INDE 420
MSK Notes Week 5: C-Spine and Shoulder

C-Spine Trauma:
If the patient is not conscious, you must ASSUME CERVICAL SPINE INJURY has occurred. this means:
1. NEVER move the patient's cervical spine or the relationship between the head to the neck until adequate imaging can be done. ("Splint where they lie") A cervical collar is applied or any make-shift device to stabilize the head to neck position should be applied.
2. An accurate neurological exam should be done and documented immediately. Then repeat the exam at regular intervals (every 15 to 30 minutes) and accurately documented each time so that a neurological injury "in evolution" will become apparent.

Cervical Disc Prolapse:
Unlike the lumbar spine where disc prolapse is often acute and results from extrusion of a fragment of soft disc material, Cervical spinal cord or nerve root compression is often a gradual process, including a frequent history of headaches or neck pain, pain with rotation of the neck, and aching referred pain down the arm.
Look for atrophy and weakness in the affected muscle groups., particularly the deltoid and supraspinatus/infraspinatus. This is best seen from behind.

The C1-2 stability issue:
The odontoid (or dens) of C2 lies inside the ring of C1, which does not have a body. The ligaments stabilizing the odontoid in position can become lax due to Rheumatoid arthritis or in Down's as noted in your notes. When this occurs, the odontoid can soft anteriorly and pinch the spinal cord causing potentially fatal cord compression.

Klippel Feil Syndrome:
Variable fusion of the cervical spine from one to several vertebrae. Patients are seen to have a short neck, high hairline, and limited cervical ROM, sometimes cervical scoliolsis or wry neck (torticollis). Often associated with Renal abnormalities such as single kidney, horseshoe kidney, double collecting system, etc. Also Cardiac abnormalities, most commonly septal defects.

Shoulder:

Remember that the large muscles of the shoulder gain their anchorage from the pelvis. When you observe the patient's back, you are looking at shoulder muscles beneath the skin, covering the spinal muscles.

Apley's scratch Test:
In 3 maneuvers you can quickly screen for the full range of functional motion:
1. Reach overhead to touch the opposite scapular angle (external rotation + forward flexion)
2. Next touch the opposite coracoid process (adduction)
3. Finally reach under and behind to touch the scapular angle (internal rotation + extension)

Impingement Syndrome vs. Adhesive Capsulitis ("Frozen Shoulder")
these entities can look very much alike but the key will be the ability to rotate the arm. The shoulder is a complex joint with motion coming from three sources:
Glenohumeral motion: account for only about 60% of total motion but the majority of rotational motion.
Scapulothoracic motion: this occurs as the scapula slides back and forth on the chest wall. However, remember that the scapula cannot tilt off the chest which is what would be needed to mimic G-H rotation.
Acromioclavicular joint: This also contributes about 10% of total motion, primarily in flexion ("forward flexion") and extension. Although not an important contributor to motion, arthritis in this joint often mimics impingement syndrome.

Impingement Tests:
1. Abduction Impingement Test: With the arm at about 45 degrees forward flexion and in 90 degrees of abduction, have the patient internally rotate the forearm and then lift the hand ("empty can test"). This will elicit pain in the anterior shoulder.
2. Adduction Impingement Test: Repeat the same test with the arm across the chest in Adduction ("Cross-Body Impingement Test"). this may reveal more posterior Rotator Cuff pathology.

Lift-Off Test:
With the patient's hand behind their back, have them try to lift the hand away from their body against mild resistance. This is a pure Subscapularis function.
Drop Arm Test:
First check passive ROM, Then, abduct the patient's arm to 90 degrees and ask the patient to hold the position while you let go. If the Rotator Cuff is torn, the patient will be unable to hold the position and the arm will drop.

Shoulder Instability and Dislocation:
Subtle instabilities allow the humeral head to slide anteriorly, catching or pinching the Supraspinatus between the humeral head and the anterior acromion. This is a common cause of dynamic impingement seen in the throwing athlete. As the overhead throw brings the arm forward, the

large muscles of the shoulder (Deltoid and Supscapularis) will decelerate the forward momentum of the arm, allowing the Supraspinatus to be caught between the bony structures. This mechanism is different than the typical Impingement syndrome. Decompression of the acromion actually worsens the problem because the anterior stabilizing mechanism is made looser by this procedure, leading to a failed outcome.
More severe instabilities lead to failure of the anterior inferior Labrum (Bankart Lesion which allows the humeral head to "escape" from the Glenoid antero-inferiorly and the "suction" mechanism is lost as the humeral head "falls out" of the shoulder as we discussed. You can test this with the Subluxation-Relocation test, also called the Jobe's Test or the "Apprehension Sign". As the shoulder approaches the point of instability or impending dislocation, the patient will become very apprehensive and will resist. Stabilizing the humerus posteriorly while repeating this test relieves the apprehension, confirming the results.

Scapular Winging:
This can be found by having the patient do a "Wall Pushup". Have the patient face the wall about 2-3 feet away, lean forward and push the body weight away from the wall. The affected side will show the scapular body swinging away from the midline as the Serratus Anterior muscle fails to stabilize the scapula on the chest wall. This is usually due to a paralysis of the Long Thoracic Nerve and frequently recovers with time

Sprengel's Deformity: The scapula is tethered higher than normal and sits asymmetrically cephalad on one side. this is often associated with asymmetry of the Trapezius muscle contours. In Klippel-Feil Syndrome, 20 to 30 % will have Sprengel's.

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