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Occupational Therapy's Role in the Management of Neck Pain

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Objectives

• Review cervical region anatomy and common conditions involving the neck
• Determine how occupational performance can be affected due to cervical region dysfunction in patients with neck pain
• Identify screening tools and special tests appropriate for assessing neck pain and measuring outcomes
• List various intervention options for effective management of neck pain.
  • Basic ergonomic modifications, therapeutic exercise, soft tissue mobilization, manual techniques
ANATOMY and CONDITIONS

What is the neck?

• Termed the “craniocervical” region
• Three joint regions
  • Atlanto-occipital
  • Atlanto-axial
  • Apophyseal joints (facet joints of C2-C7)
• Total motion
  • Flexion: 45-50 degrees
  • Extension: 85 degrees
  • Rotation: 90 degrees
  • Lateral flexion: 40 degrees
Cervical spine

- Cervical vertebrae are the smallest in the body; most mobile
- Seven cervical vertebrae
  - Eight cervical nerve roots
- Atlas = C1
- Axis = C2
- Palpable landmark = C7

Cervical spine: Key landmarks

- Vertebral body
  - Bulk of the vertebrae
- Spinous process
  - Most palpable at C7; serves as attachment point for several muscles
- Transverse process
  - Lateral portions lead to anterior and posterior tubercles, also serving as attachment points for muscles and ligaments
- Vertebral canal
  - Opening that allows space for the spinal cord
Cervical spine: Key landmarks

- Transverse foramen
  - Located at the transverse process; allows for the vertebral artery to ascend towards the foramen magnum
- Articular processes (superior and inferior)
  - Contain articular facets which create apophyseal joints
  - The orientation of each facet guides motion within the C-spine
- Intervertebral disc
  - Helps absorb shock and buffer compression
    - Nucleus pulposus and annulus fibrosus
Musculature

Can be divided into anterior and posterior musculature

<table>
<thead>
<tr>
<th>ANTERIOR</th>
<th>POSTERIOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Sternocleidomastoid (SCM)</td>
<td>- Splenius cervicis</td>
</tr>
<tr>
<td>- Scalenes (anterior, middle, posterior)</td>
<td>- Splenius capitis</td>
</tr>
<tr>
<td>- Deep flexors (longus colli &amp; longus capitis)</td>
<td>- Suboccipital muscles</td>
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<tr>
<td></td>
<td>- Levator scapulæ*</td>
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</tbody>
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Anterior Musculature

- **Sternocleidomastoid**
  - Unilaterally: contralateral rotation; lateral flexion
  - Bilaterally: neck flexion

- **Scalenes**
  - Unilaterally: lateral flexion
  - Bilaterally: assist with flexion

- **Longus colli & capitis**
  - Assist with upper region flexion and lateral flexion
Posterior Musculature

- Splenius muscles
  - Bilaterally: main neck extensors
  - Unilateral: ipsilateral rotation; assist with lateral flexion
- Suboccipital muscles
  - Extension, lateral flexion, and rotation of the atlanto-occipital and atlanto-axial joints; small movements of the craniocervical region
- Levator scapulae*
  - Unilateral: ipsilateral rotation
  - Bilateral: assists with extension

Common Conditions

- Non-specific neck pain
- Cervical stenosis
  - Cervical radiculopathy
  - Cervical myelopathy
- Cervicogenic headaches
THE ROLE OF OCCUPATIONAL THERAPY

• Neck pain impacts the following:
  • Work performance
  • Driving
  • IADL performance
  • Leisure participation
  • Sleep quality
• Clinicians treating the upper quadrant should have an understanding of how to address neck pain
• Rule out the cervical spine in upper extremity pathologies
ASSESSMENT OF THE NECK

What to assess...

- Patient history/occupational profile
- Onset of symptoms
- Pain type
  - Localized or radiating*
  - Description of pain
  - Headaches
- Upper extremity function
- Activity limitations
- Posture
- Sleeping position
Types of pain

• Headaches
• Localized and/or radiating
  • Trigger points
• Tenderness
• Sharp, burning pain
• “Pins and needles” sensation
• Dizziness, syncope, blurred vision
  • May be indicative of vertebral artery insufficiency

UE function

• Look at scapular function
  • How is the scapula oriented?
• Perform the scapular retraction/depression test*
  • In prone
  • Place scapulae in retraction and depression against the chest wall
  • Have patient hold the position
  • Look for compensatory movements
Activity limitations

What daily activities/routines are impaired?
Consider the Neck Disability Index (NDI):
• Self-report measure
  • 10 items (ADLs, pain, process skills)
• Scored from 0 to 5
  • Reported as a percentage
  • Higher percentage = greater disability

Posture

• Assess standing and seated posture
• Forward head = shortened suboccipital muscles and weak deep neck flexors
• Rounded shoulders = pectoralis tightness; rhomboid, SA, and LT weakness
  • May also present with overuse of levator scapulae and upper trapezius
• Slouched sitting = flat lumbar spine and forward head
• Perform the craniocervical flexion test*
Sleep

• Sleeping surface
• Pillows
  • Goal is to keep spine in alignment
  • Avoid exaggerated lateral flexion from pillow use
  • Review types of pillows
• Side, back, or stomach sleeper
Cervical radiculopathy

• Associated with pain and paresthesias radiating into the arm (in dermatome distribution)
• May also result in motor dysfunction
• Clinical assessment of CR = The cervical test cluster
  • Upper limb tension test A
  • Cervical rotation (60 degrees)
  • Cervical distraction
  • Spurling A

ULTTA (six steps)
Cervical rotation

Cervical distraction
Spurling A

INTERVENTIONS
Craniocervical flexion

- Targets function of the deep neck flexors
- Position patient in supine
  - Practice craniocervical flexion (small nodding motion)
- Use pressure sensor to quantify desired movement
- Inflate pressure sensor to 22mmHg
- Have patient hold “nods” for 10 seconds, completing up to 10 repetitions
  - Progress to 24, 26, 28, and 30 mmHg as appropriate

Craniocervical flexion with pressure sensor
Scapular stabilization

- Neck pain has been linked with imbalance of the scapular stabilizing muscles
- Retrain scapular position
  - Scapular retraction/depression
- Other therapeutic exercises
  - Lower trapezius
  - Middle trapezius
  - Serratus anterior

Scapular retraction/depression
Postural education

- Workstation modifications
- Lumbar rolls
- Driving posture
- Sleeping posture
  - Pillow support
- Awareness of posture with mobile devices

Taping

- Example: Upper trapezius
- Patients may complain of pain at mid-point between C7 and acromion
- Patients may present with shoulder hiking movements
- Overactivity of the upper trap may be inhibited through taping
  - Taping may also be used to facilitate lower trapezius activation
Stretch— Levator scapula

- Can be incorporated into a patient’s home program
Stretch—Upper trapezius

Summary

• As clinicians treating the upper quadrant, we must consider the importance of the cervical region
• Implementing interventions for the neck is well within our scope of practice
  • OTPF terms: joint mobility/stability, muscle endurance, muscle power, control of voluntary movement, involuntary movement reactions
• Consult with other disciplines as necessary to develop the best client-centered approach for managing neck pain.
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References