoralis minor, gives one branch which is the highest thoracic artery.

**2nd part is deep/behind to pectoralis minor, gives two branches: lateral thoracic artery to the breast and thoraco-acromial artery.

**3rd part is below pectoralis minor, gives 3 branches : subscabular artery medially and 2 arteries to the surgical neck (anterior Circumflex humeral artery and posterior Circumflex humeral artery) .

Relations to axillary artery:

1st part:

- Anterior: pectoralis major and skin
- Posterior: long thoracic nerve and serratus anterior.
- Lateral: 3 cords of brachial plexus
- Medially: axillary vein (The most medial structure in the axilla)

2nd part:

- Anterior: pectoralis major and minor and skin
- Posterior: posterior cord of brachial plexus and subscabularis muscle.
- Lateral: lateral cord of brachial plexus

- **Medial: medial cord of brachial plexus**

NOTE : cords in the 2nd part are named according to their arrangement.

3rd part:

- **anterior: pectoralis major and crossed by medial root of median nerve.**
- **Posterior: subscapularis and axillary and radial nerve which are branches from the posterior cord of brachial plexus**
- **Lateral: coracobrachialis and median nerve and musclocutaneous nerve**
- **Medial: ulnar nerve and axillary vein**

Axiallary vein

- **Medial to the axillary artery**
- **Begins at the lower border of teres major**
- **Formed from basilic and brachial vein**
- **It ends at the lower border of first rib as subclavian vein**
- **Its tributaries: cephalic vein**

Don't forget to see the pictures in the slides

Best of luck☺☺

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