CERVICAL DISC HERNIATION

Most frequent at C 5/6 level but also occur at C 6-7 & to a lesser extent at C4-5 & other levels
In relatively younger persons soft disk protrusion is more common than hard disk protrusion

Types of herniation:
1. Intraforaminal herniation:
   - most common type:
     - cause predominately sensory changes;

2. Posterolateral type:
   - occurs near entrance zone of foramen;
     - causes predominately motor changes;

3. Central type:
   - if disc herniation occurs more to the midline (ie posterior herniation), then
     it compresses spinal cord in addition to, or instead of the nerve root;
   - results in cervical myelopathy:

Symptoms

Age  40-60 years for radiculopathy
     >80 years for Myelopathy

Radiculopathy is common than myelopathy.

Neck pain  93% (Suprascapular pain in C5 or 6, Interscapular  C7 or 8)
Arm pain  93%
Finger paraesthesia  83%
Motor weakness  67%
Diminished reflexes  67%
Sensory disturbance  87%
Spurling test may be positive
Lhermitte sign is positive in cases of myelopathy
Localization of sensory deficit

Sensory numbness in the thumb  C6
Sensory numbness in the middle finger in  C7
Sensory numbness in the little finger  C8

Common: C5-6 and next common is C6-7

C3 and C4: Neck pain; Suboccipital head ache, No reflex or motor changes and is difficult to diagnosis

<table>
<thead>
<tr>
<th></th>
<th>C5</th>
<th>C6</th>
<th>C7</th>
<th>C8</th>
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</thead>
<tbody>
<tr>
<td>Neck</td>
<td>Suprascapular</td>
<td>Suprascapular</td>
<td>Scapular or Inter</td>
<td>Scapular or Inter</td>
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<tr>
<td>Arm</td>
<td>Upper lateral</td>
<td>Lateral arm</td>
<td>Posterior arm</td>
<td>Medial arm</td>
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<tr>
<td>Sensory</td>
<td>None</td>
<td>Thumb</td>
<td>Middle</td>
<td>Little</td>
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<tr>
<td>Motor</td>
<td>Deltoid SS and IS</td>
<td>Biceps; Wrist Extensor, supinator</td>
<td>Triceps, wrist flexor, Pronator</td>
<td>Finger flexor, Interossic</td>
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<tr>
<td>Reflex</td>
<td>Biceps</td>
<td>[Biceps] Brachioradialis</td>
<td>Triceps</td>
<td>-</td>
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Exam:
Look for cervical radiculopathy and myelopathy
Limitation of neck movements with paraspinal spasm
A downward head compression increases pt’s radicular pain and paresthesias, especially if neck is flexed to side of involvement

Shoulder abduction relief test:
Significant relief of arm pain with shoulder abduction in soft disc herniation, whereas, the test is likely to be negative with radiculopathy caused by spondylosis (osteophyte compression);
Spurling’s Sign:
Gentle neck hyperextension with the head tilted toward the affected side will narrow the size of the neuroforamen and may exacerbate the symptoms on downward head compression.

Neurology: lower motor neuron lesion (muscle weakness and hypotonia, reduction of deep tendon reflexes) at level of cord compression; and distal to the compression patient may exhibit upper motor neuron dysfunction (spasticity, clonus, increased deep tendon reflexes, Babinski’s sign).

Radiculopathy is: 50% by disc [between Posterior longitudinal ligament and Luska joint] and rest by osteophytosis [at Luska joint]

X ray

Sagittal diameter of the cervical canal

\[
\begin{align*}
\text{C3-7} & \quad 17 \text{ mm} \\
<13 \text{ mm} & \quad \text{stenosis}
\end{align*}
\]

Pavlov ratio or Torg ratio: Body AP/Canal AP

\[
\begin{align*}
\text{Normal} & \quad 1 \\
\text{Relative stenosis} & \quad 0.8 \text{ to } 1 \\
\text{Absolute stenosis} & \quad <0.8
\end{align*}
\]

CT scan: Bony spurs and disc

MRI is more useful. Cord size: 10 mm

Discogram is controversial.

Natural course

Complete remission never occurs with non-operative treatment
Progressive myelopathy is not uncommon. This deterioration is episodic in 2/3rd
**MRI**

**Treatment**

Conservative treatment
NSAID
Continuous or intermittent traction
Heat treatment
Temporary soft collar
Acupuncture

Majority of Radiculopathy improves with conservative treatment and one third will have mild to moderate pain at 10 yrs

**Surgery**

6 months conservative Rx (in Japan almost always conservative)

1. Anterior surgery has replaced posterior surgeries in many centers

Goal: Disc excision, Spurs and Bone graft +/- fixation through an Anterior approach

2. Laminectomy + Foraminotomy

3. Laminoplasty: 2 gutter at the medial side of the facet. One side is opened and other side is hinged. This increases diameter by 3-5 mm.

**Outcome**

Anterior Cervical spondylosis 90%
Laminectomy 60%
Laminoplasty 85% good results
Cervical myelopathy

More in Japan where incidence is 6/100000. OPLL common in Japan: Segmental or continuous

Usually in 6th or 7th decade
Male to female = 2:1

Clinical

Clumsiness in the hands
Myelopathy hand, Finger escape sign
10% spasticity in the lower limbs and urinary disturbance
Hyporeflexia in upper limb and hyperreflexia in lower limb
Positive Babinski

Various cord syndromes

Presents with symptoms, some but not complete improvement for long duration or short duration. “Stepwise deterioration”.

Treatment

Posterior laminoplasty