

THORACIC OUTLET SYNDROME



WHAT IS IT?

- Entrapment disorder of the nerves or the vascular that occurs inside the "thoracic outlet" → space between the collarbone and the first rib
- Three types: Neurogenic, vascular, nonspecific



SIGNS AND SYMPTOMS

- Shoulder pain: over the AC joint or biceps area→ could be a continuous burning, lame feeling in the shoulder and down the arm
- Tingling down the arm into the hand→ could lead to loss of control of the hand with the dropping objects
- Heaviness in the extremity
- Pain present at rest (when driving or watching tv)
- Pain radiating into neck, trapezius musculature, shoulder blade, jaw, head, and chest
- Traction downwards on the arm when carrying shopping bags
- Pain often present during activities such as swimming, throwing, overhead activities→ could cause a feeling of fatigue and burning and having to bring the arm down due to not being able to maintain that position



ANATOMY

- Many bones, muscles, nerves, and blood vessels that course through the thoracic outlet
- Structures most commonly affected include:
 - Clavicle
 - 1st rib
 - Scalene muscles (anterior and middle) → more neurological s/s
 - Pectoralis minor→ vascular s/s
 - Subclavian artery and vein
 - Upper and lower brachial plexus



SPECIAL TESTS

- The different tests are used to elicit symptoms of TOS with positions that would compress the nerves within the anterior scalene muscle
- Roos "Chicken Dance Test" (or commonly called Elevated Arm Stress Test or "EAST") → nonspecific; doesn't specify location
 - Positive test would result in usual TOS symptoms such as gradual increase in pain in the neck and shoulder, aching progressing down the arm, and paresthesias
 - Normally, a person can perform this test for 3 minutes with only minimal distress
- Adson's → test for the scalenes "Reverse Dab"
 - Positive test would result in peripheral radial pulse disappearing once the patient was put into the test position
- Allen's → to test arterial blood flow to the hand
 - Positive test would result in peripheral radial pulse disappearing once the patient was put into the test position
- Military Test → compression of costoclavicular space
- Hyperabduction Test or Wright's Test→ for pec minor
- It's recommended to use a combination of tests



DIFFERENTIAL DIAGNOSIS

- Disc herniation in the cervical spine
- Peripheral nerve entrapment
- CRPS
- Inflammatory condition



CAUSES

- Posture: forward head, tight pectoralis musculature, tight scalenes
- Repetitive overuse with poor posture
- Heavy backpacks
- Acute trauma
- Anatomic predispositions



TREATMENT EXAMPLES

- Therapeutic Exercise
 - Relaxing the shoulder girdle and upper trapezius musculature
 - Stretching the scalenes and pectoralis muscles
 - Strengthening the cervical extensors, scapular adductors, and shoulder retractors
- Manual Therapy
- Nerve Glides
- Posture Re-education (important to know for test! Best answer.)
- Ergonomic assessment
- NSAIDs
- Surgery (Rare)
- Modalities



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